DIVERSIFYING DENSITY

Renovating Rural Living within Kāpiti/Horowhenua Coast

By Nicholas Wheaton

This thesis deals with Lake Horowhenua, once a beautiful dune lake now a displaced landscape devoid of local significance.

A 120-point thesis submitted to the Victoria University of Wellington in partial fulfilment of the requirements for the degree of
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Victoria University of Wellington, School of Architecture.
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2015

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"Straight and tall the timber grew to the water's edge, fringed with flax and nodding manuka, and over the bush flashing their white breast as they circled and wheeled in the sunshine, pigeons flew literally in thousands, singly drifting from tree to tree, rising in flocks of half a hundred or so, with a whirring of wings plainly to be heard across the calm waters; circling round in a wide sweep with characteristic rise and dip in flight, skimming the crystal-clear surface of the lake as they passed over, to rise and sweep back over the bush and settle on some other tree which caught their errant fancy."

Te Hekenga; early days in Horowhenua, being the reminiscences of Mr. Rod.

McDonald (McDonald and E.) Page 25

Figure 01 Lake Horowhenua, ca 1866, The painting shows eel traps and two whares in the foreground at the lake's edge of the river mouth. Three Māori are situated in front of the buildings and there is a small canoe on the water as well as a European yacht in the distance. Harakeke (flax) and tall trees surround the water's edge and the Tararuas can be seen in the background.

By John Barr Clark Hoyte

Source: <http://horowhenua.kete.net.nz/site/images/show/15819-lake-horowhenua-painting-by-hoyte>

This suggests an intricate ecology of man, lake, plants and wildlife.

Abstract

Diversifying Density

'Diversifying Density' explores current issues surrounding New Zealand's struggling rural regions with particular focus on the test region of Kāpiti/Horowhenua Coast. These rural regions are subject to pressure from cities with regard to economic production and a cultural shift toward urban lifestyle. This has contributed to deconstructing much of what originally made these regions so attractive to live in. Through the process of revitalisation this research looks at the specific test site of Lake Horowhenua. While there is no shortage to these rural challenges, Lake Horowhenua has managed to retain particular significance within the overall region of Kāpiti/Horowhenua Coast.

The focus area of this research is to explore a diverse hybrid settlement for a specific area based around a potential economy. On developing this, the design explores how this can provide new habitation while working towards a better environmental system and occupancy potential (fig. 02).

This research looks to encouraging discussion about conservation by adding further economic opportunity, the displacement of some current practices with the benefit of economic, environmental, and spatial diversities. Pulling these elements together the thesis proposes that this generates

further opportunity, to increase human occupancy, formulating a perception and involvement within this rural landscape. Reconfiguring rural economies, lifestyles, recreation and conservation encourages authenticity of rural landscapes, creating new experiences and opportunities building the notion of abundance.

The research being tested in detail is the harakeke (flax) economy. It is structured around the processing stages involving the extraction of the harakeke fibre. Developing this concept through one economy generates new opportunities for habitation, while facilitating alternative growth specific to the site and economy. This informs design moves that are directed specifically toward the economic and environmental diversity drivers connected to the site for growth encouragement.

Then begins the exploration of concepts of authenticity; new rural living patterns; interdependencies of economies; environment and spatial patterns; and developing a synergy between work and living to construct community.

Figure 02 Image opposite: This is a diversity that accommodates density.

Acknowledgments

I would like to thank my supervisors Martin Bryant and Penny Allen along with The School of Architecture and Design at Victoria University of Wellington for the on-going support and guidance throughout the process of this research. It has been a long process and none of this would have been possible without the help of my classmates, friends, flatmates and family to keep me semi-sane. Lastly I would like to specifically thank my parents Michele and Bruce for the never-ending support over the last five years of my studies and of course to my girlfriend Rebecca for putting up with this for 12 months.

Figure 03 Historic Adkin map of Lake Horowhenua and its environs.

Source: <http://horowhenua.kete.net.nz/site/images/show/18454-horowhenua-maori-place-names-map-vii-by-adkin>

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INTRODUCTION

Figure 04 Aerial from west of Lake Horowhenua looking back towards Levin.
Source: <http://horowhenua.kete.net.nz/site/images/show/8645-aerial-view-across-lake-horowhenua-to-levin-1929>

Rural Landscape Opportunities

Broad Research Problem:

Rural lifestyle in New Zealand is a diminishing lifestyle choice. New Zealand consists of sixteen regions (fig. 06) ranging in size and location throughout the two Islands with 54.8% of land comprising rural farmland. (Statistics New Zealand, 2008) This rural landscape is perceived as 'quintessential New Zealand' to the rest of the world. The demography of rural New Zealand today is experiencing a movement whereby rural landscapes and centres are slowly fading due to shifts towards monofunctioning agriculture (Hendy, 2013) (fig. 09). A lack of infrastructural investment in rural communities and further industrialisation coupled with fewer opportunities for work and recreation being sought and offered in larger centres results in a depleted rural population (Cloke, 1985). Consequently, there is less desire to move to, or live in these regions, and the rural lifestyle ideal has been diverted from the previous conception of an idyllic slice of paradise (Halfacree, 1995).

One example of this is the Kāpiti/Horowhenua coast, once an abundant wetland system, but now a monoculture of dairy farming. The test region for this design study is the diminishing centres of Kāpiti/Horowhenua Coast, which sits to the north-west of New Zealand's capital, Wellington (fig. 07).

This provides further interest because it sits in close proximity to a major urban centre and an interdependency between the two co-exists. Often design based research is conducted and directed towards these urban centres with little emphasis directed to the outlying and supporting rural regions which hold equal significance as the urban. (Koolhaas, 2014) So this poses the research questions:

The "rural lifestyle". How do you create a more inviting environment alongside sustainable investment, that promotes and encourages future rural growth, healthier natural resources and cultural connections? Simultaneously stemming the draining demographic and minimising the shrinking of these communities? Can diversity and density be integrated in rural landscapes to address these issues?

Figure 05 View overlooking Lake Horowhenua on a calm day with no sign of occupancy.

Situating Lake Horowhenua

Figure 06 Kāpiti/Horowhenua is in the Greater Wellington Region and has an interrelated relationship.

Figure 07 The two districts of Kāpiti/Horowhenua construct what is know as Kāpiti Coast and stretches up the west coast of the southern North Island.

Figure 08 Townships of Kāpiti/Horowhenua are situated on the flat plains between the foot hills and the coast. These are scattered within this intensely worked rural land and next to the main water sources such as Lake Horowhenua.

Site Specific Research Problem

Kāpiti/Horowhenua Coast offers a vast stretch of rural landscape with sprawling urban settlements scattered within intensely worked agricultural systems (fig. 09). Kāpiti/Horowhenua's geographical composition is made up of many fragile systems linked through a network of waterways (fig. 32) which have been detrimentally suffocated with hypertrophication, resulting in little association towards the natural landscape in this region. The hypertrophication is a result of current land use practices that have taken over and unbalanced the function of the natural system (fig. 09). Kāpiti/Horowhenua was once considered the food basket for local iwi who first settled the area hundreds of years ago.

Today this still exists, but the focus has shifted to intense cropping and farming (monofunctional agriculture) to supply the masses locally and globally rather than the natural resources that existed here originally. Most of the economic emphasis in Kāpiti/Horowhenua is on intense agricultural farming, in return providing less opportunity for alternative future economic variation and developmental work for local people in the area.

The opportunity this variant creates is the potential to settle in these fragile systems and diverge slightly from the normal economic, environmental agricultural and spatial practices, re-promoting the appeal of the rural lifestyle. The re-vitalisation of Lake Horowhenua, which sits two kilometres to the west of Levin in the centre of the coastal stretch of the region (fig. 16-17), is believed to hold the greatest opportunities across the Kāpiti/Horowhenua environs.

Figure 09 Lake Horowhenua's land use, waterways, vegetated edges and features.

a. Livestock not fenced off from waterways. b. Crop land trenches funnel water through exposed soils transferring them directly into the waterways. c. Level land surrounding the lake divided by drainage networks to keep land dry for agriculture. d. Linear drains fast tracking water movement directly into the lake. e. Grating to stop debris flowing into the lake from the urban run off from Levin. f. Algae bloom within lake at its peak towards the end of summer. g. Unvegetated input into the lake from the Queen St drain. h. Exposed edge between lake and public domain with very little engagement.	<p>i. Some native marginal planting on the northern edges of the lake.</p> <p>j. Aerial over the dune ridges that help contain the water from the lake.
Source: http://horowhenua.kete.net.nz/en/site/images/786-aerial-view-of-lake-horowhenua-and-levin
Credit: Horowhenua Historical Society Inc.</p> <p>k. View from dune overlooking harakeke planted edge on the western edges of the lake.</p> <p>l. View looking towards another dune ridge with exotic wetland planting at its base.</p> |
|--|---|

Opportunities

'What if settlement networks developed around ecological systems and economies?'

Kāpiti/Horowhenua Coast provides new potentials to revitalising this region. It's natural features range from dunes and dune lakes, rivers, mountains, estuarine areas, coastline, wetlands and many heritage areas that hold cultural significance (fig. 03). This is also a downfall. These environments are subsiding due to the external pressures of intensive agriculture and sprawling urban centres, resulting in a lack of connection and association with these features. Rural lifestyle is outlined to have vast connotations relating to the natural landscape (Halfacree, 1995), but here this is not operating to its full potential. From assessing areas throughout Kāpiti/Horowhenua we begin to see the opportunities for improvement that could take place. Improving these environments, morphing them into vibrant amenities to promote and uplift the struggling identity of a rural region (fig. 10-15). These features define the area, operating over time as part of the overall authenticity of the region, bringing new qualities and quantities of experiences to the people.

Open up pedestrian access to natural resources.

Figure 10 Walking lake margins.

A new rural living within the region.

Figure 11 Walking lake margins.

Improve cultural connections to the landscape and it's context.

Figure 12 Marae in centre foreground.

Encourage interaction between land activities. This will generate economic restorations.

Figure 13 Milking sheds with no public engagement.

Restore environmental systems.

Figure 14 Lake Horowhenua thick with algae bloom.

Revitalise a natural amenity to promote community.

Figure 15 Lake Horowhenua public domain under utilised.

