WETLAND SQUARE
MARKET PIER

RETHINKING HERITAGE
IN THE NEW ZEALAND REGIONAL LANDSCAPE

Waikanae Beach, Kāpiti
“Me huri whakamuri, ka titiro whakamua”

It is by remembering our past, that we can plan for the future

(Māori proverb)
WETLAND SQUARE
MARKET PIER

RETHINKING HERITAGE
IN THE NEW ZEALAND REGIONAL LANDSCAPE

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A 120 point thesis submitted in partial fulfilment of the requirements for the Master of Architecture (Professional)

Victoria University of Wellington
School of Architecture

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My architecture colleagues who have ridden the highs and lows of this degree alongside me and whose support and comradeship will not be forgotten;

And lastly to Ma and Pops for just, everything.

<  Fig. 1: Toetoe plants at Waimeha Lagoon
>  Fig. 2: Collage Map - Waikanae Estuary
This thesis addresses the rapid environmental degradation and socioeconomic decline to which many of New Zealand’s lowland regions have succumbed. In the last 150 years, it is estimated that 90% of the country’s indigenous wetlands and swamp forests have been drained and converted to farming pastures and low-density urban sprawl. This thesis critiques existing settlement patterns, investigating innovative urban forms that work dually to reactivate the wetland environments while increasing population density to levels required for public systems to function sustainably and vitally.

These objectives are explored using design-led research, investigating a site-specific scenario in Kāpiti, Wellington region. The design project identifies a squared-off suburban conservation wetland, transforming it into a new Wetland Square: a civic heart of the region’s natural and cultural heritage with reference to the town square urban type. A Market Pier extends from the urban edge of the town square towards the central lagoon. This architectural intervention connects the new urban centre with the wider agricultural activity of Kāpiti while reinstating the historic functions and cultural significance of the wetlands which indigenous Māori historically navigated by canoe in search of food and resources.

The research rethinks land conservation practice in New Zealand’s settled regional landscapes. It advocates that conservation efforts should expand beyond current land protection measures to also consider conserving the historic relationship between early settlers and natural systems. The thesis stresses architecture’s responsibility to reconcile urban and ecological systems, with emphasis on celebrating the rich social and cultural heritage associated with New Zealand’s natural heritage to ensure environmental and community resilience in the regional landscape.
Besides the very practical beginnings of this research, was a personal yearning to investigate the formal tensions between built systems and natural systems in New Zealand. As an aspiring architect, I felt confronted with a seeming paradox: a growing fascination with both the built environment on one hand, but also a deep obsession with the natural environment on the other.

This thesis sets out to explore a middle-ground: between urban and wilderness; mountain and sea, interior and exterior. And it is as much a disciplinary investigation, as it is a personal discovery of what excites me architecturally. How might my own environmental values and strong attachment to whenua – to the land of New Zealand Aotearoa – relate to my architectural tendencies, philosophies and responsibilities?
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Urban Cool
+
Market
+
Pier
+
Wetland Lagoon
+
Madrid-Roma City Housing
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INTRODUCTION:
ELUCIDATING A PERIPHERAL PROBLEM

Introduction → Design → Reflection → Conclusion
INTRODUCTION:

ELUCIDATING A PERIPHERAL PROBLEM

From swampland to farmland to exasperating sprawling ‘ur-banality’, the regional landscapes which once lay quietly at the peripheries of our cities are now experiencing radical urban growth and subsequent and drastic environmental degradation. Incidentally, these regional landscapes have tended to reside at the periphery of architectural discourse. Increasingly however, disciplinary focus is turning towards the rural hinterland with the likes of architects such as Rem Koolhaas alerting us to a countryside condition “more volatile than the most accelerated city” (‘Rem Koolhaas in the Country’). Given such rapid transformation of these periphery settlements, this thesis asks: How can architecture contribute to the strengthening of community and ecological resilience in the regional landscape?

Fig. 5: Diagram of the city region, highlighting a segment of the regional landscape as a wavering area at the urban periphery.

\[ \text{Fig. 5: Diagram of the city region, highlighting a segment of the regional landscape as a wavering area at the urban periphery.} \]
INTRODUCTION:

From swampland to farmland to exasperating sprawling ‘ur-banality’, the regional landscapes which once lay quietly at the periphery of our cities are now experiencing radical urban growth and subsequent and drastic environmental degradation. Incidentally, these regional landscapes have tended to reside at the periphery of architectural discourse. Increasingly however, disciplinary focus is turning towards the rural hinterland with the likes of architects such as Rem Koolhaas alerting us to a countryside condition “more volatile than the most accelerated city” (‘Rem Koolhaas in the Country’). Given such rapid transformation of these periphery settlements, this thesis asks: How can architecture contribute to the strengthening of community and ecological resilience in the regional landscape?

In the search for resilience, this research sets out to investigate alternative strategies for urban settlement in the low-lying regional landscapes of New Zealand. The Kāpiti district is identified as an appropriate case study for this research, embodying characteristics of urban and ecological dilapidation typical of New Zealand’s settled regional landscapes. The thesis hypothesises that to mitigate volatile urban sprawl and further environmental damage, a relationship of mutual exchange between urban and ecological systems must be established.

To test this hypothesis, an urban wetland site is selected as the location for a new town centre. Inspired by a quintessential town square urban type, Wetland Square is a proposal for the intensification of the wetland’s urban perimeter. This initial urban gesture then provides the formwork to develop a detailed architectural response: Market Pier - a public recreation platform and marketplace extending into the lagoon and thus connecting the town centre with the wider wetland network. Together, Wetland Square, Market Pier are proposed as an archetype and catalyst for increased urban density and activity as well as the restoration of the region’s wetland systems and underlying cultural heritage.

The design research revealed further implications besides those initially sought in the search for resilience for built and natural systems. In a final critique of the initial design proposition, the thesis argues that architecture must also consider its responsibility to recognising cultural heritage as attached to natural heritage, in the regional landscape. It concludes by asking: How might architecture rethink traditional land conservation practices through reactivating traditional land use activities?

The United Nations defines ‘resilience’ as the ability of a system or community to accommodate and recover efficiently from the impacts of a hazard (‘Terminology - UNISDR’).

1
Introduction

Elucidating a Peripheral Problem

2014
(Supervised by Penny Allan, Martin Bryant & Sam Kebbell)

1. Nick Wheaton - Densifying Diversity
2. Natasha Milne - Freedom to Roam
3. Deborah Scott - Old Patterns, New Practice
4. Oliver Chan - The Unsettled Landscape
5. Winston Dewhirst - Landscape Patterns
6. Mark Radford - Shrinking Communities
7. Caitlin Walls - High ground: Low ground. Explorations in Topography and Neighbourliness
8. Louise Seyb - In Between Surfaces: A New Way to Retire
9. Jonny Fletcher - Old Hardware, New Software
10. George Grieve - The Life Aquatic
11. Gwena Gilbert - The First Line Back: Creating Lightness along the Coast
12. Ben Allinson - The Light Line: Transport Infrastructure as a Porous Object
13. Ben Alnatt - Plan B Hive
14. Belinda Stuart - A Supercharged Park
15. Tom Inwood - A Shore Thing

2015
(Supervised by Martin Bryant & Sam Kebbell)

16. Rebecca Rofe - Renewal of the Abject; Manure-facturing in the Horowhenua District
17. Monica Wong - Realigning Lifestyle: Exploring Production, Ecology and Residential within Rural Subdivision
18. Rachel Murray - Wetland Square, Market Pier: Rethinking Heritage in the New Zealand Regional Landscape
19. Helen Brunskill - Taking the Roof off a Modern Building
20. Jenny Zhu - Bazaar in the ‘Burb
21. Jonie Molloy - Out of Context
22. Devo Staples - About Architecture, Against Architecture
23. Vina Quartermain - Designed Ecologies: Breaking Away from Islandised Conservation

2016 Research Projects...
SCOPE

The project scope was initially limited to the site at Waimēha Lagoon in Waikanae Beach, but necessarily expanded to consider the implications of the design proposition within the wider Kapiti context. The brief for the design project was not determined a priori, instead developing progressively as a result of continued site studies and design tests. In this way, Wetland Square formed the conceptual premise for the Market Pier, which in turn led to an archetypal solution with macro-scale implications. However, in no way does this thesis attempt to solve all three of these scales to a resolute level of detail. Ultimately an interdisciplinary approach including ecologists, hydrologists, landscape architects, regional planners and the community would be required to achieve this. Instead, basic urban design concepts are stipulated, while the Market Pier – as the catalyst behind the proposed urban and ecological regeneration – is explored at a more resolved level of architectural detail.

A JOINT RESEARCH VENTURE

This research is part of a collaborative body of work investigating architecture’s role in the New Zealand regional landscape. Alongside this thesis are another 22 Victoria University of Wellington Master of Architecture/Landscape Architecture thesis projects which use the Kapiti Coast as a primary case study for design-research. All of these theses seek, in some way, to respond critically to issues of urban sprawl and delapidation, and a threatened eco-system. Wetland Square, Market Pier is just one approach to tackling these issues. Given the ubiquity of the regional landscape condition however, it is hoped that the findings of this thesis will extend beyond the immediate site of Kapiti, highlighting the urban and ecological issues of the regional landscape as a national and global cause for architectural concern.

Fig. 6: Map of Kapiti District (and Horowhenua District further north) showing project locations of M.Arch theses from 2015/2016.
RESEARCH METHODS:
ON DESIGN-LED RESEARCH

The thesis employs a design-led research methodology; *The Design* - including site tests, design experiments, and developed design - are undertaken first as a way of uncovering further research problems and broader disciplinary implications. Related literature and projects are considered part of the design process; they do not pre-empt the design’s initial ‘putting of pen to paper’, but are instead considered tools for solving intermediary design problems encountered along the way. The results of the research are presented as *The Design Proposal* in Part 1: *The Design*. These results then serve as a vessel to facilitate reflective discussions of the research findings, with regard to the project’s relevance for wider architectural discourse.

Although specific design methods were not stipulated at the onset on of this thesis, certain ways of working became apparent as the design process unfolded. In many ways, investigation and discussion of these design methods could warrant a research project of their own; however this thesis focuses on the findings of the final design project - *Wetland Square, Market Pier*, giving primacy to what the project is doing (its ontology), as opposed to the design methods employed to get there (its epistemology). However, as an overview, three key methods are briefly described:

Fig. 7: ‘The Hunch’ - the very first sketch of this thesis.
1: HUNCH-LED DESIGN

The ‘hunch’ is considered a key design method in this thesis, as indeed this thesis could not exist without it. It acknowledges that the preliminary design idea was not born through design sketches, or preceded by in-depth case studies and literature reviews; it was simply an intuitive response to a series of site-specific problems. In this way, the research is fundamentally design-led. However in acknowledging that intuition alone can not solve an entire project, the initial design idea is dissected and scrutinised, before being carefully redeveloped (See Part 2.1: The Hunch).

2: INTER-SYSTEMS, INTERDISCIPLINES

The project adopts an integrated systems approach to design through the proposition to integrate a town centre around a wetland. While the project scope of this thesis is limited to a M. Arch (Prof) thesis, the urban proposition was constantly and necessarily challenged by the site-specific landscape processes. Acknowledging the need for an interdisciplinary investigation, this thesis was appropriately supervised by both a practising architect (Sam Kebbell) and practising landscape architect (Martin Bryant).

3: MACRO TO MICRO AND RETURN

As a response to the larger systems at play in the regional landscape, the research adopts a method of scaling up and scaling down; effectively transitioning between a macro scale (1:50 000), meso scale (1:2000) and a micro scale (1:20) as deemed appropriate. To investigate the regional landscape at Kāpiti, a macro-to-micro approach is used (See Part 1.1: Design Context). However during the design process (See Part 2.3), the project flips constantly between scales, in an attempt to understand how the Wetland Square and Market Pier operate in conjunction with the wider systems. Interestingly, the Market Pier becomes the catalyst for the Wetland Square project and wider regional regeneration; a reversal of typical macro-to-micro masterplan frameworks.
Corresponding with the design-led approach to research, the thesis document is structured in two parts with The Design presented first. This section begins by outlining the contextual issues in A Story of Site, followed by the presentation of the results: Wetland Square, Market Pier - the final design outcome. The second section - The Reflection, is a retrospective discussion of the design experiments, and the issues and findings that arose during the design process. As a last note, the conclusion considers the future implications of these findings and further research avenues.
PART ONE: THE DESIGN

1.1 A STORY OF SITE
Design Context

A description of the test site for the project, as framed within the wider contextual issues of the Kapiti Coast District and the national narrative concerning environmental destruction in the lowland regions.

1.2 WETLAND SQUARE, MARKET PIER
Final Design Proposal

The developed design for a site-specific scenario is presented in response to the contextual issues outlined.

PART TWO: THE REFLECTION

2.1 THE HUNCH
Design Phase One

‘The Hunch’ takes a retrospective glance at the likely site and context factors which influenced Wetland Square, Market Pier.

2.2 THE TURNING POINT
Related Works
Critical Reflection

A critical reflection of the successes and limitations of the initial design proposition, which influenced the design process.

2.3 THE FINAL PUSH
Design Phase Two

The ‘Final Push’ documents the final stages of design development that resulted from the interim findings.

CONCLUSION:
A Glance Back; A Glance Forward
PART ONE:
THE DESIGN

Design Context and Design Proposal
PART ONE: THE DESIGN

1.1
A STORY OF SITE

Design Context

1.1
A STORY OF SITE

Design Context

1.2
WETLAND SQUARE, MARKET PIER

Design Proposal
A Story of Site
The Design

1. Design Context

Design Proposal

1.2 a story of site
wetland square, Market pier

THE DESIGN
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A Wakening
Aotearoa
Between Mountain and Sea
A Kāpiti Coast Case Study
Forest, Flat and Food for the City
Growth on the Coast
The Capital to Kāpiti Connection
A Great Swamp No More
A Cultural History Lost
Dividing the Community
Back Towards the Coast!
A Missed Opportunity
A Compelling Alternative
A Latent Lagoon
(A New Zealand)
(A Greater Wellington)
(A Kāpiti Coast)
(Waikanae)
(Waimeha Lagoon)

(MACRO) → (MICRO)
MACRO TO MICRO: A FIVE-FOLD CONTEXT

“Real solutions to the problems of both city and suburb can now be achieved only through understanding the place of each within the larger region and by viewing city, suburbs, and countryside as a single, evolving system linked by the processes of nature and the social and economic concerns of humans.”

