REVIVING THE HEART

Establishing Place & connection through the architectural mechanism and fabric of a transport interchange, using Trivalent Design

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A Research Project submitted in partial fulfilment of the requirements for the degree of Master of Architecture Professional.
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REVIVING THE HEART

Master Thesis Explanatory Document

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This research project, REVIVING THE HEART, researches and explores architectural solutions in connecting the people of Auckland back to their urban fabric of Auckland and each other to restore their sense of place.

Auckland is facing a pandemic of suburban sprawl. Generating a vast unsustainability transport network, a poorly equipped public transport system and therefore a disconnection in the lives of the commuters and people of the city. The disconnection stems from the lack of place, a combination of social interaction, poor architecture, urban design and transport planning.

This project seeks to focus on the major interchange of Auckland, utilising the necessary activities generated as a mechanism to create ‘place’ through the architectural intervention. From this the goal is to enhance the public transport system and the commuters experience, through people choosing to be there as a result of the sense of place and community, whilst also re-activating an existing site.
I would like to sincerely thank the following people for the support, help and importance they have been in the course of this project:

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This explanatory document has been prepared by myself, Callum Bryce Barnett - 1367931, in partial fulfilment of the requirements for the Master of Architecture (Professional) degree.

I declare that all work within this document has been done in accordance with the guidelines stated in the Unitec Student Handbook 2017.
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There is a desire in most of us to be near others, socialising and interacting. It adds comfort, intrigue and happiness. We would consider that you would achieve this in large cities with increased activities and population densities. Yet so many cities do not. People move to the city from small towns and villages for greater opportunities, to see more people, yet realise that seeing is not always interacting. Work and transport dictate their lives and time becomes scarce.

As Jan Gehl acknowledges as a modern phenomenon 3 life revolves around many of us living in small apartments or houses, frequently on our own. Cities that are so full of people are not always full of interaction and life. The largest cities can be the loneliest places!

In the road systems that feed the city, the public spaces and streets are choked with motorcars, inhospitable for humans and therefore suffocating street life. To live in these cities it is necessary to accept the transport available.

It means spending time in traffic and congestion, and less time at home or in public spaces. Less time socializing and interacting. People are essentially becoming more and more disconnected with their city, street, and each other. Streets and transport systems are the arteries to the city, the public spaces and streets are choked with motorcars, inhospitable for humans and therefore suffocating street life. To live in these cities it is necessary to accept the transport available.
To re-connect, there must first be an understanding of what & why connection has been lost. The problem can be traced back to the late Nineteenth and early Twentieth Century, where the architectural revolution of modernism was emerging from the issues and dogmas of industrialisation. Modernists advocated zoning and the segregation of functions and activities, in an endeavour to cure industrial urban living conditions. Zoning had a substantial impact on the urban layout, with the segregation requiring people to travel, consequently needing larger roads and transport systems. The highways constructed in the 1950-1960’s to support growth effectively destroyed the pedestrian friendly streets, disconnecting people further from each other and their place. The highway system seeks to connect in physically, yet has become a primary reason for our disconnection socially and emotionally with other people. While it can be argued that you are surrounded by people in cars, the scarce social or emotional response that is achieved is either a polite wave or the venting of road rage. Cities are first fashioned from the geography, yet it becomes clear just how much impact that road infrastructure has in shaping the urban fabric of cities and towns and therefore our way of life.

“Auckland is one of the most automobile dependant cities in the world. It is a continuing saga of how Auckland has failed to develop a decent public transport system.” - Sir Peter Newman

Auckland City, the new ‘super city’ of New Zealand faces these severe issues and is in a crucial moment where decisions need to be made in the direction of the urban layout and transport systems. Auckland has become a low-rise, sprawling car-based city with a population of 1.4 million and with projected growth of 800,000 more people in the next 20 years. The Mayor has proposed a vision for Auckland to become the ‘world’s most liveable city’, producing this vision would mean enhancing the social and physical interaction, creating conditions so that people want to be there, rather than need to be there. There is a sense of placelessness.

“Auckland and New Zealand’s, infatuation with the motor vehicle and in certain cases the motorway has been a predominant factor in the city’s social decline. As prominent transport blogger Patrick Reynolds quoted, “This is it. The machines have won”. In questioning this statement, anyone who lives in Auckland simply needs to ponder on why they are spending on average 47 minutes in congested traffic for every hour they travel. In late 2015, it was reported that approximately 800 cars were registered on Auckland roads per week and that the hours of traffic congestion had increased to seven hours each day”.

"...the city’s social decline. Producing this vision would mean enhancing the social and physical interaction, creating conditions so that people want to be there, rather than need to be there. There is a sense of placelessness..." - Patrick Reynolds
Traffic engineers have been planning this city for too long, devising ways in which to make the motorcar ‘happier’. As Enrique Penalosa, the Mayor of a Colombian city states, “a city can be friendly to people or it can be friendly to cars, but it can’t be both.” He is a strong advocate for creating cities predominantly focused on making people ‘happy’, not blindly following in the footsteps of western cities focused on expensive, unsustainable transport solutions. Instead, he invested heavily in parks, cycle ways, public transport, and pedestrian walkways. The disturbing reality of the effect on our social lives of the current transport systems in western cities is far less obvious.

There are many factors contributing to these statistics, therefore it would be wrong to single out transport and urban planning as the fundamental issue. However, it is the environment we live in and the activities of daily lives that determine how socially healthy we are.

Travelling via motorcar and the combination of modern technologies, including cell phones and computers, has allowed people to drastically reduce their exposure and interaction with other people. The social damage this is causing, particularly in younger children and teenagers, is difficult to calculate, as Charles Montgomery has pointed out.

The impact is not only contained to social disruption; it effects the natural geography, ecology, city growth, and creates vast financial burdens in a time of fiscal necessity. The transport links in Auckland are the city’s blood flow. They are vital and are not performing to their potential.
The aim to restore people to their place, their city, to reinforce a positive social community, and amend the city’s transport system is a task that cannot be resolved through one research project or architectural scheme. What can be achieved or attempted is to create a precedent in Auckland that re-connects people to their city and each other, but do so in a way that has identity, meaning and enhances that location.

To do so requires the exploration of place-making, identity or sense of place: something that is notoriously hard to define, yet fundamental in architecture. For the purpose of this thesis, it can be defined as the humanness of a place, its sense of liveliness or the extent to which it is memorable to us. Edward Relph describes the strongest sense of place as ‘existential insideness’ – a conscious immersion in a place and experience most people know of as their own community.

While it may be argued that creating place cannot be achieved by man-made interventions; there can be a strong framework established that allows it to develop over time. This research, therefore, explores theories and concepts that generate elements of this framework, allowing me to test my architectural ideas and various existing precedents that will be analysed.

“It is a city that has so much going for it, it’s beauty, it’s location, and yet they filled it so quickly with cars that it becomes a nightmare.” - Sir Peter Newman
In the desire to restore human connection and interaction socially and physically, it is necessary to first analyse where this interaction is predominantly occurring. An example is the Dutch architecture firm 3XN, who in the process of designing an open-plan secondary school had the desire to locate the place of most interaction between the students, and emphasise this area. It was not the open areas of seating and gathering that this occurred, but the staircase. The place where people were travelling from one activity to another, where their paths crossed and they talked and interacted.

Therefore the staircase in this school became the prime focal point of the design: this is the place of transition and interchange between activities. The interchange of routes is fundamental, being the foundation of many towns and cities. Beginning as merely a crossing of roads or paths, the activity generated by the interaction creates more activity, as human activities attract more people. The interchange is the transitional space between necessary activities.

12 Auckland Council Dept Of Ki
terengo Place Auckland Council Water
town Auckland Ltd 2011: http://www. aucklandcouncil.govt.nz/our_effective
development/planningsetup/growing. 
web/growingsetspace/growingset.pdf pg.2
13 Jan Gehl Life between build-
ings: using public space (Washington: 
Island Press 2011) p. 23

“In the desire to restore human connection and interaction socially and physically, it requires analysing first where this interaction is predominantly occurring.”
Yet these activities historically lead on to much more; for example, the gathering and interaction of people at the cross roads leads onto pop-up markets. However, this project needs to address more than the interchange alone. To establish a successful architectural precedent requires amalgamating the ideas of connection, interchange and place-making. Without the entwining of place-making principles, the interchange is merely an efficient machine (or often not so efficient). An example is the London underground sub-way, not a place people desire to go to, but a place where they need to go in order to travel. The interchange creates the physical framework for interaction, harnessing the need of people to be there or passing through in a way that it is discovered as more than an interchange, but a destination. This will help to stimulate and create place.
1.4 | RESEARCH QUESTION

REVIVING THE HEART

Establishing Place and Connection through the architectural mechanism and fabric of a transport interchange, using the theory of Trivalent Design

1.5 | AIMS AND OBJECTIVES

The purpose of this project is to research and explore architectural and urban design solutions, in connecting the people of Auckland to their urban environment and each other, through the investigation and application of the feeling of place. I am proposing a transit interchange, integrating Auckland’s major public transport networks, stitching the city access routes together at a singular point that acts as the central transport hub in the city network. This process will involve utilising an existing transport hub that accommodates the appropriate infrastructure, yet amalgamating the different modes more efficiently with particular attention on the in-between space. I will develop the architectural intervention in this space, with a focus on people, exploring new ideas and ways of creating a transitional and therefore interactive public complex. From this I hope to enhance the current public transport system, through people choosing to be there as a result of a sense of place and community, whilst re-activating an existing site.