Diversifying Density

This thesis explores the potential for developing alternative ways to settle in rural landscapes, in order to revitalise a natural resource. It researches options to generate a network of diversity that will work towards an abundant system. It will offer a slight variance to the current monofunctional rural landscape in order to provide richness and variety to what currently dominates and disfigures these rural settings.

Centred specifically on the revitalisation of Lake Horowhenua it investigates diverse hybrids and interdependencies of space, economics and environment.

Opportunities to diversify current rural uses within Kāpiti/Horowhenua are required to take place primarily amongst fragile networks of waterways. By utilising these opportunities it will provide variables to improve the vitality of the area through culture, community and its environment (Clemmensen, 2014). As individual design research projects these tests are singular options but as the network builds the variety grows as a whole. Between projects abundance within a region will begin to be seen as an overall experience. Settlement networks of satellite towns (fig. 17) that are constructed throughout the overall region inform and promote rural living through a network. These satellite towns will be seen as individual settlements that are informed by the main design drivers of economic, environmental and spatial diversity to generate specific interdependent hybrid settlements scattered within the rural region of the Kāpiti/Horowhenua Coast.

Figure 16 Kāpiti/Horowhenua Coast within close proximity of the Greater Wellington Region. The three main centres Paraparaumu, Levin and Palmerston North all sit within 50km along the stretch of the coast line.

Figure 17 A substantial number of small settlements dispersed within the Kāpiti/Horowhenua Coast stretch.

In order to grow this region we could; Design for centres like Levin; design for small rural towns; or inhabit rural land and promote new rural living that relates directly to its surroundings. This thesis explores the latter.

total for featured area: 181,473

71,986

Palmerston North

4,446

1368

15,507

Levin

5,466

14,096

Paraparaumu

29,064

Base Image Credit- Winston Dewhurst

10.KM

Background

Past Lake Life

“While the hapu could still catch eel - this became an unpleasant task. When members of the hapu waded into the stream to set hinaki (eel traps) in the autumn in anticipation of the eel migration out to sea, toilet paper and human faeces floated around them.” (Selby, Moore, & Mulholland, 2010)

Caption from 1980s by a local iwi member.

Figure 18 Series of historic images illustrating a variety of activities that used to operate on and around the lakes environs. Also highlights how the lakes edge treatment of vegetation changes as time progresses with deforestation as a result of forestry and an intensification of agriculture.

History Down the Drain

Throughout history Kāpiti/Horowhenua Coast has been considered by communities to hold immense value due to the resources that it supplies. Due to the various nutrient rich soils (fig. 20) and resources in the region it enabled agricultural opportunities to be introduced once the swamplands were drained and land deforested (fig. 19). However, this region has endured constant land/property/environmental disputes, between iwi, land owners, settlers and government bodies, ultimately contributing to a troubled and under utilised landscape (fig. 09).

Traditionally this land was first settled by local Māori iwi with ownership being hotly contested between tribes as a result of its abundant resources. As a consequence the landscape and natural features were venerated by these first inhabitants. Dunes, lakes, rivers and hills separated and defined a number of tribes boundaries throughout the stretch of coastline, (fig. 03). Presently with new orthogonally derived, (ecosystem ignorant) cadastral land ownership and infrastructure, further land division exist continuing disconnection with the rural landscape of the region (fig 36-38). This layer of the region was initially formed through the introduction of the rail network. Small settlements were located every ten miles along the length of the line to provide stops and inhabit sections of the region (fig. 22) (Dreaver, 2006).

Now these settlements and man-made land uses define and control the landscape due to urban sprawl and increased road infrastructure. Rather than the landscape defining the settlement and land use, which removes the authentic rural feel of freedom away from urban living (fig. 21).

This research is directed through the sites around Lake Horowhenua (fig. 21). These sites are not the only significant landscape characters in Kāpiti/Horowhenua Coast, although they do hold a number of potentials due to their fairly centralised location in the large regional stretch (fig. 32). On a broad scale, Kāpiti/Horowhenua the holds potential to transform a number of these types of fragile systems into a significant network of habitation points throughout.

Figure 19 Transgression of land use practices and how this begins to frame the character of the rural environment. Extrapolated from: Lake Horowhenua review: assessment of opportunities to address water quality issues in Lake Horowhenua- NIWA

Figure 20 Horowhenua landscape characters. Each of these zones holds different characteristics and soil compositions influenced by historic events such as land uplifts, storms and waterway shifts. This has resulted in nutrient rich areas which service agricultural farming through most of this region.

Landscape Lost to Urban and Agricultural Monofunction

The township of Levin does not work in harmony with the lake. Due to the lakes health, it holds very little amenity to local people with no activities currently taking place on the lake. It sits dormant as a dumping basin with urban stormwater, agricultural run off and treated waste water running into it. The towns low scale and density on a grid formation sits with its back to the lake and has lost its connection physically and ecologically even with it being in close proximity.

Figure 21 Panorama from the Arapaepae Lookout towards Lake Horowhenua. This gives a general sense of the land uses spread throughout the Horowhenua region.

Horowhenua's Block

Historically, Lake Horowhenua and its environs was an invaluable resource to control. The lake was the source of an abundant array fish-life including kokopu and koaro (native trout), kakahi (freshwater mussel), koura (crawlies and freshwater crayfish), inanga (whitebait), patiki (flounder) and tuna (eel) (Gibbs & Atmospheric, 2011). These generated a life for the lake, stories and structures in and around the lakes waterbody (fig. 16). It was documented and described as being riddled with bird life and coastal forest right to the shore of the lake (McDonald, 1961).

However in 1950 the significance of the lake was threatened and from this point onwards it was never fully utilised in the same fashion. The Levin Borough Council began to pump sewage system waste into the lake as a result of urban pressures from the growing township (Gibbs & Atmospheric, 2011). This caused a drastic environmental shift to the lake and its purpose. Iwi were no longer able to utilise this system due to the deterioration of the lake quality.

This outlines the problems behind the priorities to the growth of the region. Total focus had been toward the urban and productive economy of agriculture over the preservation of the natural environment (fig. 22). This resulted in a dramatic and violent shift in environmental systems, lost appreciation of the natural features, and abandoned knowledge of how to inhabit and use this environment.

It was early settlement documents such as Berruads painting (fig. 01) and the quote above from Macdonald that began to introduce and entice personal interest into Lake Horowhenua. It is these documents and historic paintings that indicated the significance the lake held for the people and emphasised the fact that this significance is rapidly depleting.

Figure 22 Image opposite: Historic plan of the Kāpiti/Horowhenua region. Cadastral plan showing the division over natural land form with the settlement centres being located every 10 miles along the rail line.
Source: http://archivescentral.org.nz/image_files/0000/0000/0661/HRC_00237_1_2919-14.jpg

Site Analysis

Monofunctioning Economies

Economic Development

Environment Patterns

Water Networks

Lake Horowhenua Environ Layers

Example of Spatial Patterns

Monofunctioning Economies

Horowhenua consists of a number of labour focussed economies with particular emphasis on agriculture, with dairy being the largest single sector (fig. 24). This positively impacts the economy but is significantly detrimental to the natural environment (fig. 25). Consequently employment opportunities are diminished contributing to the stagnant population growth (fig. 26). In figure 26 we see that the population has been stable with no major losses, yet it has not grown for decades making it difficult to encourage infrastructural investments in the region. The current trends of population growth and demography indicate that there is little attraction to the district for new and existing residents. This results in the aging population seen in figure 27 and affects the number of people available for the workforce of the district.

Figure 24 Horowhenua regions economic sectors 2012 with dairy being the single largest sector contributing 13.6%. Unfortunately this is also the most harmful land use to the environment.

Figure 25 Lake Horowhenua's catchment land uses highlighted with huge significance on monofunctioning agriculture of dairy, horticulture, beef and sheep. It is evident to see the natural and artificial waterways which dissect the catchment surrounding the lake and direct nutrients from the agricultural land uses directly into the lake.

Economic Development

Figure 26 Population growth over time.

Figure 28 Employment growth over time showing Horowhenua behind the rest of New Zealand.

Figure 27 Demographic of population ages within Horowhenua and New Zealand. Here we see an above average senior demographic which will result in a lower workforce. This also outlines that Horowhenua lacks attraction for younger populations live here. Hence the need for diversity.

Figure 29 Dependant vs. Workforce ratio 2013 showing Horowhenua as having a larger dependant demographic potentially because of the older population here.

Source: Horowhenua's Economic Development Strategy

Figure 30 Opposite- Low density and small settlements spread thinly across the district.

71,986

4,446

1368

15,507

5,466

14,096

29,064

10.KM

Image Credit- Winston Dewhurst

Environment Patterns

Due to monofunctioning agriculture, environmental systems are struggling. Figure 31 shows the concentration of algae blooms dispersed within the lakes waterbody. This map shows clearly where the problem points are and when read along with figure 25 it shows that pressures from agriculture contribute to this dramatically. With a network of waterways scattered through agricultural land it becomes a common issue throughout Kāpiti/Horowhenua not only within Lake Horowhenua. The lack of planting on the perimeter of these waterways results in over nutrients of the aquatic life. In figure 34 the historic map shows the old wetlands which traditionally enclosed the perimeter of the lake. These are now drained with linear artificial waterways which are intensely farmed.

Figure 31 Diagram showing the concentrations of algae blooms within the lake. Notable points being the streams main inputs (Arawhata, Queen Street and Mangaroa Streams) and the output of the lake down the Hokio stream. These inputs are where a large amount of nutrient rich water is pumped into the lakes water system resulting in algae bloom and sediment deposits.

Water Networks

Kāpiti/Horowhenua Water Networks

Figure 32 Water Networks sprawling throughout Kāpiti/Horowhenua Coast consisting of rivers, streams, wetlands, dune lakes and coastal areas. These are all affected by the agricultural land uses that dominate much of the regions resources.

Historic Water Networks Simplified

Figure 33 Historic swamplands documented pre 1950s before intensive drains subsided them. The dune lakes are assumed to have accumulated due to depressions in the land, the Levin fault line which runs to the west of the lakes (shown dotted) is presumed to push ground water up to the surface which also feeds the lakes.

Figure 34 Opposite- Lake Horowhenua and its environs pre 1950s with Māori place names.