(Spirn 54)

This is a story of site. It begins with an overview of a national environmental scenario and progressively zooms in to introduce the specific site for The Design. The literature of New Zealand ecologist historian Geoff Park forms the basis to describe many of the environmental problems. Although focusing primarily on the area of the Kāpiti Coast, the threats and opportunities impacting upon urban and ecological resilience are typical of many New Zealand regional landscapes. At each scale, various issues are exposed concerning the cultural, social, economic and ecological dimensions of the site. Revealing a destructive past and a bleak urban and environmental outlook, this section paints a backdrop to envisage a more promising alternative future scenario.

Fig. 10: (Previous) Original painting of low-lying swamplands depicting extensive Ti Kouka (cabbage tree) and Harakeke (flax).

Fig. 11: Diagram outlining structure of this section.
1.1

A Story of Site

A WAKENING AOTEAROA

“New Zealand...a garden and a pasture in which the best elements of British society might grow into an ideal nation.”

(Mitchell 21)
“New Zealand…a garden and a pasture in which the best elements of British society might grow into an ideal nation.”

(Mitchell 21)
New Zealand’s environmental chronicle differs immensely from the mythical story of ‘Middle Earth’ marketed to our prospective international visitors. Idealized imagery of our ‘untouched’ pristine alpine landscapes and river valleys might suggest that we are creatures of the mountains and forests. Yet New Zealand is in fact a nation of coastal dwellers, with the majority of our settlements located on the flat low-lying plains, “…keeping our distance from the un-colonised nothing” (Park, ‘Ngā Uruora’ 303). Indeed, the mountains may unlock a great deal about New Zealand’s natural history, but the scores of archaeological evidence uncovered at sea level reference a social and cultural history embedded much more within the coastal plains.

Fig. 12: Composite image: satellite image and historic map of NZ.

Fig. 13: The coastal settlement of Kāpiti Coast in the lower North Island lies between the Tasman Sea and the Tararua Ranges.

Please refer to VUW Library’s print version of this thesis to access this image.
Given this actuality, perhaps the collective romanticised notion of New Zealand landscape ought to be revised. This thesis looks to the lowlands to investigate Aotearoa’s true ‘Middle Earth’: the settled and highly modified wetland, duneland and river plain regions occupying the middle ground between mountain and sea.

Fig. 14: A scene from Lord of the Rings depicts one of several picturesque mountain settlements in ‘Middle Earth’. The alpine backdrop was filmed in the New Zealand Southern Alps.
“...green, unbroken seam between sea and mountains. Covering everything but the sand dunes and the wetter swamps”.

(Park, ‘Ngā Uruora’ 165)
Fig 15: Watercolour elevation profiles of lower North Island west coast regions as painted by Charles Heaphy from shipdeck circa 1840. From top: View of Ōtaki with Tararua Ranges at rear; View of entrance to Whanganui River; Southeast view of Mount Taranaki.
At the turn of the 21st century New Zealand had become a country very different to the one indigenous Māori had first laid eyes upon some 800 years earlier. In the last century and a half it is estimated that 90% of the country’s wetlands have been destroyed and cleared for farming and residential development (Robertson 1). With wetlands drained, streams channeled and riverbanks stripped of their protective riparian forest, Aotearoa’s lowland ecosystems have suffered extensive and irreparable damage. So drastic the speed of this transformation that the landscape changes that took place in one century in New Zealand occurred over a time period of four centuries in North America and twenty centuries in Europe (King 26). Such unparalleled destruction must be met with unparalleled innovation.

How to address the environmental damage caused by sprawling human development in New Zealand’s fragile coastal regions?

Fig. 16: Swamp forest drainage and clearing to create farmland in Waikato - today the dairy farming capital of the country.

Fig. 17: Diagram showing deforestation over 1000 years in NZ.
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How to address the environmental damage caused by sprawling human development in New Zealand’s fragile coastal regions?

![Deforestation in New Zealand](image)

*Fig. 16: Swamp forest drainage and clearing to create farmland in Waikato - today the dairy farming capital of the country.*

*Fig. 17: Diagram showing deforestation over 1000 years in NZ.*
1.2
A Story of Site

A GROWING HINTERLAND
(+ A HINTERLAND FOR GROWING)

"Wellington's only long-term prospect was to become the commercial 'capital' of a prosperous region."

(Hamer 254)
"Wellington's only long-term prospect was to become the commercial 'capital' of a prosperous region." (Hamer 254)
A KĀPITI COAST CASE STUDY

New Zealand’s destructive environmental history has inspired a closer investigation of the urban and ecological scenario of the coastal lowland region of Kāpiti. Lying at the northwestern reaches of the Greater Wellington Region, the Kāpiti District stretches 30 kilometres along the coast from Paekakariki to Ōtaki and is home to 50,000 residents. Once considered a wild coastal swampland, Kāpiti has progressively evolved into a new type of regional landscape; one dominated increasingly by big-box retail centres, low-density residential development and extensive farming pasture.

Fig. 18: Satellite view of Kāpiti Coast showing the offshore island from which the region was named.
Fig. 19: Diagram showing Kāpiti located 50km from Wellington City. Kāpiti (including Ōtaki) comprises 9.5% of the estimated 496,000 people in the Wellington region.
Fig. 20: Aerial photo looking south of Waikanae Estuary towards the suburban grain of Otaihanga and Paraparaumu.
New Zealand's destructive environmental history has inspired a closer investigation of the urban and ecological scenario of the coastal lowland region of Kāpiti. Lying at the northwestern reaches of the Greater Wellington Region, the Kāpiti District stretches 30 kilometres along the coast from Paekakariki to Ōtaki and is home to 50,000 residents. Once considered a wild coastal swampland, Kāpiti has progressively evolved into a new type of regional landscape; one dominated increasingly by big-box retail centres, low-density residential development and extensive farming pasture.
The colonisation of Kāpiti in the 1880s was the result of Wellington’s increasing demand for a productive hinterland. With agricultural success on the eastern Wairarapa plains limited to predominately sheep and cattle farming, dairy farming and horticulture efforts were turned towards the fertile wetland soils of the Kāpiti-Horowhenua region. Upon completion of the Wellington-Manawatu Railway in 1886 and the influx of new settlers, Kāpiti’s wetlands and swamp forests were cleared and flax milling and timber-felling industries shifted to agricultural production. Today, Kāpiti’s unrestrained urban perimeter continues to creep up the coast, overtaking the agricultural landscape that once claimed the swampland before it.

How to instil a sense of Kāpiti’s agrarian identity at the urban centre?

Fig. 21: Men collecting flax during the first stage of flax fibre production at Makerua Swamp, just north of Kāpiti District. Circa 1917.

Fig. 22: Agricultural land use map. Former farmland in the Paraparaumu and Waikanae areas to the south of Kāpiti have been transformed into low-density residential areas.
“It was manifest that a land which nourishes the stateliest forests and the densest underwood in the world must be eminently fertile.”

- New Zealand, as described by early European explorer R.G Jameson in 1842 (312).
“...the country’s future lay in sheep and cattle, not eels and koura [freshwater crayfish].”

(Park, ‘Theatre Country’ 190)

Fig. 23: Aerial view above Ōtaki farm plains looking southwest towards Kāpiti Island
Based on Kāpiti’s population and the mounting proportion of locally employed residents Kāpiti is now considered one of New Zealand’s sixteen ‘Main Urban Centres’ (‘New Zealand Urban/Rural Report’). Between 1996 and 2006, the population of Wellington city increased by 13.8% while over the same period, the population of Kāpiti Coast increased by 23.3%, the highest growth rate in the Greater Wellington Region and the second highest in the country (2006 Census Data, Statistics NZ). It is anticipated that in the next 20 years, Kāpiti’s population will be 60,000 – an increase of 20%.

Fig. 24: Density of Kāpiti District compared with Wellington region (2013 Census Data, Statistics NZ).

Fig. 25: Population density of Kāpiti settlements (Statistics NZ).
Based on Kāpiti's population and the mounting proportion of locally employed residents, Kāpiti is now considered one of New Zealand's sixteen 'Main Urban Centres' ('New Zealand Urban/Rural Report'). Between 1996 and 2006, the population of Wellington city increased by 13.8% while over the same period, the population of Kāpiti Coast increased by 23.3%, the highest growth rate in the Greater Wellington Region and the second highest in the country (2006 Census Data, Statistics NZ). It is anticipated that in the next 20 years, Kāpiti's population will be 60,000—an increase of 20%.

Fig. 24: Density of Kapiti District compared with Wellington region (2013 Census Data, Statistics NZ).

Fig. 25: Population density of Kapiti settlements (Statistics NZ).
A Story of Site

The Design

Current State
Highway One
North Island Main Trunk Railway
Foothills
Raumati South Low-density urban area
Rural subdivision
Former wetland areas transformed into channelled waterways
Expressway route in construction
Raumati interchange
North Island Main Trunk Railway
Foothills
THE CAPITAL TO KĀPITI CONNECTION

While Kāpiti’s growth is resulting in increased local autonomy, Kāpiti still operates as part of a wider polycentric region, providing Wellington City with residential overflow while also meeting the city’s ongoing produce demands. As the population of Greater Wellington gets set to increase by 80,000 over the next 20 years, significant expansions to the regional transport network are underway to increase accessibility to Wellington’s CBD, Centreport, Cook Straight ferry terminals, airport and hospital (‘Wellington Regional Land Transport Strategy’). In particular, current upgrades to the Wellington Northern Corridor – which operates 110km between Levin and Wellington along State Highway 1 – aim to reduce daily congestion, increase economic growth and productivity and strengthen regional resilience in the event of a natural disaster.

How to sustainably accommodate Wellington city’s residential overflow while maintaining productive agricultural land area?

< Fig. 26: Aerial view looking north showing main transport routes converging at Raumati with new State Highway 1 expressway in construction.
1.3
A Story of Site

A LOW-LANDSCAPE

“For a culture faced with living sustainably in a finite world, these plains of our beginnings are a landscape of warning.”

(Park, “Ngā Uruora” 74)
For a culture faced with living sustainably in a finite world, these plains of our beginnings are a landscape of warning.

(Park, "Nga Uruora" 74)
“Had he known what we do about ‘wildlife corridors’...his ‘means and opportunity’ might have ensured that a forested strip of the plain from the sand dunes to the Tararuas might still remain.”

Geoff Park reflects on the conservation efforts of English surveyor Walter Buller in the Kapiti region in the 1890s. Amidst the extensive forest and swamp destruction, small but often unconnected patches of ‘ecological significance’ were preserved such as Ngā Manu Nature Reserve, Lake Papaitonga and Waimaha Lagoon. (‘Ngā Uruora’ 175)
Geoff Park reflects on the conservation efforts of English surveyor Walter Buller in the Kapiti region in the 1890s. Amidst the extensive forest and swamp destruction, small but often unconnected patches of ‘ecological significance’ were preserved such as Nga Manu Nature Reserve, Lake Papaitonga and Waimeha Lagoon. (‘Nga Uruora’ 175)

This transect is taken north of Otaki, showing an area where dunelands have remained intact. Geomorphological and ecological processes over thousands of years have resulted in a landscape of extensive parabolic dunes. The sediments of unstable foredunes are pushed kilometres inland by prevailing northwesterly winds, forming a distinctive parabolic shape before being stabilised by vegetation. An impervious peat layer beneath the dunes catches rainwater from the foothills, resulting in a high water table with lagoons and wetlands forming around the dunes.
A GREAT SWAMP NO MORE

What is now a vastly modified Kāpiti landscape of large-scale infrastructure, monotonous farm plains and low-density urban settlement was once an extensive and dynamic eco-system of Holocene dunes, wetlands and lagoons teeming with native flora, birds and wildlife. ‘The Great Swamp’ – as the region was formerly known – once covered 75% (9,200 hectares) of the area from Paekakariki to the Manawatu River (Fuller). Today an estimated 300 hectares (less than 5%) of the region’s original wetlands remain.

The ecological impact of this destruction is severe. Acting like the earth’s kidneys, wetlands clean the water that flows through them, trapping valuable soils and filtering out contaminants (‘Wetlands’; France 4). In a regional landscape like Kāpiti, wetlands can be particularly useful, helping to restore water quality in the face of agricultural fertilisers, animal manure, and urban stormwater run-off. The threat of these contaminants is also damaging for wildlife. In New Zealand, wetlands are known to host the largest concentration of wildlife compared to any other ecosystem (‘Wetlands’).

Fig. 29: Remnant wetland lagoon and swamp forest at Nga Manu Reserve in Waikanae.

Fig. 30: Comparison of wetland cover in Kapiti in 1840 (Carceck) and 1993 (Fuller)
The Great Swamp

What is now a vastly modified Kāpiti landscape of large-scale infrastructure, monotonous farm plains and low-density urban settlement was once an extensive and dynamic eco-system of Holocene dunes, wetlands and lagoons teeming with native flora, birds and wildlife. ‘The Great Swamp’ – as the region was formerly known – once covered 75% (9,200 hectares) of the area from Paekakariki to the Manawatu River (Fuller). Today an estimated 300 hectares (less than 5%) of the region’s original wetlands remain.

The ecological impact of this destruction is severe. Acting like the earth’s kidneys, wetlands clean the water that flows through them, trapping valuable soils and filtering out contaminants (‘Wetlands’; France 4). In a regional landscape like Kāpiti, wetlands can be particularly useful, helping to restore water quality in the face of agricultural fertilisers, animal manure, and urban stormwater runoff. The threat of these contaminants is also damaging for wildlife. In New Zealand, wetlands are known to host the largest concentration of wildlife compared to any other ecosystem (‘Wetlands’).
“Swamps which might doubtless easily be drained...”