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Figure 1.15 - Diagram(s) indicating the process of identifying the intended area of research, through three major overlapping categories.
1.7 | METHODOLOGY

This research project involves two categories of research methodology; research for design, and research by design. Research for design will involve extensive analysis on significant historical and cultural events, to help gain understanding of the context and why it has developed into its current form. Exploration of the site is critical in discovering varying connections that make it meaningful, specifically to the people who associate the place as important in their lives. This investigation will also encompass additional information relating to the site including climate information, coastal and ecological conditions, built environment, and transport links and nodes. Historical analysis of each transport mode will be studied to gain a further understanding of the site and how it has developed, helping establish a brief to begin the design process. Further methodologies will include researching relevant literature relating to the sense of place, urban planning, coastal design, ecological, community values, and transport requirements. Thoroughly understanding a concept of place is crucial for the success of this thesis, and will involve a collaboration of different texts and opinions to be tested in the by design phase. This process will evolve in scope and direction as the information is analysed and explored through the context of the site. Additional research will include critical analysis of precedents that share important similarities regarding context or design processes. These will be examined through information gleaned from the literature study, identifying strengths and weaknesses regarding various functions and aesthetics that relate to the aims and objectives to the research.

1.6 | SCOPE & LIMITATIONS

The scope of this project is substantial and potentially complex due to the nature of a transport interchange, with the overlying theme of place. There are many avenues that can be taken in the research of place; however, this project is confined to quickly refining key points of research into a concise template, with which design processes and solutions may be tested. A key aim is to create a greater awareness of the environment that we live in and consider it through a renewal perspective, of how is it contributing to living a happy life. While not expecting to solve these issues immediately, to establish a precedent that can achieve this awareness is crucial. The focus should not be specifically taken up with the actual transport functions themselves, as much as the fabric and spatial design between.
In order to manifest the architectural development of this project, a site was required. This site had to possess certain fundamental criteria to allow the success of the research to develop. Crucially, it had to be situated in an existing major transport interchange; a threshold where people transitioned. The chosen site is, therefore, the Auckland CBD waterfront.

This is due to the unique infrastructure in-place allowing an architectural intervention within the transport network. The Britomart, Queens Wharf and lower Queen Street serve as the major transport hub in Auckland, and amalgamate together a variety of different transport modes and infrastructure including water ferries, trains, buses, cruise liners and exposure to high volumes of pedestrian traffic. The proximity of these functions to each other provides a great opportunity to create a mega transport centre. One that facilitates not only transport, but creates a precedent in a transport interchange being iconic in its sense of place and identity.

The site is currently being examined to determine its potential: what it could be and how it can be achieved. The existing development is a stepping stone to greater possibilities. It is the gateway to Auckland, the heart of the city, and as the research question alludes to, the chance to revive the heart.
Consequently the area was highly valued and sought after, hence the Maori name. From 1740 to 1827 tribes fought each other for this prize, in particular the Ngati Whata’s invasion of the existing Waiohua tribe, before succumbing later to the Ngapuhi invasion who were aided with muskets acquired from the Brit- ish through trade.14 It was through the last battle and fear of continued aggression from Ngapuhi,18 that helped to prompt the Ngati Whata to sell the wa- terfront land to the Crown for protection, and in set motion the settlement of Auckland.17 The precise location of this beginning lay in the hands of Surveyor General Felton Mathews, where in 1841 he se- lected the mouth of the Hauraki stream to become the new port because of deep water further out into the Harbour from the preva- lent mudflats.18 Mathews’s plan involved a substantial engineer- ing undertaking of excavating Point Britomart and reclaiming Commercial Bay, and Mechanics Bay to allow deep water berths for ships.19 From the early years of occupation it became evident that the harbour and port were funda- mental to the development of the new colonial settlement. Auck- land was essentially a port town.14

SITE HISTORY - Auckland Waterfront

15 Ibid pg. 2
18 Ibid pg. 4
19 Russell Cyril James Stone From Sandra Mahuta’s Rain to Auckland’s Hauraki Gulf (Auckland University Press, Auckland 2001) Pg. 267
21 Ibid Pg. 5

Trade with Maori was thriving with canoes supplying vegetables and meat, ships laden with goods and cargo being imported, and immigrants beginning to flow in at a rapid rate. The waterfront had become a gate way to not only Auckland but to New Zealand. It became a bustling hub eco- nOMICally, with workers dealing in the various industries of im- porting and exporting, in particu- lar a booming Kauri and wool ex- port market. Ships arriving from distant countries not only brought people but news from around the world, therefore the arrival of a vessel was a social occasion that would draw large crowds.20

From Tamaki-Makau-Rau to Auckland: A History of Auckland

15 Ibid pg. 2
18 Ibid pg. 4
19 Russell Cyril James Stone From Sandra Mahuta’s Rain to Auckland’s Hauraki Gulf (Auckland University Press, Auckland 2001) Pg. 267
21 Ibid Pg. 5
There quickly arose the need for further expansion of the port with extensive improvements in 1850 to the "Queen Street Wharf", a 1,400 foot long timber construction that projected out over the mud flats into the deeper water of the Waitemata Harbour, with horizontal piers creating berths at the end. The wharf expanded over the years due to high demand, tottering out over the mudflats into the harbour in disorganised fragments, with bits added when additional berths were needed. Part of this disarray was due to the fact that 360 metres of the wharf nearest the land wasn't viable for berthing as the water was too shallow. To compound the issue, Auckland had transformed from a small port town into a city, with a growth explosion of 27,000 in 1881 to 67,000 in 1901. In 1904, an engineer by the name of W. H. Hamer was commissioned to put together a plan to improve the harbour and port. He envisaged a bold plan of replacing the existing rotting and weary timber wharf with new reinforced concrete 'finger' wharfs, complete with new rail, cranes and further extensive land reclamation into the deeper water.

This was known as the ‘Hamer Plan’. By 1909 the construction of the wharves was almost complete, with the exception of work on the sheds, warehouses, and further piling which continued until 1913. Much development ensued very quickly here on, as the new Ferry Building was constructed for the head office of the ferry companies. This ‘red gate’ still remains and is a symbol figuratively and literally the ‘gateway’ to Auckland for many years, yet perhaps also regarded in later years as a symbolic barrier to access to the water by many people.

The Ferry building, can therefore be seen as the ‘keeper of the city’s gateway’, beginning its life with a utilitarian purpose, and developing throughout the years into a landmark at the foot of the city’s main thoroughfare, Queen Street.
2.1 SITE HISTORY - Significant Events

Being the ‘gate way’ and central gathering point to Auckland meant that Queens Wharf and the surrounding location was host to and exposed to many events that remain significant in New Zealand history. In 1913, there were violent clashes between the port working unions and government special constables, with the port closing and 10,000 workers striking.\textsuperscript{28} It wasn’t uncommon to have choirs, agriculture shows, and boxing matches hosted in the sheds; and throughout World War One troops departed from the wharf with huge crowds of people seeing off loved ones,\textsuperscript{29} these scenes ingrained in memories of thousands of New Zealanders.\textsuperscript{29} Queens Wharf also served as a welcoming point, not just for immigrants and travellers, but was also ceremonially tailored in significant cases including welcoming the Duke and Duchess of York in 1927. It reverted back to a utilitarian role with the onset of World War Two, necessitating the wharf to operate at full capacity to assist sending men and up to 1.5 million tonnes of cargo to the South Pacific campaign.\textsuperscript{30}

Many other events occurred on or near the waterfront that would evoke strong cultural and physical memories and significance, from more industrial dispute (1951), to the sinking of Rainbow Warrior (1985), and the celebrations of winning the Americas Cup. One perhaps understated but significant milestone occurred in 2009, when Queens Wharf was jointly purchased by the New Zealand Government and Auckland City Council.\textsuperscript{31} This substantially unlocked the waterfront, opening up the wharf to the public and has since accommodated the Rugby World Cup (2011), multiple sporting and Triathlon events, and a large variety of food and culture shows.
Transport has always been intrinsic with Auckland’s waterfront. From being the initial gateway to the city, where ships arrived and departed from near and far delivering and transporting goods and passengers, to developing into the nation’s primary sea port. Therefore it was natural that transport links were required in accommodating the ports expansion, with heavy rail for transporting goods and busses, trains and ferries for commuting workers and travellers. All these various transport modes have endured turbulent years of recession, development and differing popularity, yet have all begun or converged on the same place, Britomart.

As the city expanded into the Isthmus’s geographic periphery, Auckland’s waterfront evolved from what was once the gateway, to what has become the heart of the city.
3.1 FERRY ANALYSIS - HISTORY

In the mid 19th century, Auckland's growing population had spread out into numerous scattered settlements, yet were connected by very few suitable roads. Comprising the issue of accessibility, was the natural geographical separation of the Waitemata Harbour, and the increasing settling of areas outside of Devonport and Takapuna. It became necessary to provide a more efficient means of waterborne transportation and communication than the current form of sailing ships, due to unreliability of weather conditions. With the arrival of the first paddle steam ships in New Zealand in the 1850s, several owners of the vessels worked together to attempt to satiate Auckland's need, due to the complete overhaul of its road. It took 20 years for the industry to recover and reinstate itself as a reasonable transport alternative. This recovery was due to the complete overhaul of its facilities, and a fleet transformation overtime from slow ponderous steamships to diesel vessels, due to the complete overhaul of its road. It took 20 years for the industry to recover and reinstate itself as a reasonable transport alternative. This recovery was due to the complete overhaul of its facilities, and a fleet transformation overtime from slow ponderous steamships to diesel vessels, and finally to agile catamarans.