Source: <http://horowhenua.kete.net.nz/en/site/topics/2487-horowhenua-its-māori-place-names-and-their-topographic-and-historical-background>

MAP IX

MAP VIII

MAP VII

Scale
0 20 40 60 80 Chns.
One mile

Scale
0 20 40 60 80 Chns.
One mile

Lake Horowhenua Environ Layers

The urban grid of Levin sits within the levelled terrace between the Tararua range and the coastline of Kāpiti/Horowhenua. This grid fades out into the rural countryside with road networks either parallel or perpendicular to Lake Horowhenua, although very little connection is made to this resource from the urban centre. The maps to the right break down the layers of the area with the watercourses dissecting land to aid in keeping former wetland areas dry enough to farm. Also illustrated is the roading network which severs parts of the township from the lake, most notably SH1 which runs north through the centre. Finally the cadastral elements of the area which show the concentration of the township with smaller parcel sizes. The following pages show a closer scale and illustrates the low density concentration of urban living. This emphasises that there is little capitalisation on the surrounding landscape by the township.

Figure 36 Drainage network dissecting land and fast tracking water run off into the lake.

Figure 35 Map outlining the gridded road network which controls connects within the township. The main structure is the axis of SH1 which runs through the centre of the town while Queen St runs perpendicular to this from the foothills to the lake.

Figure 37 Cadastral plan overlaying the land, this divides land uses, access, connections and makes evident the proximity of the urban centre of Levin.

Figure 38 Urban sprawl can be seen as slowly progressing towards the lake with more pressure coming from the larger plots of agriculture working its way to the lake edge.

Example of Spatial Patterns

Locating the snapshots of settlement patterns within Levin.

- ① Urban pressure on agricultural land
- ② Aged housing community on the outskirts of the urban limits
- ③ Queen St running lake to hills
- ④ Empty subdivision plots

Figure 39 Urban Levin set out in a grid formation dispersing itself within the rural plains of Horowhenua. This grid is sprawling out into the agricultural land which encompasses the township. This will not address diversity.

- ① Standard urban subdivision development
- ② Agriculture plots slowly being subdivided or intensely worked
- ③ Denser development moving towards Levin Centre
- ④ Gated retirement community

Figure 41 Urban sprawl slowly moving towards lake. Agricultural land begins to be subdivided into suburbia which can take place anywhere with little to no significance to the context.

- ① Marae and other buildings built on higher ground
- ② Proximity to amenity such as a lake
- ③ Common access off main road

Figure 42 Current rural living within proximity of the lake. This shows a very low density of rural living with more focus around the community involvement with the Marae. Such an element promotes involvement and builds community.

Figure 40 Opposite- Māori owned blocks of land positioned through areas surrounding the Mangaroa Stream and drains. This land is operating as agricultural land and likely to be leased to farmers of the surrounding land.

250m

500m

Conclusion

Rural living is struggling within New Zealand due to economic, environmental and spatial pressures. Monofunctioning economic systems are sapping resources by polluting waterways and affecting the visual appeal of these landscapes. This pressures new development in these regions, causing reduced levels of desire to live in these rural regions.

Lake Horowhenua is a prime example of these problems. A polluted lake, inefficient connections to the township and no relation to the rural economies, and a stagnant township. The challenge is to address some of these issues through designing for the revitalisation of the lake by working towards diverging some of the existing land uses. This thesis investigates how we address the rural lifestyle and how we might adapt to a new way of rural living by revitalising existing rural resources. It could provide a new way of producing density.

Figure 43 Portrait of local iwi occupying a waka landing point of the lake. Estimated to be near the current lakes Domain which exists today.

Source: http://horowhenua.kete.net.nz/site/images/show/5386-local-maori-and-waka-lake-horowhenua?view_size=large

Figure 44 Photo from the edge of the lakes domain Summer 2014 with clear environment issues with thick green algae blooms present.

PRINCIPLES

Literature Review

Figure 45 River Skjern restoration through the ‘wilderness paradigm’ to work towards restoring nature.

Source: The Management of Dissonance in Nature Restoration

This thesis is modelled on the revitalisation of a rural landscape and aims to achieve this through environmental, spatial and economic drivers. The following review aims to understand the themes of environmental restoration, economic divergence and community living in rural areas to aid revitalisation and can be applied using design as a method to integrate them.

Thomas Clemmensen’s article ‘The Management of Dissonance in Nature Restoration’ explores the dissonance of restoration as an effect of revitalisation. He discusses dissonance generally through the compromise of existing practice and explores the idea through two restoration case studies, River Skjern in Denmark (fig. 45) and River Aire Switzerland (fig. 46). These cases investigate the restoration process and its effects through two different methods resulting in alternative outcomes of environment restoration. Firstly through the paradigm of ‘wilderness’ and secondly through the promotion of ‘cultural landscapes’ of people interacting with their environment (Møller, Laursen, & Center for Strategiske Studier i Kulturmiljø, 2002). The latter approach allows for human engagement with their environment but on a smaller and less intensive scale. This would be better suited to the revitalisation of the rural area surrounding Lake Horowhenua.

Figure 46 River Aire and its four stage revitalisation plan. Taking the form of a 'cultural landscape' paradigm

Source: The Management of Dissonance in Nature Restoration

The main conflict that Clemmensen outlines as a result of nature restoration is the effect it has on heritage production. He refers to Ashworth's 'Dissonant Heritage' which explains how heritage production often "consciously or unconsciously – involves some form of denial, neglect, destruction, reinterpretation, or marginalizing" (Tunbridge & Ashworth, 1996). Therefore, by creating design moves to improve one aspect of the rural landscape it will ultimately negatively affect other sectors such as heritage, economic or a way to inhabit the environment. Drivers such as settlement and economies can then be viewed as methods to improve synergies.

Within this research, nature restoration will be modelled around the second approach: cultural landscape restoration. This often results in environments like Lake Horowhenua becoming heavily constructed. The approach of 'restoration' has been staged around the word 'environment' rather than 'nature' as nature provokes emotive connotations. This aims to reconstruct the perception of the relationship between man and his environment, ultimately engaging the restoration to aid the revitalisation of a natural resource. Clemmensen outlines the question of cultural identity, "what kind of

relationship do we have, believe to have, or want to have with nature?" (Clemmensen, 2014) and makes this the focus of the restoration over nature itself. This poses how restoration can be used. Primarily as a tool, to build societies, communities and individual experience which facilitates identity, belonging, and an authenticity through the power of place.

By promoting this revitalisation of the environment, rural authenticity is constructed through the implementation of new design. This process is a form of revitalisation fostering diversity within the existing rural landscape. In the short documentary 'ReDane – a new countryside' by Danish architects Susturb and Powerhouse Company, production and efficiency is questioned (fig. 47). Their research is predominantly focussed on Denmark's main export, the pig economy. The countryside, as a result of economic pressure, has become factory focussed around production and efficiency, a "...landscape devoid of variety, devoid of diversity." (Dalsgaard) They question what is the potential to shift this focus towards a more diverse process through boutique markets that act in response to the image of the countryside and the quality of the produce? This new drive for productivity would reinstate vitality back into the

Landscape devoid of variety.

Experience on the land is factory based.

Monofunctioning focus towards production.

Production focussed towards efficiency.

Shifting the image of production.

Multifunctioning land use.

Refining existing land use to diverging practices.

Change in societal spending 1960 to current.

From farm to the dining table the diverge in economy builds a new experience.

Figure 47 Screen shots from ReDane outlining the images surrounding the pig industry and how the countryside is seen as a factory rather than a biodiverse environment.

Source: ReDane- A New Countryside

notion of productivity, growth and variety within our countryside settlements. This would, begin to restructure the rural landscape image, moving from intense monofunctioning agriculture to a variety of unique economies, influencing how it then functions within the landscape. Increasing variety of land use within the rural landscape would promote new opportunities for experience within the regional landscape and open up potential for jobs and trade therefore, building a density of diverse economies for the region.

“Maybe we could produce diversity to measure growth?”(Dalsgaard)

Economic variety is a theme discussed by E. F. Schumacher. This suggests 'bigger is not better' and questioning, is intensive agriculture the right land-use for this type of rural landscape? Schumacher outlines the disputes that are emerging through globalisation of the world's economy and the effects on the environment, human welfare and lifestyle that he foresees. Lack of controls by the agricultural fraternity place pressure on surrounding environs resulting in depleted environments and limitations to what can be experienced from the land. As noted previously this variety touches on similar questions surrounding economies with focus shifting toward concepts of environment, authenticity and permanence of the rural landscape. By constructing new habitations, ways of life, work potential and aiding in the character of place we then promote potential in a diverse range of economies within a region. In some cases new economies which construct a new form of authentic experience require unique ways to inhabit and experience this economy and its environment.

In 'To Design Landscape' by Catherine Dee the chapter 'Interplay' talks about the difficulties between both culture and ecology, and how 'interplay' is a vital aspect of design craft between these design drivers. How we bring these elements together creates challenges to design while working towards a revitalised landscape. To integrate these intensities creates experience of the landscape.

"Without integration, a design remains merely a series of motifs – little islands of design endeavour – floating in the 'dead' space of unconsidered land and connections." (Dee, 2012)

So how do we introduce these issues of environmental restoration and economies to a region? One way to potentially do this is through settlement. Designers could begin to consider human quantity and quality of form or landscape as the order behind revitalisation. Looking at the present opportunities and limitations of a region's environment and economies can render new development (Weller, 2009). Settlement can then be the catalyst, bringing these elements of revitalisation together, to construct ways of life, community and experiences. This then creates 'interplay' with people, their settlement and the process of revitalisation of the region "...not merely to contain human impacts within nature's self-healing capabilities, but also to enhance nature's capacity to sustain human welfare." (Boyce, Narain, & Stanton, 2007).