Fig. 31: An aerial photo of Ohinemaka Beach and coastal swampland in South Westland of New Zealand.
...indeed in every respect the properest place we have yet seen for establishing a Colony.”

– (Beaglehole, qtd in ‘Theatre Country’ 180)
“The plains that had been the larder of Māori life had become the centrepiece of the attempt to replicate rural Britain in the South Pacific.”

– (Park, ‘Ngā Uruora’ 308)
A CULTURAL HISTORY LOST

To the European colonists the swampy flats lying inland of Kāpiti were considered ‘wastelands’, but to the indigenous Māori, these coastal lowland areas were places of rich biodiversity providing ample food and resources. Evidence of shell, bone and stone deposits have been found scattered across the coast, painting a history of Māori iwi settled near estuary mouths and on suitable mounds and spurs in the swamplands. Unearthed remains of eel weirs and sunken canoes unlock a not-so-distant past in which a navigable inland coastal water canoe passage was said to have stretched between Paekakariki and Waikanae (Beckkett as qtd. by Baldwin 39).

How can architecture help to acknowledge a rich cultural history tied to the land?

Fig. 33: Webber. Maori fishing.

Fig. 34: Berraud. An 1853 painting of Waimeha Pa (now 133 Weggery Drive), at Waikanae River. A fenced area outlines where some dune forest may have already been cleared.
1.4

A Story of Site

A SUBURBAN SETTING

“Given the dramatic expansion of modern Waikanae, fuelled by a rapidly growing population, it is probable that the whole of the coastal plain – from beach to the foothills – may one day be covered by houses.”

- (Maclean 8)
"Given the dramatic expansion of modern Waikanae, fuelled by a rapidly growing population, it is probable that the whole of the coastal plain – from beach to the foothills – may one day be covered by houses."

(A Story of Site)

1.4 (Waikanae) - (Maclean 8)
DIVIDING THE COMMUNITY

While the State Highway 1 Kāpiti expressway is expected to have a positive impact on regional resilience and accessibility, its impact on local community could be potentially harmful. A report that analyses the social effects of the new expressway highlights the risk of ‘visual and psychological severance’ between the eastern and western Kāpiti communities (Buchan 4). The severance effect could be particularly profound at Waikanae Beach, which currently has few commercial or community amenities and whose 3000 residents are largely reliant on the Waikanae Town Centre, 5km away.

< Fig 35: Satellite image of Waikanae.

> Fig 36: Diagram of the community divide at Waikanae between the Town Centre and Waikane Beach.

> Fig 37: Map showing 18km Peka Peka to MacKays Kāpiti expressway running through Waikanae and Paraparaumu. This section of the 33km Kāpiti expressway is expected for completion in February 2017.
While the State Highway 1 Kāpiti expressway is expected to have a positive impact on regional resilience and accessibility, its impact on local community could be potentially harmful. A report that analyses the social effects of the new expressway highlights the risk of ‘visual and psychological severance’ between the eastern and western Kāpiti communities (Buchan 4). The severance effect could be particularly profound at Waikanae Beach, which currently has few commercial or community amenities and whose 3000 residents are largely reliant on the Waikanae Town Centre, 5km away.

**Fig 35:** Satellite image of Waikanae.
Settlement in Kāpiti has closely followed the development of transport routes and access to export markets (Easther 11; Maclean 8). It is therefore predictable that the new expressway will encourage a move back towards the coast, stirring future urban expansion in areas with close access to the Waikanae and Paraparaumu expressway interchanges. Examples of this shift are already observed: Kāpiti Landing Business Park – a new big-box commercial development on Kāpiti Road – has opened recently; and near Waikanae two areas of greenfield residential development – Ngarara settlement and Waikanae North – have been outlined in the Kāpiti Coast District Plan, outlining 2400 households to accommodate Kāpiti’s anticipated growth (2003).
Settlement in Kāpiti has closely followed the development of transport routes and access to export markets (Easther 11; Maclean 8). It is therefore predictable that the new expressway will encourage a move back towards the coast, stirring future urban expansion in areas with close access to the Waikanae and Paraparaumu expressway interchanges. Examples of this shift are already observed: Kāpiti Landing Business Park – a new big-box commercial development on Kāpiti Road – has opened recently; and near Waikanae two areas of greenfield residential development – Ngarara settlement and Waikanae North – have been outlined in the Kāpiti Coast District Plan, outlining 2400 households to accommodate Kāpiti’s anticipated growth (2003).
This thesis identifies a missed opportunity in the allocation of Kapiti’s future growth away from Waikanae’s existing urban areas. The Kapiti Council has recognised: ‘the community’s desire that population growth be managed to bring benefits rather than problems (‘KCDC District Plan 2009’, 18). Yet, these proposed greenfield developments are at risk of worsening existing problems induced by urban sprawl such as car reliance, lack of urban vitality and landscape degradation.

How to accommodate sustainable growth in the regional landscape?
A COMPELLING ALTERNATIVE: WAIKANAЕ BEACH

The thesis proposes Waikanae Beach as an alternative site for accommodating growth. This existing low-density urban area of 2040 households is located just north of the Waikanae River. Although the Kapiti Council has not stipulated further development in this area, the suburb will have close proximity to the soon-to-be Waikanae expressway interchange; a change that could stimulate increased interest due to reduced travel times to Wellington.

Fig 40: Waikanae Beach: The proposed site for the design intervention is located close to the Waikanae expressway.
1.5

A Story of Site

A LATENT LAGOON

“In landscapes like this where the protected pockets of wild nature are far smaller than the range of key species, the business of conservation is beset with enormous problems, not the least of which is the exclusionary way it, itself, operates.”

– (Park, ‘Nga Uruora’ 222)
In landscapes like this where the protected pockets of wild nature are far smaller than the range of key species, the business of conservation is beset with enormous problems, not the least of which is the exclusionary way it, itself, operates.

– (Park, ‘Nga Uruora’ 222)

(Waimeha Lagoon)
THE SITE

Waimeha Lagoon is the selected site for *The Design*. This uncannily square patch of “conservation” wetland grid-locked by streets and unkempt residential fences alludes to a local history of lowland European colonisation and environmental marginalisation. Yet the very existence of this urban lagoon, despite such development also indicates New Zealand’s augmenting concern for ‘scenic preservation’ – a regard for the environment that only developed in the early 1900s. To ‘conserve’ this landscape poses an interesting dilemma:

*What can we truly ‘conserve’ about a natural site that is, and should remain, in constant flux?*

---

Fig. 41: (Previous and above) Aerial image of Waimeha Lagoon, Waikanae Beach.

Fig. 42: (From top) One-storey housing backing on to wetland; The lagoon with Tararua Ranges in background; Overlooking wetland planting from south-east dunes.
Waimeha Lagoon is the selected site for The Design. This uncannily square patch of "conservation" wetland grid-locked by streets and unkempt residential fences alludes to a local history of lowland European colonisation and environmental marginalisation. Yet the very existence of this urban lagoon, despite such development also indicates New Zealand's augmenting concern for 'scenic preservation' – a regard for the environment that only developed in the early 1900s. To 'conserve' this landscape poses an interesting dilemma:

What can we truly 'conserve' about a natural site that is, and should remain, in constant flux?

Fig. 41: (Previous and above) Aerial image of Waimeha Lagoon, Waikanae Beach.
Fig. 42: (From top) One-storey housing backing on to wetland; The lagoon with Tararua Ranges in background; Overlooking wetland planting from south-east dunes.
Fig 43: Two panaromic photos of Waimeha Lagoon taken in May 2015 (top) and January 2016. Come summer, an algae bloom transforms the lagoon’s surface into a bright red carpet. Despite its colourful addition to the site, the algae is an indicator of poor water quality.
The Design

Fig 43: Two panoramic photos of Waimeha Lagoon taken in May 2015 (top) and January 2016. Come summer, an algae bloom transforms the lagoon’s surface into a bright red carpet. Despite its colorful addition to the site, the algae is an indicator of poor water quality.
PART ONE: THE DESIGN

1.2 WETLAND SQUARE MARKET PIER

Design Proposal

1.1 A STORY OF SITE

Design Context

1.2 WETLAND SQUARE, MARKET PIER

The Design Proposal
Wetland Square, Market Pier is a proposal for a new town centre and a public platform located at Waimeha Lagoon, in the low-lying landscape of Waikanae Beach, Kapiti Coast. Prompted by continued population growth, community severance caused by a new motorway and an augmenting threat to underlying natural systems, the project identifies an opportunity to increase population density, enhance urban vitality, and celebrate the natural and cultural history of a remnant and latent wetland lagoon and associated wetland system. The design response is radically contextual, driven by a unique wetland site and drawing upon a distinctive local history of Māori and European settlement. Its implications, however, extend beyond the site, prompting the investigation of other similar urban wetlands both in the Kapiti region, and across other New Zealand regional landscapes.
How can architecture reconcile a sprawling urban condition, a degraded ecological system and a cultural history of indigenous settlement to ensure community and environmental resilience in the low-lying regional landscape?

1

A proposal for a town centre situated around an urban wetland.

2

A proposal for a wetland pier and integrated marketplace.
A FIVE-FOLD PROPOSITION

1. Intensifying the Urban Perimeter:
   Housing, Commercial and Community Amenities

2. Creating Connections:
   Urban / Landscape Promenade

3. Reactivating the Wetland
   Reconnecting Ecological Patches

4. Restoring Recreation Amenity
   A Wetland Pier

5. Acknowledging an Agrarian Identity
   A Regional Farmers’ Market

Fig. 46: Conceptual diagrams showing the design intent.

* Fig. 46: Conceptual diagrams showing the design intent.
  > Fig. 47: An ‘Imperial Landscape’?
AN ‘IMPERIAL LANDSCAPE’?

The scheme exploits the unusually square configuration of the urban landscape, transforming the wetland’s perimeter into a town centre. The concept pays homage to New Zealand’s colonial history, taking precedent from a quintessentially European town square but with a clear difference: multi-storey mixed-use buildings overlook a dynamic landscape, rather than a static square of pavement.

This early conceptual render addresses the major dichotomy of such a proposition: on one hand, the rigidity of European’s urban settlement – a dominating imperial grid layout and a corresponding built history; on the other hand, New Zealand’s dynamic natural history – one that lies in the whenua, the fauna and the flora.
FROM LATENT LAGOON...

A remnant conservation wetland, enclosed by low-density suburban development

Currently, the wetland is bordered by private fences and low-density housing on 3 sides. Depressed into the landscape, the lagoon is not visible from the street. The project identifies an opportunity for development on the unoccupied southeast corner of the wetland to reconcile the wetland lagoon with its urban context.
The Design

A remnant conservation wetland, enclosed by low-density suburban development from latent lagoon... Currently, the wetland is bordered by private fences and low-density housing on 3 sides. Depressed into the landscape, the lagoon is not visible from the street. The project identifies an opportunity for development on the unoccupied southeast corner of the wetland to reconcile the wetland lagoon with its urban context.

PROPOSED URBAN INTERVENTION

New 3-5 storey mixed-use buildings are proposed around the perimeter of the square facing towards the wetland, rather than away from it. The existing perimeter of private fences is replaced with a square ring of public boardwalks and shared streets, tying the four sides of the town square together and acting as a threshold between urban life and wild life.
The thesis proposes a Market Pier as the starting point for the Wetland Square transformation. Creating a physical link between the lagoon and the town centre, the pier operates as a catalyst for reconciling urban and ecological systems in both the immediate site, and the wider regional context. Given that the town square development is likely to take at least 30 years, the pier project enables immediate and intimate community engagement with the wetland. Using the architectural project to stimulate interest in the site, further development around the edges will be fast-tracked. In this way, the Market Pier and corresponding street edge is the catalyst for development of the overall Wetland Square.

> Fig. 50: A conceptual masterplan of the Wetland Square. The Market Pier is located on the southeastern edge.

1. MARKET MAYHEM - MAIN STREET
2. THE DUNE DWELLERS - RESIDENTIAL
3. TOURIST TERRAIN - BEACH PRECINCT
4. COMMUNITY CORNER
The thesis proposes a Market Pier as the starting point for the Wetland Square transformation. Creating a physical link between the lagoon and the town centre, the pier operates as a catalyst for reconciling urban and ecological systems in both the immediate site, and the wider regional context. Given that the town square development is likely to take at least 30 years, the pier project enables immediate and intimate community engagement with the wetland. Using the architectural project to stimulate interest in the site, further development around the edges will be fast-tracked. In this way, the Market Pier and corresponding street edge is the catalyst for development of the overall Wetland Square.
Several key urban design principles are proposed for the perimeter developments of the Wetland Square. Attributes such as wetland-fronting buildings, narrow plot size and facade symmetry are stipulated, inspired by European mixed-use multi-storey buildings. To encourage diversity, different architects would be selected to design each building. To maintain overall cohesiveness, it is proposed that one masterplanner would govern the overall quality of the Wetland Square.

Fig. 51: A person overlooks the Waimeha Wetland Square lagoon from the window of a 3rd storey apartment.

Fig. 52: A composite sketch of the northeastern side of the Wetland Square.
The *Wetland Square* scheme compromises between urbanism’s desire for hard edges, and the wetland’s desire for dynamic and curved edges. On the southeast and northwest sides (A), hardscaped shared streets create a distinct separation between urban realm and wetland. Buildings are tightly clustered.

Contrastingly, on the northeast and southwest edges (B), buildings are spaced apart. The square is defined by an elevated timber boardwalk which supports additional viewpoints and walkways connecting the square to the perimeter buildings. Riparian planting is increased on these sides to extend in between the spaced buildings.
FOUR ZONES

The development on each side of the square is zoned and treated differently, according to site constraints. Although each side is 'zoned,' this is combined with residential provision. Additionally, the handwritten labels on the map indicate what the buildings could be. Much further community consultation would be required before such detail could be finalised.