32 Northern Steam Ship Company Over the coming years. By the 1880-1900s, there was increasing settling of areas outside of Devonport and Takapuna. It became necessary to provide a more efficient means of waterborne transportation and communication than the current form of sailing ships, due to unreliability of weather conditions. With the arrival of the first paddle steam ships in New Zealand in the 1850s, several owners of the vessels worked together to attempt to satiate Auckland's need, due to the complete overhaul of its road. It took 20 years for the industry to recover and reinstate itself as a reasonable transport alternative. This recovery was due to the complete overhaul of its facilities, and a fleet transformation overtime from slow ponderous steamships to diesel vessels, and finally to agile catamarans.

33 David Johnson, The Auckland Ferry Building, (Remarkable View Ltd, Auckland 1988) Pg. 49

34 Ibid pg. 58


36 Ferries account for only 8% of the total daily patronage of all the public transport services within the Britomart Hub, yet it is growing at rate of 6% a year and increasing. Therefore, while the current building is adequate, it will be quickly outgrown in demand.

FERRY ANALYSIS - CURRENT

The current (2016) ferry transport hub consists of 4,245m² of building footprint and 2617m² of wharf space, catering for 17 ferry berths. Ferries account for only 8% of the total daily patronage of all the public transport services within the Britomart Hub, yet it is growing at rate of 6% a year and increasing. Therefore, while the current building is adequate, it will be quickly outgrown in demand.

For an example of public transport growth in central Auckland, there were approx. 30,500 daily commuters to the city centre by public transport in 2011, and by 2021 that is expected to increase to 77,500. This is a 135% increase in 10 years. This rapid expansion in the use of various factors. These include a swelling road network that has approximately 33,000 cars added every year, infilling the cities congestion and forcing commuters to look at alternatives.


35 ibid, Accessed 08 14, 2016.

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Other factors include significant residential growth in land around Auckland including Hobsonville Point, Devonport, Takapuna, Beach Haven, and the increasing growth on Waiheke Island where ferries are the primary means of transport. The direction Auckland is heading in with regards to road congestion, and with new technology with faster, cheaper, and more comfortable ferries, they will become increasingly important in the city’s public transport system.

Auckland is essentially a water city, with estuaries, inlets and harbours encapsulating the urban area, and providing considerable access and additional opportunities via water as a means of transportation. The ferries central hub, Britomart, is the engine room and key interchange in keeping the system running. To cater for the projected commuting growth of 31% by 2021, the building footprint needs to increase to approximately 8490m² and wharf area of 5234m².

Figure 3.8 - View from ferry leaving Central City ferry terminal

Figure 3.9 - Chart showing the different modal types increasing and decreasing over time. Ferries are shown in blue. Dashed line indicates the finished construction of the Auckland Harbour Bridge, and can clearly show the impact it had on all other public transport services. Ferries suffered heavily due to the commuters utilising the bridge in their cars.

Figure 3.10 - Map of Auckland displaying current ferry routes in grey, and future potential ferry routes in red.
3.2 HEAVY RAIL ANALYSIS - HISTORY

Heavy Rail was introduced to the Auckland waterfront in the 1870s, assisting the Port in the transportation of imports and exports. It was one of the primary reasons for the additional land reclamations at the time, to allow the railroad to extend to the bottom of Queen Wharf and became a vital artery in the economy of the city. In 1873, the Auckland Railway Station was established on the eastern end of the waterfront until 1885, where it was relocated to Britomart. Rail was however, only partially effective in the transporting of goods to and from the port as there was a disconnection between vessels and the trains, requiring extensive manual handling. When Hamer’s new concrete wharves were installed, tracks were laid out beside the vessels, requiring the vessels and the trains, requiring disconnection between the entrances of new electric trains and the surging popularity in commuting via rail, has meant that the Auckland Council and New Zealand Government have had to (in some cases reluctantly) resolve the issue through the most ambitious civil project in the country to date, the City Rail Link. This $3 billion dollar project consists of a 3.4km tunnel extending the rail from Britomart to Mt Eden, with the addition of three new stations, and is set to be completed in 2026. To prove how the quickest journey will be, is the forecast daily trips to the city in 2041 without the CRL at 34,000. Early predictions also expect a 40% increase in daily patronage upon completion, with more trains more frequently.

The City Rail Link is fundamental to the future prospects of the transport hub, it will drive growth and reconnect central Auckland to the waterfront. A key factor in this research will not be in redesigning an existing proposed scheme, but creating seamless ‘connections’ within the hub itself to other transport modes, and what happens in the space between.

HEAVY RAIL ANALYSIS - CURRENT

The $250 million dollar terminal created an instant impact, vastly increasing efficiency. These tracks were placed down the waterfront (Quay Street) to a newly repositioned station on Beach Road in 1930, with the vacant premises converting into a bus terminal in 1937, and a carpark in 1958. This re-established the status quo until 1995, when Auckland City Council played to the old post office building and redeveloped it into an underground train station, which opened in 2003.

FERRY ANALYSIS - CURRENT

Figure 3.12 - Proposed CRL illustration

The $250 million dollar terminal created an instant impact, vastly increasing efficiency. These tracks were placed down the waterfront (Quay Street) to a newly repositioned station on Beach Road in 1930, with the vacant premises converting into a bus terminal in 1937, and a carpark in 1958. This re-established the status quo until 1995, when Auckland City Council played to the old post office building and redeveloped it into an underground train station, which opened in 2003.
3.3 | BUS ANALYSIS - HISTORY

Buses have been Auckland’s dominant form of public transport since the 1960s, capitalising on the Central and Local Governments heavy investment on road infrastructure, and accounting for an overwhelming 73% of daily commuters to the city centre daily by public transport.\(^{46}\)

The transport mode was introduced to Auckland in the early 1920s as an extension of the existing tram network, carrying commuters from the tram lines into the suburbs. By 1921 there were 190 buses operating in tandem with the trams.

This however, soon eventuated into direct competition, as the inefficient early petrol buses were replaced with trolleybuses, and later powerful diesel vehicles. The electric trolleybuses utilised the existing tram overhead line network, and were used up to the late 1960s until diesel buses became more efficient and had less infrastructure costs.\(^{47}\)

BUS ANALYSIS - CURRENT

The existing Britomart bus terminal (2016) consists of up to 12 stopping points utilising 2500m\(^2\) of road area and spread out over two blocks on the Auckland Waterfront. Its annual growth is around 0.7%, not particularly high compared to the growing popularity of the train and ferry networks. However, this is still an annual increase of around 400,000 passenger trips per year, and there is a projected 31% increase of growth from 2016 to 2041.\(^{48}\)

Therefore the Britomart terminal requires an increase in area to approximately 3300m\(^2\) to cater this expansion. There have been ongoing issues from 2015 with bus commutators frustrated at the stretched capacity of the lines, with buses arriving at each stop with no space to spare. The Auckland Council has helped alleviate this issue with double decker vehicles, yet the bus system is still compounded by the issue of congested road networks.

The current Britomart terminal is a spread-out and convoluted system which creates a significant impact on the pedestrian patterns around the site. There is a need to amalgamate the system into one terminal in a way that minimises street impact, remains efficient, and can cater for growth whilst connecting into other modal systems. The current Britomart terminal is a spread-out and convoluted system which creates a significant impact on the pedestrian patterns around the site. There is a need to amalgamate the system into one terminal in a way that minimises street impact, remains efficient, and can cater for growth whilst connecting into other modal systems.
Trams are the transport system that has been forgotten, neglected and pushed aside in Auckland’s rapid development. It is easy to overlook the importance light rail has had on the city historically, and how they shaped the outlying suburbs into what they now resemble. The first renaissance of the service began as a horse-drawn tram up Queen Street, before the expensive and unwieldy steam trams in 1884. An electric tram system opened in 1900, developing into an extensive network that spread from Queen Street into the outlying suburbs to Onehunga in 1919.

The last remnants of a once significant transport network are now in the Wynyard Quarter, a shadow of what it once was. The Auckland Council and Transport New Zealand have been mooting the possible return of a tram network for the last few years, with various feasibility schemes proposed.

There is substantial demand for an economically viable solution for public transport to the Auckland Airport, which is currently favouring light rail. The potential to reinstate Queen Street as a pedestrian street with trams is significant, as well as linking Wynyard Quarter and inner Auckland suburbs. Britomart is the historical and logical location to recreate a tram transport hub, one that connects and extends to other modal services.
Whilst passenger ships are clearly not a new phenomenon to Auckland, ‘recreational’ cruise ships are a relatively recent addition on the historical timeline. It wasn’t until around the 1980s that their popularity surged and the Auckland waterfront came to host the vessels for a few months of the year.

The global cruise industry is in a period of significant growth and expansion, particularly in Australia and China, where passenger numbers are increasing by 33% each year. The proximity of these countries to New Zealand produces an on-flow effect, resulting in surging numbers of vessels coming to the country. The number of voyages planned are anticipated to inject around $436 million dollars into the economy annually.51


The finger wharves of the Auckland waterfront provide a valuable setting where the ships can dock right in the heart of the central business district.52


This is a rarity in destinations around the world and creates an essential drawcard to the cruise industry, allowing Auckland to become a highly sought after destination. The existing docking locations on offer consist of Princess Wharf as the secondary berthing wharf, Queens Wharf as the Primary berthing wharf, and if necessary the use of the port facilities as an overflow. The Queens Wharf cruise facilities comprise of a 1900s store shed (Shed 10) with approximately 4700m² of open plan flexible area, with a rail line down the eastern side of the wharf that accommodates a portable access ramp for passengers and supplies.53


There is enormous potential in developing the cruise industry further on the Auckland Waterfront. The existing facilities are at best adequate, yet the future expansion of the industry requires more space to grow, with a possible increase to around 6250m² floor area by 2041. There is also the compounding issue that vessels are becoming extremely large, and to compete globally the facilities need to adapt to ships around the length of 350 metres in length.