The issues of size, population and density arise when assessing how to promote new rural living. As seen above rural Kāpiti/Horowhenua is struggling to establish new growth. An opportunity for growth is presented when fostering a new economy, jobs and expertise, therefore creating a new way of rural living. Robin Dunbar refers to the communities of 'human hunter gathers' which equates to groups of around 150 people. This figure has been derived through a number of similar comparisons and theories that relate back to army sector sizes within large army forces, individuals and how many friends and acquaintances they have (Dunbar, 1992). The idea of 150 is appealing, as it works well with the idea of a number of small self-sufficient settlements scattered throughout Kāpiti/Horowhenua to create this variety of rural settlement. In the case of this design research it has been rounded up to 200

which would create a new density of rural living to this type of region. Dunbar argues the fact that if this number is pushed too far it requires too much to organise and would ultimately require more resources, further displacing the rural character of the area. The rounding in this case would be pivotal to ensure enough people to create a community, workforce and the potential for social activity and interaction.

By looking into environmental, spatial and economic drivers behind revitalisation, the methods of economic variety, authenticity, interplay and density of communities arose. These inform the objectives posed by the research question of how to revitalise rural living within a struggling environment, thereby becoming the frame for this thesis.

Case Studies

Settlement Patterns - Kāpiti/Horowhenua Coast

Many settlement patterns exist throughout Kāpiti/Horowhenua Coast. These range in density and formality due to their location within the vast section of rural landscape. The four following examples are a small variety of settlement that usually occur here. Each has a different response to living within this region and has resulted in a different outcome. They have been broken down into structuring influences.

Manakua

Figure 48 Gridded urban plan, low density township located next to SH1 and originally located here due to the rail network running north. These infrastructures divide the rural and urban both physically and visually.

- ① SH1 and railway line provide foundation for settlement
- ② Settlement centre - railway station, hotel/tavern
- ③ Secondary roads feed off main road lines

Hokio Beach

Figure 49 Gridded settlement by an estuarine area amongst the dune formations of the coastline. Grid running perpendicular and parallel with the coastline promoting movement to the beach from the settlement.

- ① River resource attraction
- ② Road connections directing access towards beach
- ③ Secondary axis run perpendicular to beach line

Peka Peka

Figure 50 New residential development within the dunes aiming to work within the terrain. Keeping common public space central around the wetland areas to provide open space promoting community involvement.

- ① Dune formation influences built form location
- ② Lowland open public space
- ③ Road follows base of the dunes terrain

Lake Horowhenua

Figure 51 Settlement placed along ridge with living forming around the central civic building of the Marae. This building a strong sense of community.

- ① Marae and other buildings built on higher ground
- ② Proximity to amenity such as a lake
- ③ Common access off main road

Spatial Patterns

Project: House for Trees
Architect: Vo Trong Nghia
Where: Ho Chi Minh City, Vietnam

These vertical units within the centre of a city illustrate the proximity of elements to begin to construct space 'between'. This proximity of units creates a strong interface due to the verticality between buildings giving visual cues to the other surrounding spaces beyond the extents of each building. This questions how to consider a new rural settlement which considers proximity of dwellings to one another and the density that it holds.

Figure 52 Existing spatial arrangement creating a series of confined spaces.

Figure 53 The six above explorations begin to show alternative arrangements looking at how proximity and orientation affects the central space. These arrangements create vistas and external connections but also start to construct secondary spaces which can become sheltered and privatized.

Figure 54 Verticality and proximity creates thresholds between spaces. This construct gives a central public space with private, working and access spaces sheltered by the surrounding buildings.

Source: <http://votrongnghia.com/projects/house-for-trees/>

Spatial Patterns

Project: Butaro Doctor's Housing
Architect: MASS Design Group
Where: Rwanda

Due to the terrain, these densely positioned units construct a small clustered community on the slope of the hill. With the use of orientation, retaining and the natural landform public and private spaces are formed. This interplay between landform, house and retaining begins to construct, direct and dictate space and how it is inhabited. With a simple design palette the rural nature of this project comes through clearly with more emphasis on the surrounding context rather than the over complication and shielding of designed elements.

The plan shows the use of similar build footprints to promote ease of construction and this allows the landscape itself to begin to construct variations of spaces. This design approach begins to achieve a diversity through it's density positioned within the slope of the hill.

Figure 55 Plan highlighting the housing units staged amongst the terrain of the slope. With the help of the retaining this creates access and aids in the distinction between private areas in dark grey.

Figure 56 Photos showing the aesthetic of the design and how the terrain, housing and retaining define space and allow for access. These elements of the design create a unique way to live within a rural setting such as this.

Source: <http://archrecord.construction.com/projects/portfolio/2013/03/1303-Butaro-Doctors-Housing-MASS-Design-Group.asp>

Conclusion

When renovating rural lifestyle, many processes could take place in Kāpiti/Horowhenua. Subject to a number of issues ranging from geographical and environmental through to economic pressures, different circumstances could revitalise the rural lifestyle. Discipline tendency is to resolve environmental issues surrounding the natural resource of the lake. This could take place in a number of ways, by either replicating nature to restore the natural character or an engineered environment to restore function, each supporting and benefitting environmental restoration. By restoring this natural resource it would encourage engagement with its function, which increases appreciation of the resource. Another approach would come from an economic perspective, whereby the local council would implement strategies to improve economic development for the region, with a particular focus on creating jobs. A final approach would be to look to new infrastructure, housing or development investment, in order to encourage occupancy, although this is difficult with minimal economic growth in the region. All these approaches can be utilised in design to attempt to resolve issues surrounding diversity in revitalising rural living through the recognition of density.

Design Research Criteria

- Open up public access and connection to natural resources
- Rural living density
- Improve cultural connections to the landscape and its context
- Encourage interaction between land activities. This then will generate economic restoration.
- Restore environmental systems
- Revitalise a natural amenity to promote community

Methodology

Design Based Research Around Revitalisation

This thesis explores challenges based on rural living on Kāpiti/Horowhenua Coast and tests specifically the revitalisation of Lake Horowhenua and its environs. It challenges discipline tendencies to restoring environment, existing economic land uses and new ways to inhabit these environments. It researches these through a number of test iterations which are reflected upon throughout this document.

The scope of the design is very broadly set to the scale of the Kāpiti/Horowhenua coast but moves down in scale to the focus of the revitalisation of Lake Horowhenua. Here a planning experience takes place based on Dee's methods of sketching over photos to distil characteristics of design, place and environment. This encourages a personal understanding while helping to communicate some 'on the ground' approaches to experiencing a rural site. These sketches aided the process of constructing an experience desired through the design.

Through the design iteration of scenario planning it began to intensify lakeside living to promote interaction with the lake. This would create a 'not in my backyard' type of approach to aid in the restoration of the lake. Using the lake as a resource, investment and development would be encouraged and by doing so, assist and achieve restoration. The planning experience stage and scenario tests showed the character would be lost

to over development of this rural landscape, ultimately failing the objectives of the research. The choice to develop a design response of one of the iteration options became apparent and refined. Design is achieved with increased knowledge about site specifics, economies and environmental needs. An attempt to address design implications to resolve the revitalisation of Lake Horowhenua would also be addressed.

Discussion involving the notion of abundance, rural authenticity, new rural living, and dissonance in revitalisation emerged as a result of diversifying density in order to revitalise rural living. These elements contribute to design when working with rural landscapes, to encourage experiences while promoting healthier environments, and inviting rural lifestyles, creating 'the power of place'.

Figure 57 Diagram outlining the approach taken within this design based research.

Technique

Design Research

Through this research a number of basic techniques have aided in the process of design. These ranging from representation techniques to developing a design criteria. Each of these methods has acted as a beneficial stepping stone in exploring ideas and justifying design responses to the issues surrounding the research. While these simple techniques have aided in the design process some have been more beneficial and some can be further explored in future research in future design projects.

500m

1km

Planning Experiences:

This representation technique is a quick solution to exploring the site through another medium and distilling moments of the site. This process emerged from Catherine Dee's approach to design the landscape and is referred to as a vehicle for conceiving, conveying and evaluating design (Dee, 2012). This coupled with walking large scaled landscapes makes for a clearer personal understanding of the site (fig. 58). The process exposes your senses to your surroundings and experiences of sight, sound, smell, taste and feel all building engagement to aspects of the experience. This method acts as a good medium to facilitate ideas of site through the process of 'what we experience when we walk through existing landscapes, urban, rural or natural, increases our sensitivity to processes, structures, sceneries, atmospheres and narratives' (Foxley & Vogt, 2010).

The challenge then becomes, how to convey the experience of walking the site through representation. Photography as a representation alone is a strong tool but often dilutes the image with minor details. By drawing over such a photograph you can then distil the desired emphasis. This then becomes a way to illustrate the experience to others encouraging a process of reflection (fig. 59-61). The fact that this technique has a strong analogue background helps people to then reinterpret the images and design gestures making the ideas more interpretive and flexible. The beauty behind sketched images is that they give more of a definite sense of being out in the field giving an analogous aesthetic to the actual experience of place. Combined with captions these aid in the factual description of the image giving significance to the process of communication and designing for large scaled landscapes (Dee, 2012).

Figure 59 Opposite image: Aerial perspective of settlement arm within the harakeke plantation creating a new rural living and a multifunctional land use

Enclosure of cropping eliminates any sense of extended context.

Vast flat land dissected by *gridded linear drains* to keep land dry enough to farm.

Vast vistas of open landscape.

Small remnants of *native trees standing tall* within working land.

One of few direct *high vantage points* from elevated dune land. Large context produced from this location.

Figure 60 Planning experiences from walking parts of the landscape surrounding the lake.

Poor linear connection from lake, town and hills directed towards vehicles.

Tall harakeke *removing sense of context* by enclosing views.

Low flowing unvegetated waterways into lake.

Drains dissecting swampy land to allow farming to take place.

Constructed within the unconstructed the lake weir restricting flow out of the lake.

Exposed edge of domain with little engagement.

Rolling ridge line flowing down to the lake edge *contrasts with the surrounding lands.*

Experience of *elevating designed elements* to gain point of direction.

Enclosing design elements to *submerge an experience* within the context of the environment.

Design elements on *vantage points acting as markers* within the vastness of the landscape.

Controls to aid in the direction and manipulation of *experiencing aspects of the environment*.

Clusters of housing situated within the wetland of harakeke, these clusters construct miniature *community concentrations*.

Retaining remnant groves of native trees and emphasising them through points of interaction.

Figure 61 Planning experience exploring what it might look like to inhabit sections of the lake.

Clusters of housing locatable through their elevation from access points.