Fig. 55: Waimeha Wetland Square Zones

1. MARKET MAYHEM - MAIN STREET
The first stage of development including the Market Pier, and new shared street with retail, commercial and some community focus. This area benefits from maximum sunlight with buildings casting shadows away from the street.

2. THE DUNE DWELLERS - RESIDENTIAL
With a challenging topography and higher elevation, this area is most suitable for 2-3 storey housing overlooking the wetland. Planting continues between houses.

3. TOURIST TERRAIN - BEACH PRECINCT
The proximity of this edge to Waikanae Beach lends itself to the development of temporary accommodation and associated amenities.

4. COMMUNITY CORNER
This zone bridges the main street with the beach precinct. A community centre, swimming pool and community garden are proposed.
At the urban end of the pavilion, a permanent food market is proposed. Market stalls are rented out as small gourmet restaurant outlets or produce shops. The food market connects the new town centre with the wider agricultural activity of the region, while referencing the historic function of the wetland as an important food and plant source. Market stalls act as permanent shops,
At the urban end of the pavilion, a permanent food market is proposed. Market stalls are rented out as small gourmet restaurant outlets or produce shops. The food market connects the new town centre with the wider agricultural activity of the region, while referencing the historic function of the wetland as an important food and plant source. Market stalls act as permanent shops, activating the wetland.

Three Fig. 56: ‘Roof’ Plan; Ground Floor Plan; and Longitudinal Section

with dining areas above. At the lagoon end, there is a stall where visitors can hire kayaks. Rentable and private kayaks are stored in lockable open-air shelves. Finally, the three separate walkways meet before the pier dives into the water, forming a launch pad for kayaks and small water vessels and referencing a local history of waka travel in the wetlands.
“If any place holds the prospect of rediscovering what it means to belong to the greater sacred community of nature, it is not going to be in the mountain national parks but here in the lowlands where we spend most of our time.”

(Park, ‘Nga Uruora’ 223)

FROM WATER’S EDGE...

The sloping upper level creates a physical link between the third storey of the proposed community library on the urban edge and the lagoon. In this way the building acts as an “ecotone” – an ecological threshold or transition area between two systems. If the waterways of the region were to be interconnected as they once were, people would be able to travel to the market by canoe.
"If any place holds the prospect of rediscovering what it means to belong to the greater sacred community of nature, it is not going to be in the mountain national parks but where we spend most of our time."

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The building’s distinctive inclination from urban edge down to water’s edge emphasises that this is not simply a landscape “lookout”, but a working pier, functioning as an integral component of urban life.

Fig. 57: The Market Pier with temporary structures set up on the street edge.
Designed as an open, porous structure, the 105 m long, 11.6m wide intervention is designed to have minimal ecological impact. The floor level is elevated above the ground allowing for plants to grow and wildlife to pass beneath. Likewise, market stalls are spaced apart to allow wildlife to pass through the intervention. At a smaller scale, the same concept of porosity is applied to the structure, which uses 4-way steel cluster columns to reduce the visual impact of the intervention. On the ground level, spaced timber decking and steel grating is used to allow rainwater to filter through the building and down to the wetland.

> Fig. 58: Northeast elevation of Market Pier (cont. following pages)
The Design

a porous structure

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Upper platform provides seating areas for market-goers and those occupying the upper floors of the perimeter buildings. This high point, enables views out to Kapiti Island.

Residential properties on the southern edge undulate with the topography of the dunes

Open structure enables opportunities for temporary occupation

Proposed 4 storey public buildings on this edge open onto upper level deck

Market stalls open up to the northeastern walkway. Market stalls are weathertight and can be locked individually.

Stairways providing access to upper level dining rooms above the market stalls

Platform is elevated 1.5 - 2m off the ground level.

Upper platform provides seating areas for market-goers and those occupying the upper floors of the perimeter buildings. This high point, enables views out to Kapiti Island.

Market stalls open up to the northeastern walkway. Market stalls are weathertight and can be locked individually.

Stairways providing access to upper level dining rooms above the market stalls

Platform is elevated 1.5 - 2m off the ground level.
The Design

Lower platform descends 880mm over 4 stages to reach just above the water’s surface.

Height of market stalls reduces as pier progresses to water’s edge.

Columns extend 1.2m beyond upper platform to support balustrade and handrails.

Point at which lower ramp meets upper level platform.

Ramp from Market Lane at 1:12 gradient with landings to meet accessibility requirements.

Stairway providing access to upper level dining rooms.

Lower platform descends 880mm over 4 stages to reach just above the water’s surface.
Platform flattens out, allowing for accessibility and flexible use - yoga space, temporary stalls etc.

Column spacing accommodates for 3.2m wide market stalls, with gap between stalls allowing for temporary uses: cafe tables and chairs, hammocks, marquees etc.

Stairs connecting upper level with lower level, enabling multiple looped paths

Pier extends beyond the lagoon's edge, as these plants provide an important feeding and nesting zone for wildlife
Kayak shelves optimise interstitial space below ramp

Structural columns gradually lengthen in height to retain a sense of enclosure and structure as the overall form is lost to the water

All three walkways meet, before descending into the water
Ti Kouka (cabbage tree) is a dominant native plant in the lagoon. Historically, the roots of the tree were roasted in a traditional earth oven and served as chutney with meat. (A product to sell at the market perhaps?) The plant fibres were strong and used to make rope.

A distinctive-shaped exotic pine tree acts as a landmark on the site, referencing the many exotic plant species introduced to NZ.

A large concrete anchor on each end of the building (not shown here) ties the building down to the ground, with the building acting structurally as a bridge in order to resist horizontal/earthquake loads. This allows columns to be gravity-load resisting only, maintaining slender pin joints to ensure a lightweight aesthetic.

A Kahikatea tree (not existing) references the dense swamp forest that once grew in the soils close to this site.
The pier structure can be considered an extension of the Wetland Square promenade, feeding into the wetland’s proposed perimeter walkway. The pier is divided up into three parallel walkways which connect just before the building meets the water. Ramping up and down, the circulation paths come to define the overall form of the building. Stairways running between the market stalls, perpendicular to the main pathways enable multiple looped paths.

Upper level of buildings programmed with public function

Upper platform feeds into the urban fabric of the town edge. The bridge would need to be cantilevered from the edge buildings, and seismically separated

Market Lane

Perpendicular thoroughfare (connection to stairs and upper level dining rooms of stalls)

Perpendicular thoroughfare between market stalls and kayak storage

All walkways come together

< Fig. 59: Aerial perspective of building mass
DEEP DOWN, UP HIGH

To build big in the Kāpiti region, long piles are required to extend deep beyond the soft peat soils and into solid rock. Of course, this construction is all hidden beneath the wetland. The Market Pier gives architectural expression to this engineering feat, using tall steel columns which extend 10 metres above the ground surface, alluding to millennia worth of natural processes which created these lowland ecosystems.
To build big in the Kāpiti region, long piles are required to extend deep beyond the soft peat soils and into solid rock. Of course, this construction is all hidden beneath the wetland. The Market Pier gives architectural expression to this engineering feat, using tall steel columns which extend 10 metres above the ground surface, alluding to millennia worth of natural processes which created these lowland ecosystems.

These structural columns allow the upper-level central platform to suspend over the market stalls while the outer platforms hang cantilevered off either side. The structure uses a modified K-Brace to resist loads in the transverse direction. In the longitudinal direction, the structure acts as a bridge, with large concrete anchors embedded in the ground at either end. Under horizontal loading, the ramp acts as a second beam, transferring loads back to the anchors and into the ground.

Fig. 60: Transverse section series showing changing structure and functions as pier progresses towards the lagoon.
WEAVING THE PIER INTO THE URBAN FABRIC

The ground floor of the Market Pier feeds directly onto Market Lane, connecting the market food stalls with the retail ground floor on the new main street. Come market day, the street can be closed off and transformed into a temporary farmers’ market. On the top floor, the intervention continues above the ground floor buildings, forming a deck for the proposed neighbouring community buildings.

> Fig. 60: Plan (cont. on following pages)
The ground floor of the Market Pier feeds directly onto Market Lane, connecting the market food stalls with the retail ground floor on the new main street. Come market day, the street can be closed off and transformed into a temporary farmers' market. On the top floor, the intervention continues above the ground floor buildings, forming a deck for the proposed neighbouring community buildings.

Public arcade walkway to be designed through perimeter buildings, connecting Market Pier with Queens Rd.

Street edge steps down to form seating

Steel grating perimeter

Gap between ramp and main structure

Stairway access to dining rooms above stalls

Steel grating perimeter
Interior of stalls is drawn indicatively only. Arrangements are not fixed; fit-outs can be undertaken by those renting the stalls.
The Design

Interior of stalls is drawn indicatively only. Arrangements are not fixed; fit-outs can be undertaken by those renting the stalls.

Up to the roof deck!
The Design

1. Market Lane
2. Mixed-use building (cafe below)
3. Market Pan-Extension (cascades outdoor)
4. Outdoor Seating Area
5. Vehicle Loading Lane
6. Market Pan-Entry
7. Access to upper level/Seating
8. Upper level bridge
9. Market Stalls (Kitchen)
10. Market Stalls (Walk-in)
11. Boat-launching crane
12. Tenders
13. Kayak Hire /Fishing Hire
14. Kayak Storage
15. Community boutique
16. Pop-up market space
17. Lifted level ramp

Wetland Square, Market Pier

--- down to water's edge

water's edge - feeding zone for birds + insects.
^ Fig. 61: Section AA. Interior of market stall with dining above.
> Fig. 62: Market stalls open onto northeastern walkway.
Fig. 61: Section AA. Interior of market stall with dining above.
Fig. 62: Market stalls open onto northeastern walkway.
Fig. 63: Section BB: Connection between lower level and ramp.

Fig. 64: Perspective of ramp leading up to upper level platform, with stair connection intersecting ramp as shown in Section BB.
Fig. 63: Section BB: Connection between lower level and ramp.

Fig. 64: Perspective of ramp leading up to upper level platform, with stair connection intersecting ramp as shown in Section BB.
Fig. 65: Perspective of the four dining cubby rooms above the market stalls. These spaces are connected with a one metre bridge, with stairs at the ends running perpendicular to connect them.
The Design

Fig. 65: Perspective of the four dining cubby rooms above the market stalls. These spaces are connected with a one metre bridge, with stairs at the ends running perpendicular to connect them.
Fig. 66: Perspective of upper level platform being used as an outdoor cinema. The upper level provides views out to Kapiti Island.

Fig. 67: Section CC: Ramp on left connects to upper level platform
Stop your snivelling creek bed
come rain, hail
and flood-water
laugh again.

“Harsh” - Horace Weather
Fig. 68: Perspective of kayak shelves at lagoon edge

Fig. 69: Section DD - Left cantilevered walkway meets right walkway at the kayak storage
CONNECTING THE FRAGMENTS

Wetland Square is proposed as the first project in the restoration of a series of isolated wetland patches across the Kāpiti region. In the immediate area, the project proposes the revival of the historic Waimeha stream from which the lagoon was formed. Maps dating back to 1880 reveal the Waikanae River once had two channels, the second channel - Waimeha stream, disappeared underground, most likely in a flood event. Wetland Square seeks to reinstate this stream through proposing a swale running along Te Moana Rd, the path of the original river. With a strong riparian planting border, this revived stream will strengthen biodiversity corridors between the Waikanae Estuary (left) and the Waimeha Stream (right).

Fig. 70: Proposed wetland regeneration at Waikanae Beach.
ConneC ting the fragments

Wetland Square is proposed as the first project in the restoration of a series of isolated wetland patches across the Kāpiti region. In the immediate area, the project proposes the revival of the historic Waimeha stream from which the lagoon was formed. Maps dating back to 1880 reveal the Waikanae River once had two channels, the second channel - Waimeha stream, disappeared underground, most likely in a flood event.

Wetland Square seeks to reinstate this stream through proposing a swale running along Te Moana Rd, the path of the original river. With a strong riparian planting border, this revived stream will strengthen biodiversity corridors between the Waikanae Estuary (left) and the Waimeha Stream (right).

BEYOND THE SQUARE...

1. Proposed revival of Waimeha Stream
2. Proposed medium density development to begin around Wetland Square within 30 years but with opportunity to spread further between the two estuaries over 60-100 years (Fig. 71).
3. Proposed riparian border for stream connecting Waimeha Lagoon to Waimanu lagoons
4. Opportunity to transform abandoned street into swale/stormwater system with associated walkways and housing.
5. Opportunity to strengthen riparian border of channelled stream in Otaihanga to continue inland water network.
Waimanu Lagoons / Waikanae Estuary

30 - 50 year development

50 - 100 year future development

Waimeha Wetland Square

Future growth spine

Waimeha Wetland Square

30 - 50 year development

50 - 100 year future development
Abandoned street could be transformed into swale stormwater garden with associated walkways.

Existing grid suitable for intensification

Second remnant lagoon regeneration

Te Moana Road / Revived Waimeha stream

Fig. 71: A conceptual render of the envisaged future growth spine.
Fig. 72: Arriving at the Market Pier by stand-up canoe.
AN ARCHETYPE FOR THE REGIONAL LANDSCAPE

Together, the Wetland Square and Market Pier form a system which could rejuvenate other “grid-locked” urban wetlands in the regional landscape. In Kāpiti, a closer look reveals two other locations where this system could be implemented. At Otaihanga (2), low-density housing is threatening a small, unprotected lagoon. At Paraparaumu (3), big-box retail developments stretch along State Highway 1, with little character or cohesiveness. At both of these locations – like Waimeha Lagoon – there is an opportunity to promote urban intensification, vitality, restore wetland quality and strengthen place identity.

At a macro scale, this project proposes the restoration of the region’s former wetland belts, relinking the three wetland squares to create a regional urban network connected by its waterways. Referencing a history where wetlands were once used as a means of inland waka transport, these restored wetlands could act as a spine for associated recreation amenities such as kayaking, walking and biking infrastructure. Although the Waimeha Wetland Square and Market Pier are proposed as the catalysts for this regional regeneration, they are considered just one micro-component of a wider urban and ecological network.