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In the desire to create place, it is crucial to comprehend what it really means and why it is fundamentally needed. Place (or ‘a place’) has been described as the spirit that is perceived and noticed in an environment, referred to as its genius loci.54

This is an ancient Roman concept whereby the genius is a guardian spirit, one that determines the character or essence of a certain individual or place.55 This essence comprises of particular qualities that fused together give the location an identity as a whole. There can be no individual element, one that alone creates the desired effect. Christian Norberg-Schulz reasons that ‘place’ is fundamental, and something more than an abstract notion, but consists of “…a totality made up of concrete things having material substance, shape, texture and colour.”56 However it is not just the material substance or natural geography that starts forming this atmosphere, it also consists of the local relationships to the site, the history, the climate, the light and weather, and the smells.57

Things that make that place identifiable to those within, so they are left with a memorable experience. It can be debated that this cannot be achieved through a man-made intervention, instead developing on its own accord through the accumulation of history and experiences.

54 Florian Tigges and Alban Janson Fundamental Concepts of Architecture - The Vocabulary of Spatial Situations (Walter de Gruyter Birkhäuser, Basel 2014) Pg. 229
56 Ibid pg. 7
57 Florian Tigges and Alban Janson Fundamental Concepts of Architecture - The Vocabulary of Spatial Situations (Walter de Gruyter Birkhäuser, Basel 2014) Pg. 229
GENIUS LOCI INTRO

However as Norberg-Schulz suggests genius loci consists of tangible elements, that of built form, natural topography and materiality to name a few. This allows the possibility of the built form (architecture) to have a significant impact on the outcome of what atmosphere is present. In deconstructing previous arguments and makes on the sense of place, it becomes clear that the majority of definitions refer to the emotional connection between people and place. This would therefore require at some stage an interaction of the human and the place they are experiencing, again reinforcing the importance of the tangible experience and physical attributes of a place. However through this interaction there is also a psychological reaction that is based on a person’s perception, personality, knowledge, past experiences and attitude to name a few. 58

Therefore it can be argued that each experience is based on the individual who is perceiving that space, which in turn may suggest that each experience is different, the eye of the beholder for example. Yet it is evident that certain psychological effects are produced as people dwell and move through different environments. Gordon Cullen refers to this by articulating that the space we occupy produces an emotional reaction from us whether we intend it to or not. He then gives the example of two extremes, exposure and enclosure, by stating ‘Place a man on the edge of a 500-ft. cliff and he will have a very lively sense of position, put him at the end of a deep cave and he will react to the fact of enclosure.’ 59

Within an urban environment the surroundings that influence these emotions are primarily man-made, and reinforce the importance design has on a person’s sensory experience of that place. An architectural intervention perhaps cannot create ‘place’ directly or instantly, however if done correctly it can provide a framework for place to establish, fortify and develop over time.


The question arises as to how it is possible to take the Roman concept of genius loci, and apply it through theory and architectural exploration effectively. Ian Thompson (2003) explores this question through research by deconstructing and analysing particular features of the concept. He emphasises that the Romans believed places, like people, also had spirits that revealed their essence; that specific characteristics and features on a person’s face provides an indication of their character. Therefore they also believed that the individual components in a particular physical environment must also do likewise.60

Thompson formulates three primary categories with which these individual values can be associated, with the idea that they can fortify each other into tangible forms of site specific genius loci. These categories are:

- **Ecology** – environmental values
- **Community** – social values,
- **Delight** – Aesthetic values.

This is what he refers to as ‘Trivalent design’.61 It is through these categories that I will explore and analyse particular values, which will allow me to establish a template where they can be tested as tangible entities.

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61 Ibid. pg. 66-67

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Figure 4.4 - Revised diagram(s) indicating the process of Trivalent design, through three major overlapping categories of ecology, community, and ecology. This provides a template design.
First category: Ecology - The Oxford dictionary has various meanings for the term, ranging from biological relationships to political movements in environmental protection.62 In this research I will use the definition associated with architectural design. That ecology represents a number of natural values including geology, flora, fauna, and both human and weather processes. Most crucially, how all these elements work together in relationship with each other.63

Through understanding these complex and dynamic relationships, we can help foster design and processes that protects and regenerates the environment we dwell in.63 The significance that ecology has in the formation of Trivalent design, cannot be underestimated. There may be questions raised as to the relevance of ecology in establishing a sense of place?

To help answer this question it is necessary to look at the impacts of urbanisation on the natural environment from a global perspective. The modern city as we now know it has evolved dramatically in the last few hundred years. Fuelled by extensive industrial growth in the 18th century onward, there was a shift in migration from rural to urban centres. The cities underwent rapid expansion, requiring vast amounts of resources and land to sustain growth and demand. The scale of this demand is made clear in an investigation that estimates a city of one million inhabitants, consumes 625,000 tonnes of food, 2,000 tonnes of water, 9,500 tonnes of fuel, whilst generating 500,000 tonnes of waste water and 950 tonnes of air pollutants daily.65 Along with the fact that this is clearly unsustainable is the reality that many of these urban centres are also situated in the prime parts of the natural environment, with the best soil and vegetation often being built on. The reality is that many city dwellers have become increasingly disconnected and ignorant of nature and the ecological processes that create healthy environments. In order to sustain our way of living with transport, housing, water and waste, we create buildings, roads, and infrastructure that creates enormous pressure on the natural ecosystem.

As architecture makes up a significant portion of the built environment, there is a responsibility within design to try and mitigate the impact on the land, soil, water, and vegetation. Often this ‘mitigating’ is in actuality remedial work, as the damage has often already eventuated in the form of high impact infrastructure and built form.

Yet there still are critical opportunities that can both create an improved and processes that protects and regenerates the environment we dwell in. The relevance of ecology in creating a greater sense of place, can therefore be quantified into a number of categories.


Firstly, it pertains to our health. A healthy environment is not only the quality of air and water that we touch, consume and breathe, but also how it affects our mental wellbeing. Research has shown that there are many benefits in having natural, open green spaces accessible to humans in urban locales. Even though these green spaces may be man made, they still provide a form of mental health benefits and therefore increasing the contact people have with each other. What has also been made evident is the strong link between urban design and the physical health of those who dwell there. So pressure on public health systems in these cities rise, specialists are discovering to greater extents how these urban environments are affecting us. People are walking less while being exposed to air and water pollutants, contributing to respiratory and physical illnesses. Therefore, through healthy urban design and infrastructure, there can be a significant influence on the people who dwell there, changing their state of health and mental wellbeing so they are consequently happier.

Secondly, it can have a significant and positive influence in fostering ownership or stewardship in where we live and dwell. A simple illustration is considering if we would have any pride in a house that is filthy when guests are visiting? No, the majority of us would likely be ashamed by it. It is the same principle to a far greater extent with the natural and urban environment we inhabit. Therefore, through healthy urban design and infrastructure, there can be a significant influence on the people who dwell there, changing their state of physical and mental wellbeing so they are consequently happier.

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Lastly, leading on from stewardship, ecology helps create an awareness of the issues and impacts the environment is facing, and how people can mitigate them. Far too often the problem is ignorance, as people do not realise the effect their way of living can have on our environment. The aim is to first provide a precedent in how architecture, design and the physical environment can actively contribute in restoring, protecting and regenerating the natural setting in which it is built. What is crucial is that this process is transparent to the public, so that they can identify and get a better understanding of the processes involved. Achieving this would require a portion of the ecological functions of the design, to firstly be visible, and secondly, provide a level of interaction. Through demonstrating and educating people about ecological design, it is possible to inspire others to consider their environment, and what they can do to help foster it. It can perhaps seem like an unattainable task to reduce the impact of our cities on the environment, however, it requires many small steps to make significant progress.
What ecological issues exist at the selected site, the Auckland CBD waterfront? Auckland city is situated in an enviable geographic location; surrounded by harbours, beautiful bays, and dotted with volcanoes amidst an intricate system of streams and vegetation. The two coastal harbours surrounding the Isthmus are intrinsic to the identity of the people of Auckland. While the water is still loved by many of the locals, it is becoming increasingly neglected as the daily needs of the city demand further infrastructure expansions. These expansions were particularly prevalent on the waterfront, where past industry and shipping evolved the natural bays into a man-made environment. In this process the existing natural environment of streams, coastal vegetation, mud flats and the general geographic form, were permanently altered.

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ECOLOGY - WATER POLLUTION

The most significant ecological issue currently being faced is water pollution. A recent investigation discovered that approximately one million cubic metres of waste water and sewerage flow into the Auckland harbour each year. Another report uncovered high levels of bacteria, including E coli, in two Auckland inner city suburban bays that are frequented by swimmers, creating a serious threat to health. There are various reasons for the harbour water to be in such a bad state, yet they predominantly stem from the 41 inner city storm water overflow outlets. Of particular concern is the combined sewer and storm water pipes dating back to the early 1900s, which are found around the inner city suburban areas. Whilst new separate sewer and storm water infrastructure has been gradually installed over time, there are still too many older single pipes in the network. Every time there is more than 5mm of rain, which is often in Auckland, the rainwater flushes raw sewerage into the sea via the natural waterways. Yet it is not just sewerage that is causing these issues. A recent report regarding Auckland’s storm water, revealed that there has been a gradual increase of heavy metals and organic contaminants in the system. These contaminants are a combination of copper, lead, and zinc that are washed off building surfaces, concrete and asphalt into the nearest storm water sumps. The unfortunate reality is that this pollution is not only providing us with a less than pleasant environment, it is highly toxic to freshwater and marine animals and plant life.