Courtyard area formed by housing and these then construct visual cues out to the context by staggering dwellings with each other.

Considering how access points could bring more variety to the harakeke revegetation by diversifying planting here.

Shelter and storage areas located next to features or intersecting points to then relate to the surroundings. Again identifiable due to the elevation that the structure holds.

DESIGN

Landscape Concept

How to renovate the role of rural living to revitalise a region into a network of settlements that aid in the conservation of the environment and economy? We need to consider how aspects of revitalisation might be brought together through design to provide new forms of settling in this type of fragile environment. With the design being centred on the revitalisation of Lake Horowhenua the issues of *economies, environment and spatial aspects* need to be developed through design explorations. The challenge is where and how to integrate these to introduce relationships constructing new potentials for a region. By providing these three drivers to address issues surrounding the lake different aspects will be emphasised and tweaked to build new relationships between the aspects of revitalization.

Landscape Concept

Design Scenario Iteration

This iteration for Lake Horowhenua's revitalisation emerged using the method of designing through scenarios. It was a method that took one big idea and ran with it into producing a design output to revitalise the lake and its rural living.

The scenario was framed around promoting as much living around a fragile landscape as possible without many restrictions. This move was aimed at accounting for a population increase of around 2000 people, which equated to a 10% increase in the existing Levin population. This was considered a healthy urban population growth increase and was applied to show a limit of the research (Kiernan, 1 August 2014).

Establishing three visions; satellite towns, three centres and linear waterways, this iteration opened discussion about the lakes revitalisation from the start. Each of these were developed to a level of detail that encouraged a direction towards a variety of ways to settle within close proximity to the lake.

These ideas came to light before review in May, which was a key milestone for research, provoking discussion about the overlying theory of revitalising the lake and initial design moves that had arisen. Through discussion and reflection here it became clear that this design iteration was not quite right for this task, with little understanding of the sites character and existing relationships. Each of these designs took over rather

than working into the existing setting. With little emphasis and understanding behind the interplay necessary between design drivers these concepts would not achieve the desired outcome. They were more focussed on introducing quantity of living to the lake while also trying to improve the lakes problem points. Although positive, the outcome still emphasised the loss of rural character and ultimately failed to answer the question of how best to revitalise the lake and ultimately the rural lifestyle.

Although these responses were not directly achieving what was needed to revitalise the lake they did provide a background to start to promote alternative economies, ways to settle and inhabit, and environmental shifts. Aspects of this exploration could be taken to the next stages of design by locating the problem areas and understanding where to introduce habitation to promote development within this fragile site.

Each vision contributed to the evolution of the following developments (fig. 63-71).

Figure 63 Small nodes of settlement located next to resources, these small settlements then relate back into larger townships such as Levin.

Figure 64 Gesture of public space becoming relatable to the landscape which it is situated within by directing views to natural features such as the dunes in the distance of the image.

Satellite Towns - option one

Chosen iteration

Satellite towns situated next to major resources, creating a network of small settlements relating to one another creating a region of economies.

Positive

Starts to promote a diversity of small settlements building an abundance.

Negative

Masterplan is dominating the setting too much losing the natural character of the place.

Figure 65 Masterplan of one of the satellite towns built around the harakeke economy. With the main structure of roading directing movement either towards the lake or else from living areas out into the wetland of harakeke which would then be harvested.

Figure 66 Highlighting three main centres to encourage a transected engagement with the centre of Levin and its environs the lake and the hills.

Figure 67 Gesture of promotion of lake activities, constructing a usable edge to the lake to promote recreation once the lakes health has been restored.

Figure 68 Masterplan based around recreation taking place at the lake edge. This looks at constructing the lake edge to promote interaction while constructing wetlands to treat urban run off from the existing Levin township before entering the lake. The main axis of roading runs perpendicular to the lake to match the exiting grid and ties back into the existing sports fields.

Three Centres - option two

The three centres, looking at balance between settlement, promoting and building a direct relationship with the lake itself.

Positive

Encourages engagement with the lakes edge promoting activities to take place on the lake.

Negative

Overall scale dominates the lake edge taking over the shore of the lake.

Figure 69 Linear settlement lining the waterways that feed the lake surrounding the lake

Figure 70 Gesture of Linear waterways promoting living in harmony with conservation. This process of conservation orientates public life around this process of treating the water.

Figure 71 Masterplan of how the housing would situate itself along the waterway to aid in building infrastructure to treat the water run off before entering the lake.

Linear Waterways - option three

Linear waterways promoting the inhabitation of conservation areas and settling waterways to build relationships between man and environment.

Positive

Starts to interact with the conservation of the restoration.

Negative

Very little diversity to the settlements structure with no economy background

Landscape Concept

Choosing the Site and Economy

At this stage the designs were envisioned to be a part of the greater idea of a settlement network and work together promoting diversity to rural living within the region (fig. 76). Each of these sites tried to speak of the specific need behind the economy, environment and the natural character of the site. Exploring four designs at this stage was good as it encouraged a broad approach, establishing and promoting an evolution of ideas that could progress together. This was slightly problematic, slowing the process of design down, and struggling to get detail and specifics into the design output. From the explorations the decision was made to narrow the test down to one site focussing on the economy of harakeke (fig. 79).

Figure 72 Considering how the lakes restoration will contribute to the overall experience of the lake through moments of interaction surrounding the lakes environs.

Concept Designs

Figure 73 Explorations starting to spatially arrange the lake around it's natural systems of topography, waterways and existing land uses. These then inform figure 67 with distilling the driving characters of each site.

Figure 74 Planning experience exploring a number of alternative ways and places to settle within Lake Horohwenua's environs with specific focus around Mangaroa Stream and harakeke.

Figure 75 Planning experience exploring Arawhata drain and how settlement can occupy the stream edge. This has specific focus surrounding watercress as an economy.

Figure 76 Opposite- Four locations to introduce design drivers to work towards promoting a network of settlements to generate revitalisation for the lake. Each holds some form of landscape driver which is diagrammed in white over the above aerial and explained in the figures 77-80 following.

Harakeke Extraction

Food Production

Regional Recreation

Aquaculture and Semi-Aquatic

500m

1km

Four Economies

Figure 77 Watercress based masterplan sketch.

Figure 78 Recreation based masterplan sketch.

Watercress

Landscape character: Linear drains dissecting the agricultural land. These line the ground and direct the eyes over flat land to the edges where land begins to rise.

This conceptual design looks at generating a network of watercress paddy fields set up from the linear grid of drains. These construct terraces to treat water before it enters the lake and would be concentrated around the main axis of the Arawhata Stream. This constructed grid of watercress terraces then could inform foundations for introducing infrastructure such as roading, housing and processing options.

Urban Agriculture

Landscape character: This site has the challenge of linking the urban grid of the township with this edge of the lake and sits on predominantly flat land with no huge terrain influence.

Conceptual design for a settlement promoting the edge of the lake with water based activity and connections back to the centre of Levin. This settlement was intended to introduce a constructed edge to promote access and also form linear connections back into the town centre. Storm water would be treated within this settlement through wetland open space before entering the lake.

Figure 79 Harakeke based masterplan sketch.

Figure 80 Agricultural based masterplan sketch.

Harakeke - Chosen site and economy

Landscape character: There was no outstanding driver here but it has evolved into being the use of the more subtle dunes that define the wetland areas. This informs the limits of development and interventions.

Settlement focussed around situating settlement within a wetland environment. This type of living would work towards integrating the economy and living in a heuristic experience. The structure of the design is based around the terrain and the low wetland area which would be planted in harakeke to work environmentally and be harvested.

Agriculture

Landscape character: Stable dunes constructing enclosure of the agricultural land. This informs spatial concentrations of development and will begin to inform small sub communities.

Development based around the existing land use here but taking inspiration from the dune formations to inform the ways in which settlement can work into the existing land use here. This would result in public life taking place on the slopes of the dunes and the levelled land which holds more productivity. These micro communities would then become linked through design connections and promote engagement with the agricultural land use.

Designing Harakeke

Spatial Background

Why Harakeke and not another economy?

Harakeke is a robust, fast growing, wind, flood, drought, light and frost-tolerant plant endemic to the majority of New Zealand (Sustainable Farming Fund, 2006). Harakeke can be established primarily for environmental reasons, but in this case the scale of implementation has been extended to include harakeke as an economic resource. This is not the only economy or necessarily the most economically viable, but it possesses some significance taking into account its economic, cultural and environmental benefits.

Due to its natural character it fits within the specific context of Lake Horowhenua. The site surrounding the Mangaroa Stream was chosen as it offered the greatest potential to diverge current land use practices (fig. 87). This looked at both improving the environment and providing economic return. Allowing the economy to be designed from the ground up while providing possibilities for new ways to inhabit this setting. This enabled the development of a series of design moves outlined in the following explorations to start to produce some form of involvement in building a rural experience (fig. 91-94).

The development of the design works toward constructing an experience of a revitalised rural landscape. This comes through the engagement and involvement in the restoration of the lake and living environment. It begins to be seen through the development and research into the economy and specifics of the site. In the development of the design below, the approach to generate an interplay within the design drivers of economy, environment and inhabitation emerge, encouraging revitalisation of the rural landscape.

“Without integration, a design remains merely a series of motifs – little islands of design endeavour – floating in the ‘dead’ space of unconsidered land and connections” (Dee, 2012).

Catherine Dee refers to this as interplay between the principles of the design. In this case it is an interplay between, economic, environmental and spatial aspects, creating integration rather than a stand-alone piece. This is explored through the main design move, positioning living and fibre extraction stages in close proximity to one another (fig. 99). As a result of positioning they are located within the plantation of harakeke and set back from the lake. Though not directly sitting at the lake edge the settlement still connects with the lake through the harakeke plantation. Physical integration would support the restoration of the lake and the harakeke economy.

One of the structuring points of the settlement is the concentration of housing including how it works its way out into the plantation, encouraging its inhabitants out into the surrounds (fig. 91). The interconnection of the harakeke and settlement work together, promoting a physical relationship, blending the edge of lifestyle and work while promoting an economic incentive. The approach of ‘drawing’ the extraction stages of the harakeke leaf formulates the interaction of these moments, to inform experiences and promotion of this rural landscape (fig. 97-98). The plantation of harakeke and variable plants situated within the wetland area construct engagement with the environment, building the character of the site by a form of ‘re-establishment’ to what had existed in the past. Tying these elements together starts to suggest abundance by providing a range of opportunities to inhabit and interact with while improving the vitality of the lake, its region and environs.