> Fig. 73: Identified sites for regeneration
> Fig. 74: Kāpiti regional wetland network proposition
Together, the Wetland Square and Market Pier form a system which could rejuvenate other “grid-locked” urban wetlands in the regional landscape. In Kāpiti, a closer look reveals two other locations where this system could be implemented. At Otaihanga (2), low-density housing is threatening a small, unprotected lagoon. At Paraparaumu (3), big-box retail developments stretch along State Highway 1, with little character or cohesiveness. At both of these locations – like Waimeha Lagoon – there is an opportunity to promote urban intensification, vitality, restore wetland quality and strengthen place identity. At a macro scale, this project proposes the restoration of the region’s former wetland belts, relinking the three wetland squares to create a regional urban network connected by its waterways. Referencing a history where wetlands were once used as a means of inland waka transport, these restored wetlands could act as a spine for associated recreation amenities such as kayaking, walking and biking infrastructure. Although the Waimeha Wetland Square and Market Pier are proposed as the catalysts for this regional regeneration, they are considered just one micro-component of a wider urban and ecological network.
A REGIONAL WETLAND NETWORK

1 Waimeha Wetland Square

2 Otaihanga Wetland Square
“Landscapes exist. They fascinate and entertain us. They reveal how the past produces the present. They nourish us and show us who we are, and who, culturally, we have been.”

(Park, Nga Uruora 197)
Landscapes exist. They fascinate and entertain us. They reveal how the past produces the present. They nourish us and show us who we are, and who, culturally, we have been.

(Park, Nga Uruora 197)

Fig. 75: A regional wetland network

Fig. 76: Waimeha Wetland Square at dusk
PART TWO: REFLECTION

Design Process, Case Studies & Discussion
2.1

Design Phase One:

THE HUNCH

2.1

THE HUNCH

Design Phase One

→

2.2

THE TURNING POINT

Critical Reflection,
Related Works

→

2.3

THE FINAL PUSH

Design Phase Two
The Hunch

The Reflection

Design Phase One:

2.1 the hunch

The hunch

The Turning poinT

Design Phase One

2.1 2.2 2.3

THE FINAL PUSH

Critical Reflection,
Related Works

Design Phase Two
**THE SQUARE:**
**WHY/HOW?**

1. *The Need for the Node*

2. *The Urban Grid*

3. *A Town Square Urban Type*

4. *A Medium-Density Framework*

5. *A Landscape to Celebrate*

**THE PIER:**
**WHY/HOW?**

6. *Access to the Lagoon Edge*

7. *The Scale of the Site*

8. *A Public Forum*

9. *Lightness + Porosity*

10. *A Framed View*
THE RATIONALE BEHIND
THE HUNCH

The primary concept for this thesis was stumbled upon in a state of semi-consciousness as I awoke from a night’s sleep in December 2014. Prior to the research period officially commencing, a design proposition had already been subconsciously forming: What if the edge of the remnant Waimeha Lagoon were transformed into a new town square? It could provide a framework for new medium-density development, form a civic heart for the Waikanae Beach community and simultaneously celebrate the overlooked landscape. But what led to this idea? This chapter unravels the key design ‘hunch’ - the Square and the Pier - identifying ten factors which likely lead to its inception.

<< Fig. 77: (Previous) Berckheyde. The Market Square at Haarlem
< Fig. 78: Ten key reasons for ‘The Hunch’
A Fig. 79: An initial sketch of Wetland Square
Wetland Square is a proposition to provide a town centre node for increased growth. The idea of the node is introduced by Kevin Lynch in *The Image of the City* who argues that nodes are ‘...the conceptual anchor points in our cities (102).’ Currently, Waikanae Beach’s amenities are scattered haphazardly across the town, with a missed opportunity to create a centre for urban activity and identity. In determining the location for such a centre, *Wetland Square* seeks to capitalise upon Waikanae’s distinctive landscape. Although the coastline and river serve as powerful organising elements (or ‘edges’, to employ Lynch’s terminology), due to the fragile nature of the foredunes, the threat of sea level rise and the transient nature of the river mouth, a town centre following either of these edges was not deemed suitable. Instead the thesis investigated a retreat behind the protective foredunes, capitalising upon the site’s natural wetland history to strengthen place identity.
The Hunch

The Reflection

Wetland Square is a proposition to provide a town centre node for increased growth. The idea of the node is introduced by Kevin Lynch in *The Image of the City* who argues that nodes are ‘…the conceptual anchor points in our cities (102). ’ Currently, Waikanae Beach’s amenities are scattered haphazardly across the town, with a missed opportunity to create a centre for urban activity and identity. In determining the location for such a centre, Wetland Square seeks to capitalise upon Waikanae’s distinctive landscape. Although the coastline and river serve as powerful organising elements (or ‘edges’, to employ Lynch’s terminology), due to the fragile nature of the foredunes, the threat of sea level rise and the transient nature of the river mouth, a town centre following either of these edges was not deemed suitable. Instead the thesis investigated a retreat behind the protective foredunes, capitalising upon the site’s natural wetland history to strengthen place identity.

Fig. 80: Map of Waikanae Beach urban elements

Fig. 81: Waikanae Beach amenities: (Top) Four Square mini-mart, Tutere Street; The Bakery and the Dairy, Ono Street.
1: 
*Early Settlement Grid*

Area suitable for urban intensification

2: 
*PROPOSED Waimeha Wetland Square*

Existing cul-de-sacs converted to grid
New streets added to bring urban activity next to wetland

3: 
*1970s - Cul-de-sac Development*
The orthogonal grid layout of the existing streets at Waikanae Beach was another site characteristic that influenced the hunch. To Geoff Park, the grid imported to New Zealand in the blueprints of early settlers represented the antagonist in New Zealand’s destructive environmental narrative:

“Desperate for flat land, the grid consumed everything in its path, liberating future inhabitants from any sense of place in which active or indigenous things matter” (‘Theatre Country’ 37).

Indeed, this environmental transformation is deplorable, but when compared to the inflexible nature of the more recent cul-de-sac developments, the urban grid at least provides a reliable and permeable network of streets with opportunities to gradually increase density. From antagonist to protagonist, the thesis investigates a return to the grid; the orthogonal streets that once destroyed the original swamplands reconfigured into a framework for new higher density buildings to prevent further urban sprawl-induced environmental degradation elsewhere along the Kāpiti Coast.

< Fig. 82: Cadastral pattern of Waikanae Beach in 2015. Map shows both grid and cul-de-sac street formations and proposed intervention.

^ Fig. 83: The first streets of Waikanae Beach as shown in 1885.
THE TOWN SQUARE URBAN TYPE

The proposal to tightly cluster community and residential buildings around the wetland was inspired by the traditional town square urban type. In returning to this approach, the design is a rejection of the modernist notion of freestanding buildings as objects, arguing that buildings should instead be joined to one another, establishing open positive spaces for public use (Sitto qtd. in Carmona, Tiesdell, Heath and Oc 180).

A comparison between the Piazza del Campo in Siena (population: 270,333) and the Frydlant Square in Liberic, Czech Republic, (population: 7608) demonstrates the viability of the town square urban model for cities and towns with both larger and smaller populations (Pg. 134-135). Although Waikanae Beach has a current population of only 3000, this thesis suggests that the area could accommodate double this amount, with the Wetland Square acting as both a catalyst for this growth, as well as a way of organising it.

![Typical Town Square vs. Proposition](image)

Fig. 84: Diagram comparing typical town square and proposition. While a typical town square uses the creation of open space to allow people to appreciate outward views of the historic buildings, the Wetland Square uses clustered buildings as a framing device to capture inward views of the landscape.

Fig. 85: Comparison of existing Market Square in Brussels (above) and proposed Wetland Square concept.
While a typical town square uses the creation of open space to allow people to appreciate outward views of the historic buildings, the Wetland Square uses clustered buildings as a framing device to capture inward views of the landscape.

The proposal to tightly cluster community and residential buildings around the wetland was inspired by the traditional town square urban type. In returning to this approach, the design is a rejection of the modernist notion of freestanding buildings as objects, arguing that buildings should instead be joined to one another, establishing open positive spaces for public use (Sitto quoted in Carmona, Tiesdell, Heath and Oc 180).

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Please refer to VUW Library's print version of this thesis to access this image.
CASE STUDY:
Piazza del Campo

Siena, Tuscany, Italy
Population: 270,333
Density: 450/km²
Year of Construction: 1292-1355

Fig. 86: Aerial view of the public square in context of Siena’s high-density hilltop city.

Fig. 87: Figure ground diagram. Views directed to clock tower - ‘dominated’ by key building.

Fig. 88: The square’s high-density perimeter buildings create a strong sense of enclosure.

Please refer to VUW Library’s print version of this thesis to access this image.
**CASE STUDY:**

**Frýdlant Square**

Frydlant, Liberic, Czech Republic  
Population: 7,608  
Density: 241/km²  
Reconstructed: 2004

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Fig. 89: Satellite image showing location of town square in relation to urban spread.

Fig. 90: Figure ground study, showing a much more ‘loose’ spread of buildings than in Siena (Fig. 87). Views directed inwards.

Fig. 91: The square was reconstructed by Balda Jand’ourek Architects.
MIXED-USE ROW HOUSE TYPE

The thesis project envisions a contemporary interpretation of the traditional row house, proposing mixed-use, medium-density buildings of 3-4 storeys. To ensure an animated street elevation and a variety of interior spatial arrangements, the project proposes that a series of different architects be engaged to design the square’s individual perimeter plots. This approach was influenced by a contemporary urban-scale project by West 8 in Amsterdam where the firm was engaged to design the masterplan and also oversee the designing of the three-storey terraced houses by other architects (Fig. 92). West 8 developed a set of design principles for the 100 other architects involved to ensure both a high level of variation while maintaining ‘quality control’.

Please refer to VUW Library’s print version of this thesis to access this image.

Fig. 92: Axonometric diagrams of various row houses designed for Borneo-Sporenborg

Fig. 93: Row houses with various elevations overlook collective waterways
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BORNEO-SPORENBURG
Amsterdam, Netherlands
West 8 Architects
Average Density: 100 dwellings / hectare
Number of dwellings: 2500
1996-2000

Please refer to VUW Library’s print version of this thesis to access this image.
“Ecologically, these were landscapes of interconnection and interaction, the antithesis of the boundary lines and the grid subdivision of the country into legally separated units desired by English land laws.”

(Park, ‘Theatre Country’ 189)
A LANDSCAPE TO CELEBRATE

The proposition attempts to quite literally put landscape back at the centre of Kāpiti’s urban life. Although awareness of the ecological importance of wetlands has increased in recent years, approaches to wetland restoration have remained conservative. In one such instance, Kāpiti’s 100 metre-wide expressway is mitigating the loss of 5.6 hectares of indigenous planting by replanting 5 times this amount alongside the expressway corridor (Blundell). However, this process, known as ‘compensatory loss mitigation’ can be limited in its success (France 16). From an ecological standpoint, the track record for wetland mitigation is known to be poor with the effects on wider site hydrology often unknown. From a social standpoint, a man-made wetland buffer running alongside a 100km/hour expressway is hardly likely to reinstate the rich cultural significance once attached to Kāpiti’s original landscape. From mitigation to celebration, the project uses the landscape as the centrepiece of a new town centre, endeavouring to imbue a stronger sense of community guardianship over the wetlands to ensure recognition and subsequent long-term protection.

< Fig 94: (Top) Wetland plant corridor being planted just north of Kapiti Road, in front of Makarini Street, creating a buffer between the expressway (left) and residential area (right).
< Fig 95. An early concept diagram showing the wetlands - not the road - at the centre of the urban environment.
The pier was motivated by a site-specific problem: the unoccupied edge of the wetland most suitable for initial development and the new main street was problematically also the edge located furthest from the lagoon. How to engage this distant side of the site with the central lagoon? A series of early plan and section sketches all investigate a 80-100m long narrow building elevated above the wetland stretching out from urban edge to water’s edge (Fig. 96).

Fig. 96: Preliminary sketches experimenting with building elevated above wetland. Building transitions from solid mass to structural skeleton

Fig. 97. Masterplan sketch of development on southeast edge
The pier was motivated by a site-specific problem: the unoccupied edge of the wetland most suitable for initial development and the new main street was problematically also the edge located furthest from the lagoon. How to engage this distant side of the site with the central lagoon? A series of early plan and section sketches all investigate a 80-100m long narrow building elevated above the wetland stretching out from urban edge to water’s edge (Fig. 96).

Fig. 96: Preliminary sketches experimenting with building elevated above wetland. Building transitions from solid mass to structural skeleton.

Fig. 97. Masterplan sketch of development on southeast edge.

Urban greenhouses on perimeter
Community Garden

Four streets proposed around wetland square (initial concept)
Jetties and landscape interventions on water’s edge
Pier extends into urban fabric
Urban greenhouses on perimeter
Community Garden

0 10m 50m
Push and Pull

Investigating the existing street layout

Double row of perimeter buildings
Fig. 98: Series of preliminary conceptual sketches.

- The Pier
- Lookout
- Series of jetties
Although 12-15 metre high buildings were intended around the perimeter of the *Wetland Square*, at 4 hectares large, the square was disproportionately too wide to create any sense of enclosure. Although enclosure is not a fundamental requirement in creating a public square, its absence is often counteracted by the presence of a dominant feature - a prominent building, view or monument - around which the surrounding structures are directed (Carmona 180). Although in some ways, the central lagoon could be considered this dominant feature, its low siting within the landscape makes it visually inaccessible from most corners of the square. The pier is thus an opportunity to create visual intensity within an otherwise vast site.

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**Fig. 99:** An early diagrammatic section of the site used to understand its scale.

**Fig. 100:** *Bellotto / Piazza San Marco*, Venice. The large open space uses the clock tower to provide focal direction.