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Through historical research, it became clear that the chosen site at the base of Queen Street, provides a unique ecological design opportunity. What lies beneath Auckland Central is a stream that formed approximately 60,000 years ago beneath modern day Myers Park. The Horotiu stream, beginning from a series of tributaries, meanders down from Aotea Square via Queen Street before entering the Waitemata Harbour. In the 1840s, Auckland’s growth in the central area polluted the stream turning it into a muddy bog, becoming hazardous on a very busy transport link. It was transformed into a closed roof canal later becoming a brick culvert.73 There is the opportunity to daylight the stream, utilising a series of swales and weirs (as shown in figure 4.12) to naturally filter and cleanse the water from toxic sediments and metals in the storm water run-off.

73 Auckland Regional Council Stream Daylighting - Identifying Opportunities for Central Auckland (Auckland: Auckland Regional Council 2010)

These species include salt-marsh shrubs like oioi, salt-marsh ribbonwood, sea rush; and low lying shrubs like sea primrose and Salicornia.74

74 Auckland Regional Council Stream Daylighting - Identifying Opportunities for Central Auckland (Auckland: Auckland Regional Council 2010)

Due to the stream running down a hill, it is necessary to utilise weirs to create even distribution and prevent flooding. The advantage of a day-lighted stream is that it provides a chance to plant native species in the weirs that were once found on the Auckland Waterfront, yet were destroyed in the reclamation of land.

Figure 4.9 - Illustration of the approximate location of the Horotiu Stream

Figure 4.10 - Image of the Horotiu culvert beneath Queen Street

Figure 4.12 - Diagram of Wetland swales

Figure 4.11 - Existing typical vegetation diagram
Green roof technology provides an array of benefits for a building. Firstly, it again provides an opportunity to plant natives on the Auckland Waterfront that were removed in the past. The planting also creates a statement about the ecological health of the surrounding environment. It becomes a precedent and a benchmark for other buildings.

If designed correctly it can allow not just visual delight to the users, but also the ability to walk amongst them. To be in a central urban environment such as Auckland, it is essential for the mental well being of people that these green spaces are accessible during work breaks and recreation time. As shown in figure 4.14, Auckland Central’s green spaces are mainly large parks that are not close to the waterfront. There is an opportunity to provide a green space around Queens Wharf that is more significant than just a few trees and seats, but a park size green intervention. The benefits also include utilising the green roof to collect rainwater which is then used as grey water in the plumbing of the building. Another design option, as seen in figure 4.15, is to design canopies around the urban space that also collects rainwater for the site’s utilities.
COMMUNITY - INTRODUCTION

Defined by Ian Thompson as the category of social values, and how a place functions socially.^55 When endeavouring to foster a sense of place within a design and locale; community is inherent in the process. It is a critical piece of the puzzle; whereby ecology refers to people's relationship with the natural environment, and delight is intrinsic to the visual and experiential aesthetics, community identifies the social values. Attempting to quantify and measure these values, however, is far from an exact science. You cannot simply create sentimental or cultural feelings (which are aligned with the social values), as these things are often peculiar to ones own beliefs and life experiences. There is a need to work with the cultural and historical values the site has to offer to the community, and perhaps in some cases, enlighten people about these values. A report regarding the need of a social framework in design terms the process as Social sustainability. The authors argue that social sustainability is a framework of physical and social design – being infrastructure that facilitates social and cultural engagements, whilst allowing the place to develop its own identity through events.\^56

COMMUNITY - WALKABILITY

The first sub-category is walkability. Cities and urban settings that discourage walking, struggle to produce any resemblance of meaningful social value in public places. What is important in these settings is for people to get from one place to another without much regard for the journey between. However, as I alluded to earlier, it is precisely this journey in between that is where the majority of social value is a reality. Where then does this discourage predominantly occur? Again, as previously mentioned, the origins of this discourage ment can be traced back to when Australian underwent major transformations regarding transporta tion. As the urban environment evolved over time, the growth of the motor vehicle consumed so much public area, that the pedestrians were left with very little space. It can be argued that there still are many situations where there are public squares, avenues, and precincts to cater for pedestrians instead. Yet if there is little pedestrian space on the roads, it creates a disconnect and these squares and precincts are going to often be very empty or unpleasant places. A great example of this can be seen in the Crossroads of the World – Times Square in New York. Since 1904, the iconic square has been a place of bustling activity and a chaotic cross crossing of cars, buses and trains. Yet as the iconic square became congested with faster moving traffic, the pedestrians were squeezed against the building edges, and by the 1940's it had become an unpleasant mix of seedy bars and brothels.\^57


\(^{56}\) Saffron Woodcraft, Tricia Harden and Luisa Centre-Anderson. *Design for Social Sustainability* (Centre for Sustainable Urban Design, Young Foundation & Wordpress 2011)

\(^{57}\) Andreas M. Dalsgaard (Director) *The Human Scale* (Motion Picture 2013)
COMMUNITY - WALKABILITY

It is essential to keep in mind the value that the common motor vehicle has had, and how it has improved many facets of our lives in the developed world. Yet it comes with a great cost to our way of living, where planning for cars is a far greater priority than planning for people. Jan Gehl was the first pioneer for this line of thinking with his book *The Death and Life of Great American Cities* (1961). He too, could not emphasize enough the importance of the pedestrian and walking in our cities. To him walking is the means to much more than merely walk, it allows the urban environment to unfold before people much more directly than travelling in a car. There is direct contact between people and the surrounding context, fresh air, outdoor views, the general pleasures of life, experiences and information. And at its core walking is a special form of communication between people who share information. Through his 50 years of researching urban design, he describes a formula to achieve positive public interaction.

Jan Gehl, who graduated as an architect in 1960, was one of those influenced. He too, could not emphasize enough the importance of the pedestrian and walking in our cities. To him walking is the means to much more than merely walk, it allows the urban environment to unfold before people much more directly than travelling in a car. There is direct contact between people and the surrounding context, fresh air, outdoor views, the general pleasures of life, experiences and information. And at its core walking is a special form of communication between people who share information. Through his 50 years of researching urban design, he describes a formula to achieve positive public interaction.

What is made very clear in this statement is the importance Gehl places on people in design. Through his 50 years of researching urban design, he describes a formula to achieve positive public interaction.

**COMMUNITY - INTERACTION**

This is the second category within the social infrastructure framework. His formula consists of three forms of activities: Necessary activities, optional activities, and social activities. Firstly, necessary activities consists of things that people are required to undertake. These will often include activities such as commuting to work or school. Secondly, optional activities will be things that people are not required to do, yet make a choice to go. These can include going for a walk, or restaurant, going for a walk to see views and sightseeing etc. Lastly, social activities are formed directly from both necessary and optional activities.

As Gehl explains, humans are naturally inquisitive of other humans. Moreover, Jane Jacobs states that there must be two or more primary functions to help generate different activities and use throughout the day, not just at certain hours. This is a fundamental reason for utilizing a typology such as a transport interchange. Through having multiple functions, which include people commuting on ferries and buses for example, combined with cafes, shops and pedestrians. There is a healthy mix of all the activities and interactions mentioned as prerequisites for healthy social values by both Jacobs and Gehl.
The next sub-category, memory and sentiment, are both significant factors for people to perceive a sense of place. Yet these values are extremely organic, and cannot be forced; yet will occur if the conditions are right. These conditions require the place to obviously ‘feel nice’, which is a combination of the three values in trivalent design working together. One particular condition however, identifies the need to draw people back to the same place again and again. Each time someone revisits a place their memory triggers past events which in turn enhances their attachment to that particular locale. Therefore there needs to be a significant level of necessary activity to ensure people continue to visit the urban setting.

The last sub-category is events and festivals. The Auckland waterfront has hosted a large array of events, big and small. The more recent significant events include the America’s Cup Yacht race series in 2000, and the 2011 Rugby World Cup. Other considerable events include World Series Triathlon races and recently the World Masters Games. Other than sporting, there have been many festivals and activities ranging from the buskers festival to concerts in Wynyard Quarter. What is crucial about these activities is that they create memorable experiences. Not only this, in certain situations like the rugby world cup, they galvanise the gathered people together in ways that give them a great sense of identity as New Zealanders.

Queens Wharf’s significant location on the waterfront of Auckland City it provides an opportunity to further reinforce its status as one of the focal points during events. The design must be capable of providing the infrastructure and flexibility for large and small events alike.