Figure 81 View from recreation track looking up towards the settlement on the higher ground.

Figure 82 Potential feeling within a cluster of housing where communal living takes place internally and private facing outward.

Figure 83 Elevated structure at designated intersections within plantation acting as both lookout markers and storage shelters.

Imagine Harakeke

Figure 84 Harakeke through the scales of plantation, plants, bush, leaf and fibre.

Moutoa Swamp.

Old transport methods.

Miranui flax mill.

Figure 85 Historic extraction process of harakeke.

Source: <http://horowhenua.kete.net.nz/en/site/topics/2475-miranui-the-story-of-new-zealands-largest-flax-mill>

Hanks of extracted flax fibre.

Fields of fibre bleaching and drying on lines.

Softening process called 'scutching'.

Harakeke Extraction Process

Figure 86 Extraction stages of the harakeke process coupled with existing site structure below influence the placement of design intervention.

Figure 87 Above and opposite- Spatial make up of the site looking at lowland and elevated land. How this along with existing infrastructure such as roads, watercourses and terrain can then lead to informing design intervention.

N

200m

400m

Spatialising Extraction Points

Figure 88 Beginning to spatialise the extraction process
By looking into the existing structure of the site previously, this approach to locate these extraction stages here are a result of existing roading, terrain and the water source from the Mangaroa Stream which can be used within this extracting process.

1. Preparation shed
2. Soaking and rinsing
3. Stripping
4. Drying and bleaching fields
5. Holding shed
6. On site fabrication

Figure 89 Diagram beginning to structure the introduction of extraction.
Looking to introduce living areas (a) to work alongside and situating the structure of the design on the higher ground of the land.

Figure 90 Sketch spatialising areas to work with existing roads, drainage systems and higher ground to influence locations of inhabitants and the extraction locations from figures 88-89.

Figure 93 Question how to begin to integrate the economy more with the living through spatial arrangement, proximity, exposure and connections. This promotes access and involvement with the processing points of extracting the fibre from the harakeke.

Figure 94 Spatial planning of the settlement arms and their communal living on the interior of the arm. Points are located along these arms where community is promoted with more space and views, connections and exposure to the context is more evident.

Developing Harakeke Iteration

Economic areas outlining: plantation, service tracks and extraction areas.

Living areas following the terrain into the plantation.

Public areas with integrated areas of living and working with recreation tracks through plantation.

Figure 95 Layers of the conceptual masterplan of the harakeke settlement.

Layers of the conceptual plan together.

500m

1km

Figure 96 Planning concept masterplan of the harakeke settlement with the concentrated extraction stages fails to meet the goals to open up public access and connection through the encouragement and interaction between land activities. This does not achieve economic restoration.

Concentrating Versus Drawingout Extraction

Figure 97 Economy driving the spatial layout too much with the idea of concentrating the extraction stages together. This generates a dull experience with little integration between living and working.

Figure 98 Re-structuring to integrate the living with the economy. This promotes interaction and engagement within living and working areas to promote community living.

Figure 99 Developing ideas of integration with 'drawing' out the extraction process into the living areas. This constructs contact points and promotes the experience as a journey.

Design Structure

Multifunctioning Landscape: (Economic Diversity)

The design of the harakeke settlement is focussed around diverging the current agricultural land use surrounding one of the drained historic wetlands bordering Lake Horowhenua (fig. 33). The design aims to promote a range of land uses in these contested situations allowing for balance between economic drivers both new and old. It proposes to do this through introducing a harakeke plantation and processing development on the fringes of the wetland depression surrounding the Mangaroa Stream (fig. 87).

Diverging practises will work towards explaining new economic potential while keeping some of the existing land uses to construct a multifunctioning landscape and a movement away from monofunctioning agriculture. This harakeke design is situated here because current agriculture is stifling this wet marshland area which sits in close proximity to the lake (fig. 25). The economic driver has been structured primarily around the stages of extraction involved (fig. 86), the processing of the harakeke leaf and locating the plantation in the wet geography of the site (fig. 100). This is important as it gives structure and practicality to the layout of the design, emphasising the need and requirements for the leaf to be extracted. By introducing this practicality along with reading the landform ridges and depressions, these stages have been expanded to draw out the process of extraction (fig. 98).

At the processing stage timeframes are lengthy and require a few days to develop. Proximity is not a controlling factor to the efficacy of extraction and transportation. This has resulted in the design move to “draw out” the processing stages into the landscape (fig.99), promoting more points of interaction and engagement with the economy. This encourages integration between living, working, and the environment, furthering the potential of this multifunctioning landscape (fig. 101-103). Promoting the stages involved in the extraction of the harakeke leaf constructs a heuristic experience that builds a relationship with the economy, constructing a new rural authentic experience in this rural landscape. It is important to develop a full cyclic experience from being exposed to the different stages of the extraction process; from the plantation through to drying the fibre, to the living and community areas occurring in close proximity (fig. 100).

Design intervention works to intensify the experience of the economy by access ways and pathways enabling the inhabitant to view this cycle of extraction. These moments of economy are brought forward through views, access and materialistic connections exposing interaction and developing an experience (fig. 102-103). A transition of experiences expose moments of living and working environments that interact with one another creating an interplay between work and living, furthering this promotion of multifunctioning rural landscape and how we can inhabit this type of environment (fig. 100-103).

Figure 100 Opposite- Masterplan of the integrated harakeke settlement. A larger focus has been put on the exposure of the economy and lifestyle to build this abundance and promote an authentic experience.

- 1 Preparation Storage
- 2 Soaking Beds
- 3 Stripping
- 4 Rinsing
- 5 Drying and Bleaching
- 6 Textile/Visitor Centre
- a Retention pond
- b Residential arms
- c Traditional area

Figure 101 Gestural perspective of community area within the drying process of the harakeke fibre with views out over the plantation of harakeke.

Figure 102 Perspective of a contact area with a public path edging onto a workable area where the harakeke is soaked for 3-5 days before fibre extraction.

Figure 103 Perspective of a public common space which can service public events. A vision of education happening here with lessons about how to traditionally extract fibre from the leaf. This is located centrally to the two settlement arms and is semi submerged in the harakeke plantation for access to harvests.

Design Structure

Lake Restoration: (Environment Diversity)

The approach to environmentally revitalising the lake is to address one of the sources of the lakes problems. It looks into reintroducing planting into a previous wetland area around the Mangaroa Stream to treat water before reaching the lake. Currently, the streams catchment is intensely worked with agriculture and dairy within the wet marginal land which is in close proximity to the lake. This marginal land is dissected by exposed drains, their prime function being to extract water from this historic wetland environment (fig. 25). These drains are mainly uncovered with no planting and unfenced, providing optimum potential for high nutrient levels of agricultural run-off and soil erosion to flow directly into the lake.

Here the design looks at phasing harakeke strips along the linear drainage network creating a progression of plants to treat the waterways (fig. 104-110). As these plants mature, more land will be dedicated to the harakeke plantation by converting higher areas, susceptible to pugging, to harakeke (fig. 109-110). By phasing, it allows plants to mature and be harvested while other areas are being planted out. This allows for a gradual conversion of the land to take place enabling current land practices to be moved and established to work alongside the growing plantation. This conversion will not only provide environmental benefits but will give economic return through harvesting and aid in the re-introduction of the harakeke economy.

Staging of development will work with the scale of the plantation as the capacity of the facilities are met, development will extend, allowing for balanced growth and promoting this multifunctioning landscape (fig. 108-110). Another benefit to the strips of harakeke is that as development occurs these drains will start to define paths and connections, building a network of arteries or corridors that service working connections or recreation tracks. The majority of these drainage links will eventually diverge slightly as the plantation grows with further introduction of varieties of native plants endemic to the area. The corridors of planting provide biodiversity for the flora and fauna of the area and give a slightly wilder feel while moving within the plantation (fig. 111). These will provide diversity to the planting and give elevation overhead to locate and aid in the navigation from within the field or from landmarks afar.

Here the topography is one of the key elements that helps to define the limits of the agriculture, harakeke plantation and settlement. By cutting off some of this land from the function of agriculture it will contribute to the overall natural character of the lake by attracting wildlife, especially birds like tui and keruru which start to generate an experience of its own. The plantation not only adds to the environment here it also gives an economic return and starts to construct an interesting spatial feel by being submerged within the mass of harakeke (fig. 112).

Figure 104 Current

Figure 105 1-5 years

Figure 106 5-15 years

Figure 107 15+ years

N
1 Figure 108 5 years - Riparian strips for the drain network. This facilitates the main access ways for the plantation in following years.

N
1 Figure 109 5-15 years- Convert wetter areas of pasture to flax plantation. While planting is taking place the riparian strips can be harvested at a small scale. While phasing takes place dairy and beef and sheep farming will still take place in other paddocks.

Figure 110 15+ years- Further plantation extension while earlier plantings are being harvested. In the later years of this phasing infill planting will take place to grow remnant bush and main recreational access ways to form corridors of various native planting.

Figure 111 Perspective of a working track with a line of diverged native corridor planting to give direction above the harakeke. Storage sheds and lookout points extrude out of harakeke also providing markers to navigate from.

Figure 112 Perspective of recreation track next to the Mangaroa stream outlet into Lake Horowhenua.

Design Structure

Authenticating Habitation: (Spatial Diversity)

The challenge when revitalising rural living in a region is integrating aspects together, in a coherent manner. Spatial aspects provide this thread as designed components feed between environmental, economic and inhabitation aspects. Here, the design driver attempts to build on the rural aesthetic of 'minimal', to allow the recognition of the complex surrounding context, to create contrast between constructed and unconstructed.

One key design move was integrating living environments with the working areas of the harakeke extraction. These living areas consist of the introduction of 80 units (accommodating around 200 people). Arranged in a linear orientation these settlement arms extend out into the plantation of harakeke following the ridges of the terrain (fig. 92). These ridges are vantage points and define the position of dwellings out amongst the plantation creating a larger surface edge to the field while opening up more access into or out of the plantation. The terrain generates an interplay between levels and is intensified with the introduction of small simple housing units and concrete retaining walls staggering within the environs of the slope (fig. 119). This interplay starts to define habitation and levelled areas constructing public and private spaces within the spatial arrangement.