**Fig. 101:** (Top) At Waimeha Wetland Square the pier can be considered the visually dominant feature of the square; a horizontal proposition instead of the typically vertical one.
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Fig. 101: (Top) At Waimeha Wetland Square the pier can be considered the visually dominant feature of the square; a horizontal proposition instead of the typically vertical one.

Vertically defining element of Square

Horizontally defining element of Square

Riparian Wetland planting
2-4m high.

Proposed 4 storey mixed-use row building

228m
8

THE PIER: WHY?

ESTABLISHING A PUBLIC FORUM

Where a typical town square offers a hardscaped area for public gatherings, markets and impromptu performances, Market Pier is an opportunity to reclaim open space within an unconventional wetland town square. At the early stages, the project investigated the possibility of integrating a market within this open space – either as a temporary or permanent fixture, on or near the pier. Observing a physical and emotional disconnect between Kāpiti’s urban settlements and the wider agricultural context, the marketplace offered an opportunity to restore the region’s agrarian identity at the urban centre, while establishing a necessary public forum.

Fig. 102: Preliminary sketch of a glazed Market Pier.
Fig. 103. A selective typology of the market places investigated.
Where a typical town square offers a hardscaped area for public gatherings, markets and impromptu performances, Market Pier is an opportunity to reclaim open space within an unconventional wetland town square. At the early stages, the project investigated the possibility of integrating a market within this open space – either as a temporary or permanent fixture, on or near the pier. Observing a physical and emotional disconnect between Kāpiti’s urban settlements and the wider agricultural context, the marketplace offered an opportunity to restore the region’s agrarian identity at the urban centre, while establishing a necessary public forum.

**Farmers’ Market - Matakana, Auckland, New Zealand**

A small town timber yard is transformed into a riverside Sunday market, attracting Auckland city residents from 1 hour away.

**Toverballerne - Copenhagen, Denmark**

Two urban market halls offer gourmet produce while temporary outdoor market stalls attract a more diverse clientele.

**Waitangi Park Inner City Market - Wellington, New Zealand**

An inner-city carpark is transformed into a Saturday market offering cheap fresh produce and gourmet meals under temporary marquees and food trucks.
Identifying a need to ensure dynamic wetland and wildlife movement, the pier assumes an exposed skeletal structure form. At this early stage of the design, tensile membrane fabrics are proposed; bridging between the structural elements, offering shading and rain cover. Additionally, the structural framework offers opportunities for 'bottom-up' design, allowing the community to adapt the structure as they see fit.

Fig. 104. A composite digital and analogue image of the Market Pier. Presented at the June Review 2015.

Fig. 105: Preliminary sketches investigating exposed structure.
Identifying a need to ensure dynamic wetland and wildlife movement, the pier assumes an exposed skeletal structure form. At this early stage of the design, tensile membrane fabrics are proposed; bridging between the structural elements, offering shading and rain cover. Additionally, the structural framework offers opportunities for 'bottom-up' design, allowing the community to adapt the structure as they see fit.

Vertical structure vs. organic pathways

'Wishbone' bracing structure
CASE STUDY: 
Steilneset Memorial
Peter Zumthor / Louise Bourgeois - Norway

The Steilneset Memorial is a set of two physical structures - ‘a line and a dot’ - which mark the coastal landscape where 91 victims were persecuted in the 17th century Finnmork Witchcraft Trials (Zumthor, “Witch Memorial”). The ‘line’ consists of sixty regimented timber frames supporting a tensile membrane cocoon inside which a gallery is nestled. This tectonic overlap between repetitive vertical structure and long interstitially suspended fabric creates a powerful moment of rhythmic intensity within a vast and barren site. The four edges of the membrane volume taper together at the ends, neatly concluding the suspended form before the final structural frames. Inspired by these formal techniques, the preliminary design attempts to replicate a similar sense of rhythm, repetition and elongation by finely balancing a combination of vertical and horizontal structural elements.

Please refer to VUW Library’s print version of this thesis to access this image.

Fig. 106: Site plan of Steilneset structures

Fig. 107 : Side elevation and plan
The Steilneset Memorial is a set of two physical structures - 'a line and a dot'—which mark the coastal landscape where 91 victims were persecuted in the 17th-century Finnmark Witchcraft Trials (Zumthor, “Witch Memorial”). The 'line' consists of sixty regimented timber frames supporting a tensile membrane cocoon inside which a gallery is nestled. This tectonic overlap between repetitive vertical structure and long interstitially suspended fabric creates a powerful moment of rhythmic intensity within a vast and barren site. The four edges of the membrane volume taper together at the ends, neatly concluding the suspended form before the final structural frames. Inspired by these formal techniques, the preliminary design attempts to replicate a similar sense of rhythm, repetition and elongation by finely balancing a combination of vertical and horizontal structural elements.

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Fig. 108: (Top) Structural elements of the ‘Line’
Fig. 109: Perspective showing tapered membrane structure within timber framework
To address the low-lying nature of the site, the platform climbs to 7 metres above the lagoon surface, enabling a view of the Wetland Square and Kāpiti island beyond. While most of the structure is dedicated to a large community public space, the lookout is envisaged as a tapered smaller platform allowing for an individual engagement with the landscape. Designed only in section, the resolution of this concept, from large public space to small individual lookout, proved challenging to translate into three-dimensional form.
To address the low-lying nature of the site, the platform climbs to 7 metres above the lagoon surface, enabling a view of the Wetland Square and Kāpiti island beyond. While most of the structure is dedicated to a large community public space, the lookout is envisaged as a tapered smaller platform allowing for an individual engagement with the landscape. Designed only in section, the resolution of this concept, from large public space to small individual lookout, proved challenging to translate into three-dimensional form.

Fig. 110: The lookout end of the pier.

Fig. 111: One-point perspective sketch. The structure and loose fabric is used to frame a vantage point at the end.
Fig. 112: Sections of Market Pier at various times showing how the skeletal structure can be adapted to suit multiple community events.
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2.2
Critical Reflection:
THE
TURNING POINT

2.1
THE HUNCH
Design Phase One

2.2
THE TURNING POINT
Critical Reflection,
Related Works

2.3
THE FINAL PUSH
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The hunch

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Critical Reflection,

Related Works

Design Phase Two
A Problem with the Picturesque  →  Towards an Integrated Systems Approach  →  Towards a Cultural Landscape
THE TURNING POINT:

WHERE TO WITH THE HUNCH?

This section addresses limitations with ‘The Hunch’ and the pivotal design revelations that came to influence the direction of the project. These revelations were provoked both by site-specific design problems, problems found when developing the initial design hunch, and feedback provided by critics during interim project reviews.

Correlating with the order in which the design issues were prompted, this section is structured into three chapters: First, A Problem with the Picturesque addresses the fundamental limitations of ‘The Hunch’. Second, Towards an Integrated Systems Approach discusses the project’s definitive shift away from the picturesque approach towards an interdisciplinary, systems-based design method. Finally, Towards a Cultural Landscape discusses how the consideration of historical, cultural practices at the site influenced the final design outcome. Critical feedback, case studies and design experiments are used to support these discussions.

Fig. 113: Morere Swings. The rope is made from strong Ti Kouka (Cabbage trees) fibres found in NZ wetland regions.

Fig. 114: Diagram of three overarching themes in this chapter.
“It’s a nice pier - it’s really sensitive to the wetland, but it’s like this wetland is in the wilderness…. But we’re talking about a city.”

(Academic Reviewer - August 2015)

“There’s got to be a reason to go to the end [of the pier]. I don’t think that going to look at the view is enough.”

(Academic Reviewer - August 2015)
LIMITATIONS WITH THE HUNCH:

A PROBLEM WITH THE PICTURESQUE

Despite positive feedback from critics concerning the use of the existing landscape as a primary mechanism for organising urban growth, one common criticism was that I had prioritised the development of the urban form – both the Square and Pier – over direct efforts to physically improve the wetland’s health and water quality. By framing the wetland and creating a landscape look-out, the project was identifying too strongly with the picturesque – a concept of the late 19th and 20th centuries concerning art and architecture’s preoccupation with ‘the pictorial values’ of the landscape (‘Picturesque’- Encyclopaedia Britannica).

In New Zealand, this European-derived preoccupation with landscape influenced the establishment of the 1903 ‘Scenic Preservation Act’ – legalisation concerned with the conservation of selected sites of natural beauty, but less concerned with overarching ecosystems (‘One Hundred Years’, New Zealand History). Just as the land surveyors had squared-off Waimeha Lagoon in the very first place, I found myself culpable of similarly exploiting the aesthetic and phenomenological offerings of the wetland for urbanism’s sake, while disregarding the site’s underlying natural systems.

This separation between urban and ecological systems is reflected upon using three case studies: Garden City by Ebenezer Howard, Stop City by Dogma, and The Brick Pit Ring by Durbach Block Architects.

< Fig. 115: ‘Framing’ Waimeha Lagoon. View from the birdwatching hut on the north side of the lagoon.
Ebenezer Howard’s 1898 proposal for Garden City is strikingly similar to Wetland Square - not only in the way it integrates natural elements within the urban realm but also in the way it structures the urban environment around a central garden feature. Taking a hypothetical greenfield scenario in the countryside, Howard diagrams a radial urban arrangement where a central garden enclosed by civic institutions is in turn surrounded by a central park and a ‘Crystal Palace’ – an arcade of shops and a winter garden. This arcade is surrounded by housing, a green belt and agricultural land. Despite the project’s influence on the direction of urban planning, Garden City has been criticised for its so-called ‘integration’, limited to the ‘trappings of nature’, with little acknowledgement or understanding of site-specific natural processes (Spirn 52).
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STOP CITY

Stop City is a more recent project which also proposes the use of pure geometry to organise urban development. The theoretical proposition calls for the use of eight 500 metres high, 500 metres wide slabs in a geometric arrangement to establish an ‘absolute limit’ for urban growth across the landscape. Dogma describes the centre of the square as: ‘…empty, a simple urban void filled with forest’ (Aureli and Tattara 3). This description clearly indicates an inclination towards object over the landscape. While Wetland Square is both an attempt to use the landscape to frame the town and contrarily, town to frame the landscape, Stop City blatantly ignores the landscape entirely, focusing purely on the pursuit of a strict urban order for the city.
Like previous case studies, The Brick Pit Ring uses pure geometry as a simple ordering device; in this case, to facilitate access and the interpretation of a fragile habitat in Sydney Olympic Park. But unlike the previous case studies, The Brick Pit Ring consciously defines its relationship with the landscape as one that is necessarily separate. Acknowledging the extreme fragility of the site – a refuge for a rare and endangered frog species – an aerial walkway elevated 20 metres high enables the human experience to operate above, but separate to the frog’s habitat. The project serves a purely educational and recreational purpose; the ring acting as both lens and focal point, enabling an urban experience in an otherwise vast landscape.

Please refer to VUW Library’s print version of this thesis to access this image.
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Please refer to VUW Library's print version of this thesis to access this image.
“...a scene is never but theatre.”

(Coleridge as qtd. by Geoff Park in ‘Theatre Country’ 127)
"...a scene is never but theatre."

Fig. 122: (Inset) A framed view from the birdwatching hut overlooking wetland lagoons north of Waikanae Beach. These ponds are part of the Kawakahia wetland belt running parallel to the coast and which were once connected to Waimaha Lagoon. Controversially they were transformed into sewage oxidation ponds in the 1980s. The secondary dunes, and foothills of the Tararua Ranges dominate the background.
Towards an Integrated Systems Approach

“How can your architecture perhaps ameliorate the quality of the water?...Maybe your ambitions for the town square actually need to incorporate the wider regional area.”

(Academic Reviewer, June 2015)

Identifying a problem with the picturesque, the thesis makes a decisive move towards a more contemporary, interdisciplinary design approach known as Landscape Urbanism – an argument that landscapes and their processes should act as underlying drivers for city design (Waldheim 15; Steiner 333). One of the first instigators of this argument was regional planner Ian McHarg in 1969. In his book ‘Design with Nature’ McHarg advocates for the use of large-scale ecological systems to structure urban proposals. Taking The Woodlands project in Texas as an example, McHarg uses a stormwater drainage system as the organising principle for urban form (Yang, Li and Huang 777-779). Venturing beyond McHarg’s approach, contemporary proponents of Landscape Urbanism now argue that with a holistic and relational approach, natural systems can be used both to structure urban systems, but also to overlap multiple systems and functions within the same territory (Steiner 335). Relevant to this thesis project, this theoretical shift marks the distinction between ‘The Hunch’ – where the natural system determined the urban form, while remaining separate to it – and the new direction for the project, discussed from hereon.
Identifying a problem with the picturesque, the thesis makes a decisive move towards a more contemporary, interdisciplinary design approach known as Landscape Urbanism – an argument that landscapes and their processes should act as underlying drivers for city design (Waldheim 15; Steiner 333). One of the first instigators of this argument was regional planner Ian McHarg in 1969. In his book ‘Design with Nature’ McHarg advocates for the use of large-scale ecological systems to structure urban proposals. Taking The Woodlands project in Texas as an example, McHarg uses a stormwater drainage system as the organising principle for urban form (Yang, Li and Huang 777-779). Venturing beyond McHarg’s approach, contemporary proponents of Landscape Urbanism now argue that with a holistic and relational approach, natural systems can be used both to structure urban systems, but also to overlap multiple systems and functions within the same territory (Steiner 335). Relevant to this thesis project, this theoretical shift marks the distinction between ‘The Hunch’ – where the natural system determined the urban form, while remaining separate to it – and the new direction for the project, discussed from hereon.

“How can your architecture perhaps ameliorate the quality of the water?…Maybe your ambitions for the town square actually need to incorporate the wider regional area.” (Academic Reviewer, June 2015)

The following set of design experiments and case studies is an attempt to design for wetland processes through ‘blurring the edge’ of the wetland patch – interrogating the square boundary at which urban and ecological systems intersect. In ecosystems, ‘ecotones’ are areas of transition - defined or blurred edges - between two adjoining biological communities where nutrient concentrations change (Mulamoottil 19). As a result these ecotones often provide suitable grounds for nesting and food foraging, harbouring a higher density and variation of plant and wildlife species than either flanking community. When designing for wetlands, it is preferable to avoid rectilinear boundaries, through mimicking nature’s curved edges to increase opportunities for animal use (France 52). Here arose a tension between the rigidity of the proposed urban square, and the wetland’s desired curved boundaries (Fig. 123). In considering methods for resolving this tension, the following design experiments and case studies consider various thresholds operating between ecological and urban systems – both within a detailed moment, as well as at a wider regional scale.