COMMUNITY - SENTIMENT & EVENTS + FESTIVALS

Figure 4.22 - Image of Auckland Waterfront

Figure 4.23 - Americas Cup Yacht in Auckland Viaduct

Figure 4.24 - Triathlon on Queens Wharf

Figure 4.25 - Image of Auckland Waterfront

What use is the genius loci? (Construction of Places, Mind and Matter, Routledge, London 2003) Pg. 74

Ian Thompson
Third category – Delight – Defined by Ian Thompson as the category of aesthetic values. This category is likely the most essential in regard to architecture. To explain this, requires exploring the origins of the word aesthetics. Arnold Berleant identifies that it originates from the Greek word aisthesis, which he states means, “literally perception by the senses”. What is significant about this statement is that it identifies our senses as the primary way aesthetic values are perceived. And whilst the senses we have consist of hearing, smell, touch, taste and vision it is almost entirely our sense of visual perception that is responsible for our cognitive understanding of the environment we inhabit. For someone to feel a particular attachment to a place their senses will be required to interpret the experience for them. Trying to attain a sense of place without these sensory functions would be extremely difficult. The reason these are grouped together is because it is through creating the boundary that you achieve enclosure. Norberg-Schulz emphasizes the importance of enclosure in creating identity in any man-made place. His argument stipulates that without a form of enclosure, there is merely a void or in-between of other spaces that are enclosed, and in this state a settlement loses its identity in the greater context. Yet if enclosure exists, the space becomes comprehensible as a center or a focal point. To further deconstruct this point of view is to think of every space that we walk through or occupy and to analyse every form and void. We encounter walls, solid surfaces, open spaces, wide expanses, voids and thresholds. As our senses process the information that every space provides, we consciously and sub-consciously react to it and make a judgment of that space makes us feel. Norberg-Schulz analysed this process in regards to urban design, and where there were feelings of a loss of place with the general public. What he discovered was that the settlements with dwellings and buildings scattered around, with little uniformity or consideration for the space in-between, lacked this feeling of place. From this he explains one of the primary reasons this feeling occurred was due to there being no resemblance of enclosure. It is perhaps not surprising for people’s mind of enclosure as the majority of people dwell, live and work in enclosed spaces. There is also a need for open spaces as a form of contrast; yet enclosure creates a feeling of security and rest, particularly in dealing with urban design as a contrast to a busy path.

The first sub category of delight is Boundaries and Enclosure.

Figure 4.25 - Sketch of underground bus station

Figure 4.26 - Sketch from Pattern Language showing the built form - how the left plan is a convex, it creates a distinct focus, a place. While the right plan is less distinct, and lacking enclosure and place.
The need for enclosure is established, yet what needs to be considered is the form of the boundary in greater detail. It does not necessarily mean a large monolithic wall surrounding a small enclosed space. Heidegger says “A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that, from which something begins its presence”.91 What he refers to is that it does not have to be a barrier, like the wall of a cell; but rather consist of something that has more porosity, or even visually presenting a boundary.

An example of this would be the Stone Henge. There is no barrier as the monumental stones are set apart with space between, yet there is a very strong sense of a boundary, and as a consequence a focal point and enclosure. This becomes a very useful tool in the process of designing, to utilise the built architectural form as the boundary itself. Then just as a building has thresholds and apertures which makes it porous, so too can the built form be a porous boundary which can help establish enclosure.

If then the boundary forming the enclosure is porous there is a need to determine where the primary openings are in the form. This is due to the fact that if there is a continuous form with an opening, a visual axis is created. Norberg-Sculz explains that a large portion of the identity and character of a space is established through how open or closed it is.92 Not only is the feeling of the space altered but the openings become critical tools through the visual axis in reinforcing orientation and identity. We are in a constant habit of positioning ourselves in our setting.93 We seek cues that confirm our location in and to the place we occupy and perhaps subconsciously, our identity. Hence the need to have visual avenues in the place of enclosure to retain our sense of orientation.


Figure 4.27 - Image of the Stone Henge

Figure 4.28 - Sketch displaying openings in a continuous form. A) shows a fully enclosed space with no openings. B) provides fewer openings, isolated buildings are made clearer yet the space is still defined as an enclosure. C) Porosity is made through the boundary having more porosity, and creating visual axis on shown. These visual axis or view shafts can frame a particular view to provide a sense of orientation.
Jan Gehl refers to the boundary instead as the edge, and places a considerable amount of emphasis on the importance it has in a healthy spatial environment.94 Whilst he refers to urban design, it is fundamental in architecture as these edges are often the facades or thresholds in the buildings themselves. Gehl makes it clear the need for soft edges in urban spaces, as this is where the most of the activity is generated. He explains that it is near walls, under awnings, and in alcoves where people will naturally linger and wait, as being in the centre of the space creates feelings of exposure and vulnerability.95 People are naturally curious and like to be comfortable, and it is perhaps no surprise that the edge is what we inhabit, so we can view what is happening with the comfort of something at our backs.96

When applying this logic into useful tools for design it becomes clear that there is emphasis required on the design of the façade that creates this edge. Gehl’s approach is measured through taking in the physical environment at walking speed. Therefore he advocates for a façade rhythm and aesthetic that generates plenty of visual appeal. These include ensuring there are around fifteen shops or tenancies per one hundred meters of urban space, to periodically renew interest from pedestrians. Along with this façade rhythm, which creates vertical articulation on the ground floor to further accentuate interest, Gehl argues that horizontal lines can suggest longer distances, which in turn create boredom and lack of interest that he refers to as ‘Tiring length perspective’.97

Whilst in some urban planning situations there is a need to see long distances to orientate oneself in the environment, there is a need to also heed Gehl’s warning in preventing this tiring perspective. This is something that Gordon Cullen clearly explains in his theory of serial vision. He advocates a journey approach to urban design; that we move through different openings and thresholds, with bends and corners in the path, so that we are confronted by new scenery at each turn.98 Another fundamental role in the façade and edge is providing behavioural support. A simple illustration of a building typology that lacks this function is perhaps Early Minimalist architecture, whereby the often monolithic or transparent materials of the façade would extend right down to the ground, offering very little interaction with the street. This was very much the point with the style of architecture, a rejection of the street in favour of a monumental aesthetic approach. However, the soft edge needs to be achieved while also catering to the large majority of people who occupy that space. Ways to help foster this edge is for the architectural façade to be externally considerate: it can include canopies, seating, shelter, deepened thresholds, and perhaps even specific vegetation.

DELIGHT - SERIAL VISION

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Another fundamental role in the façade and edge is providing behavioural support. A simple illustration of a building typology that lacks this function is perhaps

DELIGHT - SOFT EDGES, BEHAVIOURAL SUPPORT
Exposure is the contrasting element to enclosure, and plays a fundamental role in establishing a sense of place. Whilst there can be exposure out on a plain, the exposure more relevant in this situation is found by being elevated. It references what was earlier quoted by Callen – “Place a man on the edge of a 500ft. cliff and he will have a very truly sense of position…”[96] It is this sense of position and orientation that is critical for the success of a space as an identity.

When we transition from a place of enclosure to a place of exposure above, there is a conscious feeling of being out in the open. Our visual senses are almost overwhelmed with the views to process in comparison to the most restricted visual axis in the places of enclosure. What this can do however, is provide key visual connections from the site to other significant landmarks, like Rangitoto, back to Auckland City, and even a different perspective of the Auckland waterfront. Whilst being elevated and exposed may not be the most comfortable setting it provides this perspective in more of a transitional space.

Contrast is another valuable tool in the formal aesthetics of design, and perhaps even more critical in terms of our visual perception than often realised. Researcher Chris Haile began to understand our perception through studying the movement of our eyes processing different scenes.[100] What occurs is that our eyes are far from inert during this process, and are in a continual state of movement. Yet the movement of our eyes are actually jumping from point to point, called “saccadic movements”,[101] instead of one continuous motion. In-between these points our brains block out images to prevent our visual perception from becoming overloaded, which in turn would make us feel nauseated. Haile then wondered what made our eyes zero in on particular points in the selective visual process, and therefore determining where our vision and focus is drawn towards. He discovered was through camera technology, where the auto focus setting will accurately focus on where we are looking the majority of the time. What he discovered was through our eyes jumping to particular points in the selective visual process, between verticals against horizontals, dark against light, and changes in levels as examples. When these elements are not present in our environment, our vision becomes frustrated at the lack of contrast, and thinks less positively of the surroundings.[102] These contrasting elements can consist of the intersection between verticals against horizontals, dark against light, and changes in levels as examples. This then is where Haile discovered our visual perception jumps to in each saccadic movement. These contrasting elements can consist of the intersection between verticals against horizontals, dark against light, and changes in levels as examples. When these elements are not present in our environment, our vision becomes frustrated at the lack of contrast, and thinks less positively of the surroundings.
It is critical in the design process to locate at the earliest phase the location of the enclosure: within the enclosure is a static zone, where people mingle around in either optional or social activities, in comparison to the movement zone of necessary activity. Because the site (Queens Wharf) is a finger wharf, it acts predominantly as a street with only one access point. What occurs then is a zone of movement generally along the edges for people to see the water, yet also through the centre, where a pathway is located. Placing the static zone in the centre of the finger wharf means that movement and circulation will be interrupting and disturbing people.

Again, if the static zone was placed at the end of the wharf where it can be regarded as a destination, significantly more effort is required to get there. There is less chance of the place being used informally and spontaneously. The best outcome is to locate the static zone at a tangent to the path at the point of highest interaction. Therefore people will be constantly passing the space, allowing for spontaneous use, yet not congesting the main movement path.105

Latency is the capacity of the design’s flexibility to adjust to different events and perhaps functions. This is a prerequisite for also being able to cater for events and festivals as mentioned in the community category of Tri-valent Design. In his 1981 thesis, *The Sense of Place*, Blain Brown highlights the need for successful buildings to be able perform this flexibility, with little or no change to the main structure of the building.106 It is simply not feasible to have an adjustable main structure in architecture, and rather use minor structure and infill framework like partitions, screens, fabric materials, and facade elements that are transitional.

The idea behind latency in the design is not only to support the larger events, it is even more crucial to be applied in small applications. What I mean by this is to use it to reinforce the soft edge approach to the design, allowing for flexible openings that encourage activity and mixed functions. A great example would be to have a structure that can be opened up for stalls and markets for people to browse in the shelter, yet when the markets close the edge reverts back to its original state.
The last sub-category scale is a powerful tool regarding our aesthetic visual perception. What is easily mistaken is the thought that scale represents the size of something. Cullin states that instead of representing the size of an object, it is instead the size of the object that we perceive against another object or background. As an example we can have a box ten metres high that looks large, however when placed beside a box one hundred metres high, it is suddenly perceived as being rather small.