The main structure to the housing units is to have more common living areas at ground level and private living on the upper floors. Views within these arms are important with the main focus directed down the length of the arm, framed

by living units on either side of central space which run the length. From the units, views out into the field are emphasised, with the majority of living facing out to interact with the surrounding context. The staggered arrangement of these units are intended to encourage visual cues and connections to the surrounding context of landscape character and harakeke extraction stages (fig. 114-115). From afar, the settlement arms stand out from surrounding areas acting as landmarks as they tower out of the harakeke while clustering around one another generating a range in heights (fig. 117).

The main element that ties these aspects of living and working together is the language of the rural aesthetic. Design interventions with the spatial arrangement and materials construct areas to inhabit and relate to one another. It was important to try and integrate the areas between work and play, here the design as stated earlier 'draws' out the processes involved in the extraction of harakeke fibre into the landscape of the site. This allows introduction of access and pathways to move through these stages. By using a similar design language to tie these experiences together it starts to be read as a whole experience. The proximity allows the blending between living, community areas and working space, promoting participation and involvement, while generating exposure to the experience of the harakeke extraction and facilitating and promoting community accord within the rural environment.

Figure 113 Opposite page showing an aerial view over the multifunctioning design with living, working and environment all working together to construct a rural experience.

Building experiences

Figure 114 Diagram outlining the structure behind the settlement arms. With emphasis behind the concentration of living with common areas outlined along the arm to provide views and connections to the surrounding context.

Figure 115 Diagram outlining points of experience within the overall layout of the design

Figure 116 Plan of central common space and how levels begin to construct space directing movement out towards the harakeke edge and views towards contextual elements.

Figure 117 Perspective approaching one of the settlement arms. To the left you see the harakeke hugging the road and to the right the harakeke fibre drying and bleaching on lines.

Figure 118 Perspective down one of the settlement arms with the views being focussed towards the surrounding context.

Figure 119 Perspective of one of the community points that has exposure and access into the harakeke plantation. The retaining walls start to partition spaces giving elevation and separation to allow areas of privatisation.

DISCUSSION

Revitalising Rural Landscapes

Notion of Abundance

Authenticity

Diverging Rural Authenticity

Rural Living

New Ways to Re-inhabit the Rural Lifestyle

Dissonance in Revitalisation

Environment Informs Economy which Informs Spatial

- 1 Preparation Storage
- 2 Soaking Beds
- 3 Stripping
- 4 Rinsing
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- a Retention pond
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Revitalising Rural Landscapes

Notion of Abundance

In order to revitalise a monofunctioning rural landscape variables must be added in order for development to take place. These variables need to bring forward opportunities, variance, vitality and diversity to achieve some form of revitalisation. A sign of achieving this revitalisation is the notion of abundance. This conceptual notion developed from the process of the design experimentation, with the word 'abundance' emerging as a result of exploring the dissonance of revitalisation and the potentials offered.

Abundance is something that can be considered to be variable, plentiful and dynamic. However, this notion is really a multi-layered order that has been refined in this research from the three key design drivers for revitalisation: environment, economic and spatial diversity. It is these three drivers that are thought to help sustain the future for the region, to make it appealing when compared to urban living and other successful New Zealand regions such as the Tasman District and Hawkes Bay.

Figure 124 Regional settlement network constructing diversity for this notion of abundance.

Palmerston North

4,446

1368

15,507

Levin

5,466

14,096

Paraparaumu

29,0649

Base Image Credit- Winston Dewhurst

10.KM

Abundance Aspects

Environment diversity – Lake restoration with the introduction of harakeke into the historic wetland areas where the greatest pollution run off problems stem from. This filters and cleans nutrient rich waterways from excessive agricultural runoff. One plant provides a filtration uplift for these waterways while also providing a habitat for local wildlife. This aspect alone provides biodiversity to the region and benefits aquatic species, birdlife, vegetation, communities, cultures, and builds the overall character of the landscape.

Economic diversity – Multifunctioning landscape of the harakeke being harvested moves away from the monofunctioning nature of agriculture. The idea of a subtle divergence on the existing land use practice would promote new authentic experience through this engagement with the extraction processes of the harakeke. Providing new jobs, economic profits and more product variety for the region while retaining more strategically placed agricultural practices away from fragile environments.

“There is no answer to the evils of mass unemployment and mass migration into cities, unless the whole level of rural life can be raised, and this requires the development of an agro-industrial culture, so that each district, each community, can offer a colorful variety of occupations to its members.” (Schumacher, 1973)

Spatial diversity – Introducing design intervention elements provides an opportunity to inhabit part of this landscape. By introducing this concept through a number of scales and taking into consideration the above aspects, integration between the three aspects begins to take place. The design elements start to act as a thread, connecting the three creating an experience as a whole. By introducing a diverse range of landscape interventions at a number of scales to the research, the design can start to interact through the number of scales of local, neighbourhood and region, building the quality of an experience. This begins to introduce a spatial structure to the design, informing a logical infrastructure, adding to the functioning of the regional landscape.

When read together these three drivers begin to construct this notion of abundance. They influence the way in which the rural landscape, lifestyle and living is to be perceived. These three inputs evolved from the sites issues, disciplinary tendencies and literature around revitalisation. On researching what would be required to revitalise Lake Horowhenua the concept evolved, moving on to outline three discussion points and building on this notion of abundance from revitalisation. These each hold significance and generate an aspect in which rural revitalisation design can be reflected upon and evolved for other sites (fig. 125).

Figure 125 Three input design driver matrix which informs this notion of abundance. The lists below start to suggest possibilities for the region of Kāpiti/Horowhenua.

Authenticity

Diverging Rural Authenticity

Developing a divergence in current rural land use in the revitalisation of Kāpiti/Horowhenua poses new potentials, building experiences as a result. By looking closely at the land and taking into account that it was once dominated by wetlands, areas of Kāpiti/Horowhenua can be identified as suitable for harakeke. Building upon this idea of restoring wetland planting, a specific economic process such as harvesting the harakeke leaf can bring conservation and economic potential to the area. This process has allowed the introduction of new development potential, informing new authenticity.

Developing a design based around the introduction of a new economy poses disputes between sectors of economic, environmental and private ownership with existing productive rural land. These disputes require compromise and a shift in rural authenticity which promotes new experiences and engagement with the region. This design looks at introducing a new economy that will work in parallel with living, a form of co-existence, to create a new way to inhabit rural landscapes and works towards turning these disputes into positives. By promoting areas of interaction and exposure to the harakeke extraction processes an experience is constructed.

This production process produces a variance of experiences at the different points of extraction, these observations and experiences help to create this diverging authenticity. This begins to build a memorable relationship unique to this region

that relates to the revitalisation of Kāpiti/Horowhenua, Lake Horowhenua and environs. On promotion, one would speak highly of the rural nature, outlining the process and production of a particular product, while advertising the locally sourced, locally produced product of the region which will act as a draw card to experiencing the area.

Developing this design looks at how the adaption of land use informs authenticity, resulting in a shift in rural landscape use to contribute to the diversifying region, building a multifunctioning landscape. The quality of experience of rural landscapes over the years has shifted. Once a traditionally naturalised 'abundance' that dominated Kāpiti/Horowhenua's environs it is now controlled and fatigued from the new pressures of economic disputes. The environment was first altered to create a landscape that was more reminiscent of the traditional British countryside when first colonised. Presently, there is very little change to rural landscapes as development has saturated the environment agriculturally, subsequently adapting at a relatively slow pace in comparison to Colonial times. They are assumed to be operating at supposedly efficient production levels through very controlled environments with massive emphasis on production. This slow change has begun to cement current agricultural systems as being a part of the identity behind the functioning of the rural landscape. This is predominantly due to the control of privately owned land, giving little opportunity for public interaction with the rural

landscape and economies because of the productive pressures that surround agricultural economies.

Although this response to revitalise Lake Horowhenua is not a naturalistic approach and constructs restoration around the economy it does add more of an integrated approach to restoring the lake as a system. Addressing one of the sources of the problems i.e. runoff, surrounding the lake it promotes a healthier environ, resulting in lake regeneration. Regeneration would encourage a more personal and interactive relationship with the lake, with the economy also encouraging a stronger connection with a functioning rural landscape. This developmental potential for a slightly diverging landscape creates opportunity for the establishment of a multifunctional landscape as opposed to the current monofunctioning system of agriculture.

Rural Living

New Ways to Re-inhabit the Rural Lifestyle

By exploring the revitalisation of a rural landscape many issues are resolved with solutions globally applicable. Although these conservation methods are beneficial to the environment, this research has questioned; if there are further advantages? And if so, how one might further this process by adding layers to the solutions? When starting to formulate answers some of the problems connected to rural landscapes, more questions emerged through the design phases. How can we possibly fashion rural conservation to establish new ways to inhabit these landscapes rather than trying to avoid inhabiting them? When exploring this question development of settlement patterns emerged and were explored from the conceptual stage through to the developed design to established new ways to bring a new hybrid land use to the region. By approaching the issue of poor water quality and encouraging lake side living, the settlement needed to spatially belong without destroying the appeal. The focus around this settlement was to create community within the rural environment and promote rural living which was different to traditional rural living.

Exploration tests of how one might settle in these fragile landscapes began to uncover more site specific approaches, informed by landform features, economies, and how these can structure settlement. In the early stages of the design process, exploration in four test areas were being undertaken, each taking on a different characteristic due to the landform and the influencing economy. Looking into the landform of specific sites exploration by drawing over photographs allowed for tests and development of an appropriate vision for these specific areas. For example, looking to the west of the lake, the rolling dune hills and developing how the design can be informed around

this. These hills begin to make micro communities with liveable land on the lower extent of some of the slopes which encircle higher return workable land on the lowland.