“The idea of the ecotone between dry and wet needs to be explored more. If we start to add a million people around the edge, will the wetland survive?” (Academic Reviewer, June 2015)

The following set of design experiments and case studies is an attempt to design for wetland processes through ‘blurring the edge’ of the wetland patch – interrogating the square boundary at which urban and ecological systems intersect. In ecosystems, ‘ecotones’ are areas of transition - defined or blurred edges - between two adjoining biological communities where nutrient concentrations change (Mulamoottil 19). As a result these ecotones often provide suitable grounds for nesting and food foraging, harbouring a higher density and variation of plant and wildlife species than either flanking community. When designing for wetlands, it is preferable to avoid rectilinear boundaries, through mimicking nature’s curved edges to increase opportunities for animal use (France 52). Here arose a tension between the rigidity of the proposed urban square, and the wetland’s desired curved boundaries (Fig. 123). In considering methods for resolving this tension, the following design experiments and case studies consider various thresholds operating between ecological and urban systems – both within a detailed moment, as well as at a wider regional scale.

Fig. 123: Diagram of new research question: How to maintain the bold gesture of the Wetland Square concept, while allowing for dynamic wetland movement?
EXISTING EDGES AT WAIMEHA

KEY:
- Grass (predominately)
- Indigenous Wetland planting (Riparian Zone)
- Waimeha Lagoon and stream
- Roads
- Existing Buildings (single dwelling)
- Sand bank
- Perimeter fence

Fig. 124: Mapping the ecological zones.

*Fig. 124: Mapping the ecological zones.*
1 / Hard edge between street and grass perimeter

2 / Soft edge between water and riparian wetland planting

3 / Hard edge between grass perimeter and urban fence line

Fig. 124 : Mapping the ecological zones.

Fig. 125 : Site Photos (Visit #2). Investigating the edge.
Fig. 126: A series of satellite images compares the shifting edge of the lagoon perimeter over 10 years.

Fig. 127: Edges overlayed.
Fig. 126: A series of satellite images compares the shifting edge of the lagoon perimeter over 10 years.

Fig. 127: Edges overlayed.

The Turning Point

The Reflection

The Hunch

The Reflection
The High Line uses a micro-scale detail to address the boundary between landscape and urbanism. Situated in New York, The High Line is the conversion of an abandoned elevated railway into a 2.3km long pedestrian-only public park. The project carefully details the edge treatment between hardscaping and vegetation to reinterpret a history which once saw this vital piece of urban infrastructure deteriorate into a derelict platform overcome by wild nature. Long pre-cast concrete planks are designed with open joints to interlock with plant life, blurring the edge between built and natural.
The High Line uses a micro-scale detail to address the boundary between landscape and urbanism. Situated in New York, the High Line is the conversion of an abandoned elevated railway into a 2.3km long pedestrian-only public park. The project carefully details the edge treatment between hardscaping and vegetation to reinterpret a history which once saw this vital piece of urban infrastructure deteriorate into a derelict platform overcome by wild nature. Long pre-cast concrete planks are designed with open joints to interlock with plant life, blurring the edge between built and natural.

Fig. 127: (Top) The High Line - plan segment.
Fig. 128: (Bottom) Interlocking detail between planting and pavement.

Fig. 129: ‘Edge’ diagrams, influenced by the High Line. When left unscaled, these drawings can have multiple interpretations: as the edge between grass patch and pavement, between wetland and boardwalk, between city and hinterland.
Qunli Storm Water Park is a 34-hectare urban wetland which demonstrates an edge treatment technique suitable for application at Waimeha Lagoon. At Qunli, Turenscape uses a cut-and-fill technique at the wetland edge, creating a necklace of ponds and mounds which act as a storm water filtration and cleansing buffer zone between the surrounding streets and wetland. Above these ponds and mounds, a network of landscaped paths enable human interaction with the wetland, creating a blurred edge between hard urban infrastructure and soft landscape, while also leaving the central wetland area to prosper. The wetland is transformed into a positive amenity for the city, facilitating storm water management while providing recreation use for nearby residents.

Please refer to VUW Library's print version of this thesis to access this image.

Fig. 130: Edge Treatment of Qunli Stormwater Park

Fig. 131: Panorama of apartment towers overlooking park

Please refer to VUW Library’s print version of this thesis to access this image.
Qunli Storm Water Park is a 34-hectare urban wetland which demonstrates an edge treatment technique suitable for application at Waimeha Lagoon. At Qunli, Turenscape uses a cut-and-fill technique at the wetland edge, creating a necklace of ponds and mounds which act as a storm water filtration and cleansing buffer zone between the surrounding streets and wetland. Above these ponds and mounds, a network of landscaped paths enable human interaction with the wetland, creating a blurred edge between hard urban infrastructure and soft landscape, while also leaving the central wetland area to prosper. The wetland is transformed into a positive amenity for the city, facilitating storm water management while providing recreation use for nearby residents.
**MACRO THRESHOLD**

**CASE STUDY:**

**Waitangi Park**

_Wright + Associates, Athfield Architects - Wellington_

Waitangi Park is an urban wetland project in Wellington designed as an ecological filter and spatial threshold between city and sea. The project uses a water sensitive urban design approach, revitalising the historic Waitangi stream which shifted underground following the 1855 Wellington earthquake. This technique, known as ‘daylighting’, unearths the original landscape, exposing an aspect of natural and cultural heritage for park users to engage with. Water from the city's storm-water system is directed through the park's beds of wetland vegetation, strengthening water quality before its dispersal at sea.

Fig. 134: (Top) Plan segment showing Waitangi park as a threshold or 'ecotone' between two environments.

Fig. 135: View to Wellington Harbour.

Please refer to VUW Library's print version of this thesis to access this image.
Waitangi Park is an urban wetland project in Wellington designed as an ecological filter and spatial threshold between city and sea. The project uses a water sensitive urban design approach, revitalising the historic Waitangi stream which shifted underground following the 1855 Wellington earthquake. This technique, known as ‘daylighting’, unearths the original landscape, exposing an aspect of natural and cultural heritage for park users to engage with. Water from the city's storm-water system is directed through the park's beds of wetland vegetation, strengthening water quality before its dispersal at sea.

**Before Development: Pre-2006**

Fig. 136: Satellite image and corresponding figure ground. Park is an ‘island’ separated from other ecological systems.

**After Development: 2006-**

Fig. 137: Waitangi Park and its wetland system act as mediator and water filter between city and sea.
1: **Existing Scenario**
   Edge of wetland defined by perimeter fences

2: **The Hunch**
   Edge of wetland defined by four perimeter streets

3: **Push and Pull - Built form**
   Streets on two sides removed

4: **Push and Pull - Wetland form**
   Riparian border plants weave between buildings on two sides
BLURRING THE EDGES

Following a series of diagrammed masterplanned iterations the project strikes a balance between the wetland’s call for curved edges and the town square’s call for well-defined edges by replacing two perimeter streets with elevated boardwalks and spaced buildings to allow for ecological permeability.

Elevated pathways and associated viewpoints on the ‘blurred’ edge

‘Daylighting’ technique used to resurface the historic Waimeha stream that once flowed via the lagoon
UNLOCKING A LAYER OF INDIGENOUS HISTORY

“You could look into something quite local, something indigenous to be that metaphor……An eel trap or woven ‘kete’ (basket). And then you could tie in that Māori history - it’s just going to give you this whole other language.”

Academic Reviewer - August 2015

While the first key turning point was related to ecological systems, the next key pivotal point in the design process came with the realisation of the importance of indigenous history to the project. This moment came at the August Review, when it was suggested that I use the indigenous context as a conceptual driver for the pier. Incidentally, the structural form and programme of the pier already bore uncanny similarities to indigenous Māori architecture. As an overall form, the regularity of the vertical structural columns resonated with a vernacular ‘hākari’ (feast) stage – a traditional Māori building type constructed to stage food for important celebrations or events (Fig. 141). A second coincidence it was that both the hākari structure and proposed Market Pier shared a common food-focused programme.

Given these inadvertent connotations, it is important to note that this project was never an attempt to design a Māori or bi-cultural building. Nor did I have any intention of progressing the design further down this path – in spite of these coincidences, or in the wake of advice to use traditional Māori objects as analogical concept drivers. While this could have inspired an interesting tectonic investigation and perhaps a distinctively New Zealand architecture, it also risked being mildly cosmetic given the complex ecological dynamics which also demanded attention. Nonetheless, this feedback unlocked an important site layer of cultural history, prompting research into concept of ‘cultural landscape’.
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“You could look into something quite local, something indigenous to be that metaphor……An eel trap or woven ‘kete’ (basket). And then you could tie in that Māori history - it’s just going to give you this whole other language.”

Academic Reviewer - August 2015

Fig. 140: (Top) The hinaki [eel pot]  
Fig. 141: Hakari [feast] structure  
Fig. 142: Early conceptual pier drawings (bottom).
RETHINKING HERITAGE:

ACKNOWLEDGING A CULTURAL LANDSCAPE

Provoked by questions regarding the indigenous history of the site at Waimeha, the project begins to critique its own initial interpretation and relationship to heritage. At the onset of the thesis, heritage was considered within both a New Zealand landscape context, and a European urban context; the former relative to a distinctive natural history, and the latter relative to a constructed built history (Fig. 85). However, this understanding of heritage was found limiting, with the concept and significance of cultural heritage – as embedded within both natural and built histories – overlooked.

In an attempt to address this limitation, the thesis begins to probe not only architecture’s relationship to natural heritage conservation, but equally its responsibility to cultural heritage conservation as associated with these ecological systems. How to acknowledge that the wetlands were once an important food source and inland water network for waka travel; that the landscape has not only ecological significance in terms of biodiversity but was actually fundamental to indigenous life? The initial thesis research question is thus revised:

How can architecture reconcile a sprawling urban condition, a degraded ecological system and a cultural history of indigenous settlement to improve community and environmental resilience in the low-lying regional landscape?

This new-found acknowledgement of the project’s responsibility to cultural heritage coincides with contemporary shifts in international heritage conservation thinking. In the last two decades, with the incorporation of the concepts of ‘cultural landscapes’ and ‘Historic Urban Landscapes’, heritage conservation thinking has moved away from the repair and protection of individual urban or natural sites of value, towards a more holistic whole-environment appreciation of the social and cultural processes that have shaped our landscapes (Taylor, Clair and Mitchell 1)

The cultural landscape approach is relevant to heritage conservation, as it offers a framework for considering not only the tangible, physical characteristics of a landscape, but also its intangible qualities. This approach acknowledges that landscapes are a cultural construct and process – not product, and that they reflect evolving values, ideologies and beliefs with regard to how humans have inhabited a place (Taylor,
Clair and Mitchell 2). Cultural landscapes can be considered both UNESCO World Heritage sites of international significance and conversely, ordinary ‘everyday’ landscapes such as the suburban-laden plains of the Kāpiti Coast. Fundamental to both these types, the cultural landscape concept recognises that heritage places are not isolated fragments (such as Waimeha Lagoon) worth conserving, but dynamic interwoven systems operating in conjunction with people, their evolving social structures and wider ecological systems.

Recognising the importance of the cultural landscape concept for conservation thinking, the Council of Europe Framework Convention on the Value of Cultural Heritage for Society in 2005 defined heritage as:

“...a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. It includes all aspects of the environment resulting from the interaction between people and places through time.”

(Council of Europe)

In the last five years, the cultural landscape concept has been applied to heritage thinking in urban environments. In 2011, UNESCO released the Recommendation on Historic Urban Landscape (HUL), replacing a traditional approach that focused on the conservation of individual buildings, monuments or ensembles. The HUL Recommendation instead advocates for a holistic and interdisciplinary method to urban historic conservation that is integrated with mainstream urbanism. Such an approach acknowledges that a city has tangible and intangible historic assets that need protecting as it develops, and additionally that these assets can in turn act as key drivers in the design of cities.

Recognising the opportunities to highlight intangible qualities of the Kāpiti Coast, the project investigates the possibility of establishing a ‘living heritage site’ (ICCROM; Vakhtoova 224; Poulis 21). This strategy concerns the reviving or continuity of traditional land uses and has been advocated for by various organisations including Australia ICOMOS (Organisation behind The Burra Charter)2 and ICCROM (International Centre for the Study of the Preservation and Restoration of Cultural Property). Rather than arbitrarily appropriating a vernacular object to drive the development of the Market Pier’s form, the project considers how the acknowledgement of the wetland’s functions - both as a food source and means of travel – can have design implications at both micro and macro scales; relative to the intimate details of the pier design, as well as the wider regional urban network beyond the immediate site at Waimeha Lagoon.

2 The Burra Charter is a set of principles that have been adopted to create a nationally accepted standard for heritage conservation practice in Australia.
Fig. 143: A composite conceptual map investigating the existing waterways linking *Wetland Square* (centre) with Waikanae Estuary (left). This was the first drawing completed following the August Review ('The Turning Point') having identified the need to consider the wider cultural historical narrative of the region. This image stitches together site contour lines, historic maps and an original painting of indigenous coastal settlement and fishing (Fig. 34). Later, this image is revised to consider the connection to Waimeha Estuary (right).
Fig. 143: A composite conceptual map investigating the existing waterways linking Wetland Square (centre) with Waikanae Estuary (left). This was the first drawing completed following the August Review ('The Turning Point') having identified the need to consider the wider cultural historical narrative of the region. This image stitches together site contour lines, historic maps and an original painting of indigenous coastal settlement and fishing (Fig. 34). Later, this image is revised to consider the connection to Waimeha Estuary (right).
2.3
Design Phase Two:
THE FINAL PUSH

2.1
THE HUNCH
Design Phase One

2.2
THE TURNING POINT
Critical Reflection, Related Works

2.3
THE FINAL PUSH
Design Phase Two
THE FINAL PUSH:
RETHINKING THE PIER

With a renewed understanding of ecological systems and cultural heritage, came a renewed direction for the design. Originally, the pier was proposed as a simple connection between the urban perimeter and the lagoon. Considered a ‘landscape lookout,’ the pier was critiqued for its lack of programme, for being too elevated above the wetland, and for correlating too strongly with picturesque ideals. As a response, the project investigated the concept of the ‘ecotone’ by blurring the edge between the urban square and the landscape. In reflection, the Market Pier could also be considered a type of threshold – a mediator between the urban perimeter and the lagoon.