What is significant regarding scale is the distance away to discern the true size of it. If that wall was brick an example, we know the average brick is around 70mm high and we can visually calculate the height of it. If that wall was brick we may find it very difficult from a small distance away to discern the true height of it. If that wall was brick as an example, we know the average brick is around 70mm high and we can visually calculate the height of it.

What is significant regarding scale is the distance away to discern the true size of it. If that wall was brick as an example, we know the average brick is around 70mm high and we can visually calculate the height of it. This can therefore determine the degree to which we can accurately read facial expressions and build body language, and determines how far away we can accurately read facial expressions and build body language. Gehl mentions is our ability to recognize someone from a distance of 70 metres and less. This information is around 25 metres.

Gehl also places critical importance on the scale of buildings, with his primary focus regarding the social experience of interaction against the building edge. He refers to two fundamental thresholds in vertical height, the 6.5 metre 2-storey zone, and the 13.5 metre 4-storey zone. The first on the ground level, the interactive space where there needs to be vertical articulation, latency, behaviour support and the degree to which we can accurately read facial expressions and build body language. Gehl states that in the interactive space where scale represents the size of the public space from perspective.

Gehl advocates that in the interactive space where scale represents the size of the public space from perspective. It is essentially the active soft perimeter to the building as it resides at the edge of the building. He analyses this design technique is applied it creates a sense of human scale.

What this then allows is to ensure that our maximum range to perceive the social experience of interaction is 70 metres and less. Materials and massing can be used to provide a transitional building in between the heritage and the new. Heritage buildings tend to have far more surface (façade), depth and more varied form than modern buildings, and whilst that does not mean copying them in design, it requires a sympathetic approach. What materials and massing can be used to provide a transitional building in between the heritage and the new. What materials and massing can be used to provide a transitional building in between the heritage and the new.

This is due to the fact that beyond 13.5 metres our capacity to visually accurately detail significantly reduces. This is not referring necessarily to the ability to discern the people occupying the building from that level and vice versa. Humans are naturally curious and when they cannot discern activities of other humans, a lack of interest quickly ensues. Gehl also applies the social field of vision tool on horizontal applications, like public squares and recreational public spaces. This can therefore determine the degree to which we can accurately read facial expressions and build body language. Gehl mentions is our ability to recognize someone from a distance of 70 metres and less. This is due to the fact that beyond 13.5 metres our capacity to visually accurately detail significantly reduces.
It is important to analyse precedents whether they are successful or not, and to glean information from both. It is particularly relevant to judge the following examples through the lenses of the knowledge section’s research in the previous section. What is critical for the research project is to be able to incorporate all three categories of trivalent design, and the qualities that can be attained through this approach. Therefore, it is important to emphasise each example’s strengths and weaknesses regarding ecology, community, and delight.

This project is a great example of ecological awareness and creating a more sustainable footprint on Vancouver’s waterfront. The green roof is the design’s focal point, and treats both black and grey water, while irrigating the rooftop plants. The building mass is split into a large form and a smaller form which creates a limited sense of enclosure with a visual axis out into the water. The typology as a convention centre hinders the design, as all the primary functions are internal, therefore not interacting with the urban space as much. The building edge is also not soft, and provides very little behavioural support.1

111 Wang Zhi and Zhan Tingting. Top 100 World’s Landscape - Urban and Ecological. Tart Publishing and Media 2012 pg. 14

Figure 4.45 - Aerial view of the convention center's green roof

Figure 4.44 - Site plan of convention center showing the masterplan and urban setting layout

Figure 4.42 - Convention Center down at water level

Figure 4.43 - The roof water treatment system
Den Norske Opera House
This project uses the principle of accessibility as a prime design tool. The design has taken the public plaza and through shifting levels created the mass needed for the theatre it contains. It is a dynamic re-interpretation of the town square. Where this building lacks enclosure on the outside, it makes up for it within the internal foyer, yet the connection between inside and outside its not porous. This is perhaps to the cold climate of Denmark, where the majority of dwelling is inside. The change in levels create a dramatic sense of exposure when climbing the structure, and allows people to view the water and city, creating a great sense of orientation and place. What this building does well is provide a place for the community to interact and mingle on the roof as if it were a traditional town square or street. What issues arise is the lack of connections and different activities that can cut down on interaction.
5.0 DESIGN PART ONE

5.1 DESIGN PART ONE INTRO

This section of the research document focuses on the site as a macro element. Due to the site consisting of Queens Wharf and a segment of Quay Street, it is relevant to approach this first section in a master planning phase. I will initially summarise the information gleaned from the research section, into a design brief. This brief allows a template with which a design process can be achieved. This initial design phase will let me achieve a critical summary and discussion that allows me to take my design to a micro design level.
Ferries – There is a need to cater for the projected commuter growth of 51% by 2041, the building footprint needs to increase to approximately 8490m² from 4245m², and wharf area from 2617m² to 5234m². The ferry terminal is the most central transport mode, therefore plays a key role in stitching together the other modes and functions into a transport hub.

Trains – There is no requirement to design anything regarding the trains utility. What is necessary instead is to create a seamless integration of the trains commuters into the masterplan.

Bus – Requires increasing the existing 2500m² to approximately 3300m² to cater for expansion. The current bus terminals are spread out and confusing for commuters to use. The current bus stops on the streets greatly disrupt the street atmosphere and create visual pollution. There is a need to have one amalgamated bus terminal that can potentially be removed from street level, yet still integrate into the transport interchange as a whole.

Light Rail – Propose to create a tram network with Britomart as the hub reconnecting outlying suburbs of Auckland. Queen Street and Quay Street will incorporate the tram lines with a tram station within the interchange.

Cruise - With an increase from 4700m² to around 6250m² floor area by 2041. There is also the compounding issue that vessels are becoming very large and facilities need to adapt.

Ecology Rules
- Daylight stream with use of swales for natural filtration of storm water
- Utilise green roof technology
- All flora to be of native species
- Rain collection systems for new ferry terminal

Community Rules
- Needs to be a safe and pleasant walking environment
- Must have at least 2 primary functions
- Be a venue or focal point for events large and small

Delight Rules
- Have space flexible for different minor functions, e.g. markets, stalls (latency)
- Create a sense of enclosure through boundaries (building)
- Utilise the built form as a porous boundary, soft edge with behaviour support
- Having predominantly vertical façade articulation & rhythm changes 15 times per 100m
- Utilise serial vision principles in urban design
- Create exposure and change in elevation to foster orientation and spatial awareness
- Incorporate design of scale and materiality
- Create contrasting elements for visual intrigue
- Create a tangent static enclosure zone to movement path (square location)
Additional site analysis is required in the master plan phase to determine additional building functions than solely transportation. As mentioned in the Community category of trivalent design, walking is critical in the healthiness of an urban environment. Yet it is not just walking that can be beneficial; cycling is becoming far more popular in Auckland due to a variety of reasons. These range from bad traffic congestion to a higher level of money spent on infrastructure by local and central authorities. Cycling routes have already been implemented in parts of Auckland, including the western and central link, and these have been extremely successful. This project has the potential to activate a waterfront cycling link from Wynyard Quarter through to Mission Bay. There is an opportunity to also follow other countries examples and design a bike, where people can not only lock there bike, yet also hire them. Other functionalities that can be incorporated are determined by analysing figure 5.6. What is made clear is that around the existing main public spaces of Queen Elizabeth Square and Britomart Square, are the bulk of retail and cafes and restaurants. These are functionalities that require a high level of foot traffic to maintain, and also help to activate a space. I will look incorporate both a cycling hub and high level of retail, cafes and restaurants in the design to increase the level of optional activity mentioned in previous research.
INITIAL BULK MASSING

The initial phase of design involves massing of the site, and experimenting with form, scale and the spaces that these create. This massing analysis is focused primarily on the Old Ferry Building and surrounding area, as this is the where all the interaction occurs between transport modes. Mass model one is a simple illustration of applying the delight rule of 13.5 maximum height to the place of interest.

Model two lowers the massing on the north-eastern side of the Old Ferry Building, and around the proposed structure replacing Queen Elizabeth Square. This is important as pedestrians at lower end of Queen Street require a visual connection north towards the Waitemata Harbour and Rangitoto Island.

Model three considers the primary arterial axis of the site, being Queen Street and Queen Wharf, and Quay Street. These axes are critical to be kept in place to be utilised by foot traffic, new trams and cyclists. Having both axes closed off to cars would be controversial, yet highly effective in reconnecting the harbour with the city.

Model four brings in the idea of enclosure through the insertion of a square. This square acts as a replacement to the QE Square that will be replaced, and is formed through the building mass that will act as the new ferry terminal. As shown it lies on a tangent to the main axis to allow flowing circulation.

Model five extends the ferry terminal along the western edge of Queen’s Wharf to meet the expansion requirements of 51% in the next 20 years. The blue zone represents the events space. There is a need to keep this open to the northern view shafts, yet provide the public a high level of interaction with the water through terraces. These terraces can then form the seating for a water stage to cater for various productions and festivals.

Model six begins breaking down the ferry terminal massing, creating further access points into the enclosure space. The blue dotted line represents the path of a proposed underground bus terminal beneath Quay Street. While ambitious, this terminal will connect to the proposed underground City Rail Link, and provide access to the enclosed space via the Old Ferry Building.
Model seven highlights again the importance of keeping the shown (in yellow) axis open to the view shaft. The main open end of the enclosed space also defines the view out to this direction, so that when people occupy the space, their attention is often fixed to the harbour outlook and therefore locating themselves in their current position.