In the developed design, working towards the harakeke economy and looking at the reintroduction of the wetland environment to the site, indicated a strong influence on the structure of new rural living. The harakeke will need a different type of settlement, which can be fitted onto the ridges in a more intense way than found in traditional farming, but not so intense as to lose this quality of rural living. Through concentrated dwellings and positioning them along the ridges they form a linear structure that indicates living together, generating densification. This promotes new rural living through a number of ways by situating living within an economy, based around the harakeke plantation, providing a new type of rural setting and density that touches on urban, while still focusing on promoting the setting to maintain a rural feel. This rural living provides a unique experience that speaks strongly and constructs the context of the region. The location of this settlement back from the lake edge still promotes a relationship with the lake without fully compromising the economy and living. Concentration of density works towards avoiding sprawling settlement within the landscape, disrupting character within the setting. Each dwelling unit then begins to relate to its surroundings through views and proximity, forming new connections to the context of the lake, dunes, waterways and harakeke extraction processes.

Building more of a community environment in rural landscapes like Lake Horowhenua, speaks of traditional characteristics of settlement, where Māori used to occupy land in living clusters next to resources such as crops and waterways. This community would encourage a stronger relationship with others as well as surroundings by visually or physically interacting with the extraction stages of the harakeke.

Dissonance in revitalisation

Environment Informs Economy which Informs Spatial

Many fragile landscapes where rivers and wetlands exist, or have been cultivated for the purpose of intense agriculture are beginning to undergo change. Better understanding of the issues surrounding land use practices involved in agriculture, questions of restoration and revitalisation of natural systems are emerging. The challenge found in this research is overcoming the dissonance in revitalising the lake. Like Clemmensen's thoughts on the dissonance to nature restoration the drivers do contradict one another to some extent. For example, economic and environmental diversity often contrast and result in compromise needing to be reached. This can include losing productive land to riparian planting. One approach explored is how a third driver, spatial diversity, can introduce new ways to interact with both of these design aspects and begins to bring them together into one over arching experience.

"Diverse craft is required to join landscape at different scales. Site planning involves the consideration of functional spatial structure, at an early stage of a project, to develop logical infrastructure." (Dee, 2012)

Often displacement arose as a result of economic and spatial diversity, for instance, changing land use as a result of searching for environment diversity. Environmental diversity first emerged while searching for ways to improve the water quality of the lake. This was established through riparian planting, however this would create little diversity at this scale. To increase diversity potential to revegetation, agriculture would need to be

pared back away from water sources. With more revegetation it will add to the environments visual and physical character by promoting wildlife to return to the area. This not only treats the waterway, improving the health of the lake and visual character, it contributes to increased human occupancy i.e. recreation. This design move would result in a large economic downturn for the land surrounding the lake. Native horticultural plant choice became important in the development, shifting this displacement and turning it into a potential opportunity. Harakeke provides excellent nutrient uptake and wildlife habitation, while also offering economic opportunity with the extraction of its fibre. In order for this revegetation to have an economic return a substantial plantation of harakeke is needed to establish any economic potential. A plantation of this leafy plant would create a large mass of plants creating a unique setting and spatial feeling. This therefore influences ways in which we can introduce settlement while constructing new concepts of rural living. Through the design the approach to achieve this revitalisation was not perceived to be 'a restoration trying to reconstruct the natural setting of the lake' but rather, to construct 'a constructed restoration' that addressed broader issues than purely the environment.

Conclusion

This research has explored a particular way in which we can design to revitalise rural lifestyles through the restoration of a natural resource. The test site of Lake Horowhenua within the region of Kāpiti/Horowhenua Coast was seen as a vehicle to test specific ideas within a struggling rural landscape which captures many of wider New Zealand's rural issues. This revitalisation method occurs through three drivers; economic, environment and spatial diversity and is illustrated specifically around the integration of harakeke within the current monofunctioning landscape. These drivers are only one way to revitalise a rural landscape but were seen as aspects to be improved within this particular test region.

This design research has investigated landscape architectures discipline tendencies to revitalise a rural landscape and has attempted to add a diverged approach. This emerged during the developing strategies, working towards integrating the three drivers, in order to answer the discipline dispute between revitalisation and current rural landscape practise. This creates abundance within a rural region, offering opportunity to retain or even attract new populations to inhabit these environments. With a shift in land use the question of revitalisation brought

forward dissonance to existing practices. The question was then raised as to how to work this into some form of opportunity to benefit the rural landscape. By removing some agricultural land to address environmental issues the challenge was to create an economical return without jeopardising the environment again. This was achieved by moving away from a monofunctioning economy and diverging into more environmentally friendly economies. This created a multifunctioning landscape which provided variety in the function to the context. By promoting a new economy the opportunity to engage with such a process emerged. With a development of involvement to how this rural landscape then functions, assists in developing a sense of authenticity, to build a unique experience relatable to this particular location or region. With the emergence of new land use the desire to introduce a new type of concentrated rural living could be established to accommodate new residences encouraging proximity to the lake and the new economy. This would also aid the infrastructure, to restore the lakes health and aid in a diverge in land use between economies both monofunctional and multifunctional.

Much of rural New Zealand is facing the same pressures as

the Kāpiti/Horowhenua Coast and this approach of diverging existing land use slightly could be developed elsewhere. The process of integrating harakeke into existing land use could be used anywhere in New Zealand. A development does not need to be to the same extent as this particular research study but consideration could be given to create further ways in which this integration could open up access to our rural landscapes and environs.

Further developments in research can be explored. One option is through alternative drivers to revitalisation. The approach taken was one method and there are many others that can be developed for specific sites and catering for different characteristics. Another approach to furthering this research would be to apply the drivers of revitalisation in another region to see the outcome. This could result in a higher priority being placed on a particular driver over the others, for example, more emphasis directed towards environmental diversity as this may be the driver which lacks the most. Also, if this rural revitalisation were applied somewhere internationally, a question of what the drivers might need to be could be raised as, these might change depending on the scenario and priorities present.

This thesis was created to develop an approach to addressing specific issues surrounding the revitalisation of Lake Horowhenua. From attending site visits, planning, drafting stages, research and implementation what emerged was clearly the importance of building 'abundance'. In order to revitalise such an amenity you need to develop opportunity – through economic, environmental and spatial diversity. Revitalising this setting created new concentrated rural living, explored dissonance within a region, while introducing modified rural authenticity specific to Kāpiti/Horowhenua.

Figures List

All figures not attributed are authors own.

Figure 01 Lake Horowhenua, ca 1866, The painting shows eel traps and two whares in the foreground at the lake's edge at a river mouth. Three Māori are standing and seated in front of the buildings and there is a small canoe in the water and a European yacht in the distance. Harakeke and tall trees surround the water's edge and the Tararuas can be seen in the background.

Source: <http://horowhenua.kete.net.nz/en/site/topics/2162-lake-horowhenua-and-early-maori-history>

Image credit: Horowhenua Historical Society Inc

By: John Barr Clark Hoyte

Figure 03 Image opposite: Historic Adkin map of Lake Horowhenua and it's environs

Source: <http://horowhenua.kete.net.nz/en/site/topics/2162-lake-horowhenua-and-early-maori-history>

Figure 04 Aerial from west of Lake Horowhenua looking back towards Levin.

Source: <http://horowhenua.kete.net.nz/site/images/show/8645-aerial-view-across-lake-horowhenua-to-levin-1929>

Figure 09 Image j: Aerial over the dune ridges that help contain the water from the lake

Source: <http://horowhenua.kete.net.nz/en/site/images/786-aerial-view-of-lake-horowhenua-and-levin>

Figure 17 A substantial number of small settlements dispersed within the Kāpiti Coast stretch.

Base image credit: Winston Dewhurst

Figure 18 Series of historic images illustrating a variety of activities that used to operate on and around the lakes environs. Also highlights how the lakes edge treatment of vegetation changes as time progresses with deforestation as a result of forestry and an intensification of agriculture.

Source: <http://horowhenua.kete.net.nz/en/site/topics/2162-lake-horowhenua-and-early-maori-history>

Figure 22 Image opposite: Historic plan of the Kāpiti region. Cadastral plan showing the division over natural land form with the settlement centres being located every 10 miles along the rail line

Base image source: http://archivescentral.org.nz/image_files/0000/0000/0661/HRC_00237_1_2919-14.jpg

Figure 30 Low density and small settlements spread thinly across the district

Image credit: Winston Dewhurst

Figure 32 Water Networks sprawling throughout Kāpiti Coast consisting of rivers, streams, wetlands, dune lakes and coastal areas. These are all affected by the agricultural land uses that dominate much of this regions resources.

Base image credit: Winston Dewhurst

Figure 34 Lake Horowhenua and its environs pre 1950s with Māori place names
Source: <http://horowhenua.kete.net.nz/en/site/topics/2162-lake-horowhenua-and-early-maori-history>

Figure 43 Portrait of local iwi occupying a waka landing point of the lake. Estimated to be near the current lakes Domain which exists today.
Source: <http://horowhenua.kete.net.nz/en/site/topics/2162-lake-horowhenua-and-early-maori-history>

Figure 45 River Skjern restoration through the ‘wilderness paradigm’ to work towards restoring nature
Source: The Management of Dissonance in Nature Restoration. Journal of Landscape Architecture

Figure 46 River Aire and its four stage revitalisation plan. Taking the form of a ‘cultural landscape’ paradigm
Source: The Management of Dissonance in Nature Restoration. Journal of Landscape Architecture

Figure 47 Screen shots from ReDane outlining the images surrounding the pig industry and how the country side is seen as a factory rather than a biodiverse environment
Source: ReDane- A New Countryside [Short Documentary]

Figure 54 Verticality and proximity creates thresholds between spaces. This construct gives a central public space with private, working and access spaces sheltered by the surrounding buildings.
Source: <http://votrongnhia.com/projects/house-for-trees/>

Figure 56 Photos showing the aesthetic of the design and how the terrain, housing and retaining define space and allow for access. These elements of the design create a unique way to live within a rural setting such as this.
Source: <http://europaconcorsi.com/projects/233250-MASS-Design-Group-Butaro-Doctors-Housing>

Figure 85 Historic extraction process of harakeke.
Source: <http://horowhenua.kete.net.nz/en/site/topics/2475-miranui-the-story-of-new-zealands-largest-flax-mill>

Figure 124 Regional settlement network constructing diversity for this notion of abundance.
Image credit: Winston Dewhurst

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