The ‘Final Push’ recounts this transition from ‘landscape lookout’ to ‘wetland infrastructure’ – a programmatic shift which sees the pier’s function develop from an open platform into a launch pad for water vessels, referencing a history of wetland waka travel. Accordingly, the form transitions from what was originally an elevated platform, into a ramp-like structure descending right down to the lagoon (Fig. 145/146). Design iterations in this section are prompted by problems encountered with circulation, structure, and the integration of watertight market stalls. Finally, the project zooms out again, to understand the implications of Market Pier within the wider region.

<< Fig. 144: (Previous) Hakari stage.

Fig. 145: From high to low
How to create an architectural form that blurs the boundaries between water and land, while responding to the site’s historical cultural context?

Fig. 146: Working sectional drawing of the pier.
RETHINKING THE PIER: FROM HIGH TO LOW

Fig. 147: Iterations of 3D digital models shown in elevation.
Multiple pier 'endings' - all 'dead end'. Some finish up, some down

Experimenting with pier endings coming together to create looped paths

Experimenting with pier endings coming together to create looped paths

Removing the lookout 'strip'

Fig. 148: Early digital model iterations of circulations 'strips'

Fig. 147: Iterations of 3D digital models shown in elevation.

Fig. 146: Iterations of 3D digital models shown in elevation.

Fig. 145: Iterations of 3D digital models shown in elevation.

Fig. 144: Iterations of 3D digital models shown in elevation.

Fig. 143: Iterations of 3D digital models shown in elevation.

Fig. 142: Iterations of 3D digital models shown in elevation.

Fig. 141: Iterations of 3D digital models shown in elevation.

Fig. 140: Iterations of 3D digital models shown in elevation.

Fig. 139: Iterations of 3D digital models shown in elevation.

Fig. 138: Iterations of 3D digital models shown in elevation.

Fig. 137: Iterations of 3D digital models shown in elevation.

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Fig. 134: Iterations of 3D digital models shown in elevation.

Fig. 133: Iterations of 3D digital models shown in elevation.

Fig. 132: Iterations of 3D digital models shown in elevation.

Fig. 131: Iterations of 3D digital models shown in elevation.

Fig. 130: Iterations of 3D digital models shown in elevation.

Fig. 129: Iterations of 3D digital models shown in elevation.

Fig. 128: Iterations of 3D digital models shown in elevation.

Fig. 127: Iterations of 3D digital models shown in elevation.

Fig. 126: Iterations of 3D digital models shown in elevation.

Fig. 125: Iterations of 3D digital models shown in elevation.

Fig. 124: Iterations of 3D digital models shown in elevation.

Fig. 123: Iterations of 3D digital models shown in elevation.

Fig. 122: Iterations of 3D digital models shown in elevation.

Fig. 121: Iterations of 3D digital models shown in elevation.

Fig. 120: Iterations of 3D digital models shown in elevation.

Fig. 119: Iterations of 3D digital models shown in elevation.

Fig. 118: Iterations of 3D digital models shown in elevation.

Fig. 117: Iterations of 3D digital models shown in elevation.

Fig. 116: Iterations of 3D digital models shown in elevation.

Fig. 115: Iterations of 3D digital models shown in elevation.

Fig. 114: Iterations of 3D digital models shown in elevation.

Fig. 113: Iterations of 3D digital models shown in elevation.

Fig. 112: Iterations of 3D digital models shown in elevation.

Fig. 111: Iterations of 3D digital models shown in elevation.

Fig. 110: Iterations of 3D digital models shown in elevation.

Fig. 109: Iterations of 3D digital models shown in elevation.

Fig. 108: Iterations of 3D digital models shown in elevation.

Fig. 107: Iterations of 3D digital models shown in elevation.

Fig. 106: Iterations of 3D digital models shown in elevation.

Fig. 105: Iterations of 3D digital models shown in elevation.

Fig. 104: Iterations of 3D digital models shown in elevation.
RETHINKING THE PIER:
CIRCULATION

The design encountered circulation problems when attempting to combine the marketplace and the pier. While the market type usually corresponds with large open spaces and flexible circulation, the pier is contrastingly associated with a narrow form and a ‘there-and-back’ experience. The design tried to strike a balance between the market’s circulation demands and the pier’s call for a slender, elegant form.

Fig. 149: Transverse section - early iteration encounters difficulties with tight circulation.
The design encountered circulation problems when attempting to combine the marketplace and the pier. While the market type usually corresponds with large open spaces and flexible circulation, the pier is contrastingly associated with a narrow form and a 'there-and-back' experience. The design tried to strike a balance between the market's circulation demands and the pier's call for a slender, elegant form.

**Early Design Iteration**

Circulation on both sides of stalls inside of structure

Sheltered circulation but too constricting

Platform continues on northeast side

**Fig. 149: Transverse section - early iteration**

Encounters difficulties with tight circulation.

**Fig. 150: Digital model - width dimensions**

Ramp cantilevered off structure

Spaces between stalls used to connect ramp and main platform

Main circulation on northeast side, cantilevered off structure

**Developed Design Proposal**

**Fig. 151: Transverse section - final development.**
Please refer to VUW Library’s print version of this thesis to access this image.
CASE STUDY: URBAN PIER

Race Street Pier
Field Operations - Philadelphia

Width to Length Ratio - 1:3

Please refer to VUW Library’s print version of this thesis to access this image.

Fig. 153: Common urban pier and proportions
A significant challenge in the design process was attempting to combine the various tectonic ‘elements’ of the pier - the roof, the platforms, the balustrades, the columns and the market stalls. With all of these elements competing, which one should prevail? While the initial ‘hunch’ proposition preferred the balustrades (Fig. 112), later developments encounter problems when attempting to add the market stalls. In the final design iterations, the vertical structural columns overrule (Fig. 151).

Fig. 154: Early iteration of longitudinal section showing the clash between structural bracing, complex clustered columns and market stalls. Composite image - digital model export and ink.
A significant challenge in the design process was attempting to combine the various tectonic 'elements' of the pier - the roof, the platforms, the balustrades, the columns and the market stalls. While the initial 'hunch' proposition preferenced the balustrades (Fig. 112), later developments encounter problems when attempting to add the market stalls. In the final design iterations, the vertical structural columns overrule (Fig. 151).

Fig. 154: Early iteration of longitudinal section showing the clash between structural bracing, complex clustered columns and market stalls. Composite image - digital model export and ink.

Fig. 155: (Top) Transverse section sketch experiments of various combinations of structural bracing, columns and market stalls.

Fig. 156: One of the final iterations. The structural columns become the dominant 'element' of the design, continuing above the upper platform to form the balustrade. Market stalls sit neatly within the structural grid.
RETHINKING THE PIER:
STRUCTURAL REPETITION

Inspired by Zumthor's Steilneset Memorial (Fig. 106), the design investigates the use of an exposed structural skeleton with repetitive elements to define the overall form. Design iterations investigate the use of clustered columns, structural bracing, column spacing and width, in relation to the other pier 'elements'.

Fig. 157: Iterations of digital model explore various structural systems; (1) and (5) are preliminary iterations which incorporate the circulation within the structure; (4) shows the design at the most developed stage. From here, clustered columns were reduced from 6 members to 4 members.
Fig. 158: Sections drawn at 1:200 scale.
Fig. 159: Sketch and watercolour image of Market Pier in final stage of development.
Fig. 159: Sketch and watercolour image of Market Pier in final stage of development.
RETHINKING THE PIER:
CONNECTING INTO THE URBAN FABRIC

As a last design move for the pier, the upper level of the building is developed as a bridge, extending the pier from lagoon into the urban fabric. This was a response to critique at the October Review that the upper platform would not be used enough with a "dead-end." By tying the pier into the urban fabric, the project shifts back out to a larger scale, asking: what are the implications of the pier on the masterplan of the Wetland Square? Accordingly, the upper level of the perimeter buildings are allocated community and public functions to allow users direct connection to the pier and lagoon.

Fig. 160: Aerial perspective of Market Pier mass model shown in isolation.

Fig. 161: (Fig. 159) was printed and used as sketch paper to investigate the pier-to-urban perimeter connection.
As a last design move for the pier, the upper level of the building is developed as a bridge, extending the pier from lagoon into the urban fabric. This was a response to critique at the October Review that the upper platform would not be used enough with a 'dead-end'. By tying the pier into the urban fabric, the project shifts back out to a larger scale, asking: what are the implications of the pier on the masterplan of the Wetland Square? Accordingly, the upper level of the perimeter buildings are allocated community and public functions to allow users direct connection to the pier and lagoon.

Fig. 160: Aerial perspective of Market Pier mass model shown in isolation.
Fig. 161: (Fig. 159) was printed and used as sketch paper to investigate the pier-to-urban perimeter connection.
Fig. 162: Masterplan sketch

Fig. 163: Masterplan collage
> Fig. 164: Overlay study of Waikanae Beach. Contours, flood zones, existing buildings and district plan zones are used to determine wetland areas (hatched). This study takes into account that wetlands form in low area belts behind dunelands.

 Fig. 165: Concept diagram investigating wetland belts as flood retention zones and stormwater draining features.
Fig. 164: Overlay study of Waikanae Beach. Contours, flood zones, existing buildings and district plan zones are used to determine wetland areas (hatched). This study takes into account that wetlands form in low area belts behind dunelands.

Fig. 165: Concept diagram investigating wetland belts as flood retention zones and stormwater draining features.
Fig. 166: Overlay study is continued south towards Paraparaumu. Contours, flood zones, existing buildings and district plan zones used to determine path for a rejuvenated wetland network (shown in sketch).

Fig. 167: (Fig. 165) and (Fig. 166) are stitched together to consider a conceptual framework for Kapiti region’s future urban and wetland network.
CONCLUSION:
A GLANCE BACK; A GLANCE FORWARD
CONCLUSION:

A GLANCE BACK:
RECOUNTING THE NARRATIVE

Wetland Square, Market Pier presents a site-specific proposition for the regional landscape. Firstly, it provides a conceptual urban framework for anticipated growth in the region through proposing a new medium-density town centre for an existing settlement. Situated around the edge of an isolated wetland lagoon, Wetland Square is a rapprochement of urban and ecological systems aimed at the recognition and conservation of the site’s underlying history. As a catalyst for the development of this town centre and proposed density, a Market Pier is proposed. This intervention highlights both the agricultural identity of the region, as well as the historical infrastructural functions of the wetland. Together Wetland Square, Market Pier presents an alternative settlement strategy, operating as an archetype with the potential to be appropriated at other urban wetlands across the region.

The Reflection was next an opportunity to retrospectively interrogate the design process and expand upon the project’s interim successes and limitations. The first chapter of this section explained the rationale behind the initial design hunch. Next, the thesis discussed the key limitations of the preliminary design – notably the initial disregard for the wetland’s ecological processes and its value as a cultural landscape. These discussions then lead to the final iterations that eventuated in The Design. This thesis structure - design first, reflect second - was important as it ultimately used Wetland Square, Market Pier as a vehicle for considering unanticipated research implications regarding architecture’s role towards heritage conservation for the regional landscape.

Fig. 169: The Design Proposal: Wetland Square, Market Pier
Looking forward, this thesis argues for a rethink of architecture’s typical approach to heritage conservation. Where architecture’s tendency is to concern itself with the conservation of individual urban monuments, *Wetland Square, Market Pier* explores architecture’s contribution to the conservation of large scale cultural landscapes, including their ecosystems and associated traditional functions. As a design response, it oscillates between various scales, proposing a singular *Market Pier* structure as the catalyst for the renewal of a regional landscape’s ecological and cultural heritage. Moreover, it encourages a *living heritage*; a heritage that is not only celebrated as a part of everyday life but acts as a strategy for reforming the regional landscape’s future urban development. Given that widely-circulated cultural landscape discourse has yet to field significant practical implications, *Wetland Square, Market Pier* is a useful provocation, promoting architecture’s renewed engagement with cultural and natural heritage conservation.

In recognising the limitations of this thesis, but also in considering future research directions, it is worth highlighting heritage as an evolving, interdisciplinary concept which requires a multitude of stakeholders - including practitioners, community members, Māori iwi (tribal groups), and local government bodies to
identify firstly what constitutes heritage, and secondly how best to go about conserving it. What this suggests is that there are number of available strategies for conserving significant cultural landscapes – and these need not always be architectural (indeed, in many cases they are not). In similar respects, this project investigates only one set of cultural histories, when certainly there are many other narratives and values which could also be recaptured. In any case, this thesis highlights architecture's utility as a valuable lens through which heritage and context can be investigated, and a medium through which it can be resurfaced and told.

Faced with ever-growing threats of urbanisation, environmental degradation and the subsequent marginalisation of cultural landscape heritage, Wetland Square, Market Pier acts as an example of how architecture can respond innovatively and emphatically. It highlights the discipline's capacity to think holistically and creatively about the reconciliation of urban, ecological and associated social and cultural systems. In the pursuit of regional resilience, such an integrated systems approach is fundamental. Moreover, this challenge must be seen as an opportunity for a new form of creative imagining in the regional landscape; ultimately, a necessary basis to propel urbanism into new realms of innovation.
WAIMEHA LAGOON
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