Model eight begins to break down the large masses in smaller scale forms through short cut axis. What this allows is the buildings edge to be increased to the public space which is a fundamental focus of this research project.

Model nine takes a step back from eight regarding the broken up masses. It shows the reasoning behind creating an angled mass into the water is through mirroring the context on Princess Wharf, and allows a softer more transitional approach to creating space for a square.

Model ten incorporates the ecological functions of the design through the daylighting of the Horotiu stream as shown. This concept shows the stream continuing its direction down Queen Street and continuing along the wharf. The idea is then to break up part of the wharf near the end into wetland area, before entering the harbour.

Model eleven looks at the tram line down Queen St, (shown as dotted line with end dot). Creating a small tram station helps enclose the square to a greater degree, although allowing a high level of porosity. There is also shown a connected overpass to allow cyclists to ride over the boundary of the ferry terminal, creating an experience of exposure.

Model twelve shows the ferry terminal with small berthing connections allowing for transferring of passengers. This was disconnected from the main shore line to allow a greater connection of pedestrians to instead have access to the water. The blue mass is an illustration of the need to create a link to the water for the Old Ferry Building.
THE DESTINATION: This becomes a point where people are intrigued to be at, drawing them along the wharf. Then climbing the structure evokes the sense of exposure, giving amazing views of the harbour and back towards the city.

WETLANDS: The part of the wharf broken to make room for the wetlands - the last phase of natural filtration before the Horotiu Stream feeds into harbour.

FERRY TERMINAL: Made of broken masses and linked with a arching cycling path. The ferry terminal orientates at a 45 degree angle to the wharf for efficient docking. It also forms the boundary enclosing the main public square.

WATER STAGE: The stage is an iconic part of the community section providing a venue for events and festivals, while allowing the public to interact in the water.

BUS INTERCHANGE: The sub-terrean bus interchange connects the CRL heavy rail link as shown in figure 5.20. The surface of Quay St has skylight openings that provide light and air to the station below.
DESIGN OUTCOME ONE

Figure 5.25 - Water stage
Figure 5.26 - Ferry terminal
Figure 5.27 - Ferry terminal
Figure 5.28 - Sketch of design outcome one
Figure 5.29 - View from destination
It has become clear with the above design outcome, that the research of the project has to a degree suffered through a variety of reasons. Firstly, to amalgamate a variety of transport modes into one hub has proved problematic due to the large scale of the endeavour. This massing analysis takes its consideration macro size forms and cannot break down the elements to a degree where research can occur of creating place in an environment. The project needs to go through a more thorough process of analysing why the existing site needs to change from what it was to what it will become.

Positives to glean from this design outcome include the effectiveness of creating a public space around the Old Ferry building. This building is intrinsic with the waterfront, and the open space in front celebrates it, emphasising it as a landmark and a strong focal point of the project. The water theatre is a nice idea, however in reality it does not provide the flexibility and room to be effective. The space will likely be required for larger cruise ships. Breaking the wharf with the wetland scheme too is not feasible, and loses too much open space that is valuable for large scale events. Therefore, to take this information into the next design phase considers analysing where the design was the most successful, and the most necessary. This has lead me to the conclusion, that to reach an effective design solution there needs to be a focus and refining of the site to where is most critical. Referring back to the research title REVIVING THE HEART, tells me to select where the heart of the project lies? The projects pivotal component is the focal point, the enclosure and the boundary. Therefore the project needs to focus on the design of a new ferry terminal and the urban space around it to be successful.
Design part two looks at focusing the design on the center of the initial design – the ferry terminal and the enclosed space within. This phase includes a more comprehensive breakdown on the design process with closer correlation to the research studied. This will be shown through sketches in a stage by stage process to ensure the end design is not misinterpreted.
The first stages of the design process firstly clear the existing buildings off the site. However, with the new approach of only designing the ferry terminal (there is the option(s) of retaining either Shed 10, The Cloud, or both). My design now goes from a complete wharf proposal to a stage design; where after the ferry terminal is complete, then other projects can go ahead. It becomes a precedent for other projects on the site. With the removal of the buildings, it becomes clear how the Old Ferry building can be utilized as a focal point. The existing terminal is a visual block on the front, allowing only glimpses of the structure. The next phase is to accentuate this front façade, open up the space around it for people to see it truly.

Figure 6.1 - Existing site sketch

Figure 6.2 - Removal of existing buildings

Figure 6.3 - Re-insertion of a square to replace QE

Figure 6.4 - Creating a mass form to create enclosure

Figure 6.3 shows how through the relocation of the existing Queen Elisabeth Square, to the front of the Old Ferry Building can achieve bringing the building to life. QE square was a poor public space with closed edges, poor sunlight, no destination and interaction. Therefore with the new developments removing the space a prime opportunity is created in the relocation. What this achieves also is put public space on the water side of Quay st, giving far greater room for interaction with the water.

Figure 6.4 is the process of applying the enclosing form around the newly created space, in order for it to become distinct and not a plane. As the previous design phase the eastern side is left open to allow for view shafts to be maintained, and to make use of the high pedestrian volume walking past. Terraces and berthing wharfs are created on the waters edge to facilitate the ferries.
PHASE 4:  
- New ferry wharf on old rail axis
- Interaction to harbour in new square, to resolve the disconnection of the Ferry Building to the water
- New materiality zone, provides scale and transition from heritage ferry building to the new ferry terminal

PHASE 5:  
- Two primary functions within the ferry terminal: Biking, & ferry
- Interweaving design form the two functions, with differing levels and scales referencing volcanic nature of Auckland

PHASE 6:  
- Includes the ecological green roof system, Waihorotiu daylighted stream, with the potetnial terraces and canopy systems

DESIGN PROCESS

Figure 6.5 begins to evolve the form the wharf's take. A main axis is formed from the existing rail link, which historically loaded and unloaded goods onto ships. This is shown as yellow and forms a large wing in the wharf, to allow for more efficient berth- ing and public space. The small blue mass is inserted between the main ferry terminal mass and the Old Ferry building. This is to cre- ate a more sympathetic transition between the two very differently styled structures, utilizing ma- terials, forms and articulations that appeal to the human scale.

The next process takes the main ferry terminal mass and how it is also articulated. The building needs to increase from around 5000 square metres to 8000 square metres, and will fit in the boundary form. Yet as mentioned in the research, it is fundamen- tal that there are more than two primary functions to allow for greater interaction and level of activity. Therefore cycling will form a strong link with the fer- ry terminal, and as seen in the sketches will in turn together to form the articulation sought. What this form displays is kinetic movement, something that reso- nates with the surrounding water, CBD and building's typology of transport.

Figure 6.6 shows the cycling and walking link on the roof of the buildings form as a yellow track, clearly identifying what it is to the surrounding context. What is achieved through this form is the need for it to rise and fall in or- der to twist together. This in turn enables the users of the path to experience the exposure that is crucial in gaining visual cues and sensations that help reinforce ori- entation, and therefore place. Fig- ure 6.6 shows this path circling around until it connects again with the street level. What is also shown is the green roof technol- ogy, the day lighted stream and canopies forming the tram station that allow for beneficial ecologi- cal affects.
7.0 SOLUTION
This thesis has explored how architecture can create a physical environment to foster a sense of place. As I have stated in the research, a sense of place is notoriously hard to define. In doing so, it requires dissecting certain elements, until you are left with small ideas. These small ideas cannot create place, it is only all the elements as a whole.

Using the theory of Trivalent design in the research provided me with a datum, a point with which I could work from in a difficult topic. I felt the methodology was very successful in defining ecology, community, and delight. It allowed me to comprehensively analyze sub categories within each part, and pull out the small ideas I mentioned above. Through this exploration and my solution to the research question, I feel my design could adequately provide the answer over time. A building cannot be built and have a sudden effect on people’s sentiment and memory. These are a few of the limitations that I came across. Yet over time if the environment is suitable, it can foster these feelings. Other limitations include using trivalent design theory somewhat narrows my research field in an extremely broad category. This was something I had to take into account, yet needed a more specific approach to yield any useful results.

The ideas that I gleaned through research can be applied to any building or site, it is not a one site only fit. I feel it can be a template for people to have better quality public life in their cities. We are living in environments that effect us consciously and sub-consciously, and determines our quality of life. There are too many things disconnecting us from each other, interaction, and living healthy lives.
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10.2 FINAL PRESENTATION
Pathway
Cross-roads
Interchange

Developmental research sketches, images & diagrams
Above: Ferry Terminal Main Foyer
Right: Waters Perspective of development
1 - Office + retail zone
2 - Small ferry zone
3 - Cafe + Retail (Latent zone)
4 - Old Ferry Building
5 - Splash Pool
6 - Main public square
7 - Tram Station
8 - Public water interaction
9 - Daylighted stream outlet
Declaration

Name of candidate: Callum Bryce Barnett

This Thesis/Dissertation/Research Project entitled: Reviving the Heart is submitted in partial fulfillment for the requirements for the Unitec degree of Master of Architecture (Professional)

Principal Supervisor: David Turner

Associate Supervisor/s: Associate Professor Dushko Bogunovich

CANDIDATE'S DECLARATION

I confirm that:

• This Thesis/Dissertation/Research Project represents my own work;
• The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
• Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: .............................................................

Candidate Signature: ........................................Date: 11/7/2017

Student number: 136791
Full name of author: ...Callum Bryce Barnett

ORCID number (Optional): ..................................................

Full title of thesis/dissertation/research project ("the work"): Reviving the Heart

Practice Pathway: Architecture

Degree: Master of Architecture (Professional)

Year of presentation: 11 July, 2017

Principal Supervisor: David Turner

Associate Supervisor: Assoc Prof Dushko Bogunovich

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