Re.Structure

finding the synergetic relationships between functioning urban ports, trapped landscapes, and public life.

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By David Ferrari

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Fig. 1: World context

Abstract

In many countries around the world, contemporary urban ports have a major economical, infrastructural, and dominant presence along strategic waterfront edges. In terms of public life, these industrial private entities disconnect themselves from their parent city due to the interaction between a number of factors, namely; topography, orientation, positioning, port typology, the safety and functionality of ports, urban planning, and the effects on the natural ecology. The changing nature of how a city utilizes their waterfront questions whether urban ports have a role within the heart of the city. The potential to restructure port areas and their surrounding spaces that have been effected by development leads to the creation of dynamic public life entities. With these large infrastructural entities, the areas surrounding the boundaries are compromised and are trapped in a confusion of development and derelict design. Trapped landscapes often have detrimental effects on natural environments. This negative impact can be seen in the urban fabric of the city, and in the public well-being and life of the occupants of those spaces.

This thesis investigates urban areas trapped by functioning port infrastructure, specifically the area known as the Quay Park Quarter, situated in Auckland, New Zealand. The Ports of Auckland Ltd (POAL), directly north of the area, imposes a dominating, privatised and industrial statement to contribute to the nature of this trapped landscape. The Quay Park Quarter includes heritage sites, railway infrastructure, and ad-hoc developments, some of which were initially intended to rejuvenate the area.

This thesis aims to address the privatised issues surrounding the contemporary urban port by challenging the role and incorporation of public life as a means to restructure such areas. This thesis argues that active port areas can be reconfigured, restructured and reimagined in ways in which to utilize public life along active waterfront networks. This thesis will also argue that this utilization of public life can actively change the way in which trapped landscapes can be restructured for the future. By considering the ecological impact, the city's growth and surrounding developed areas, positive changes can be made at multiple scales within the city context.

This thesis proposes that this can be investigated through observing three interrelated scales to discover city systems and functions, the intimate, neighbourhood and metropolitan. The intimate scale involves the interactions with one's self in the environment that surrounds them, as well as the composition of all things to create public life. This creates a sense of locality for being in the environment. Because of the port's impact on this urban area as well as its external and internal functions, the neighbourhood scale addresses the reconfiguration and restructuring of the port infrastructure that has impacted this trapped urban area. The metropolitan scale involves how the public life network fits within the context of the city, through the means of landscape infrastructural components. The collaboration of these three scales allows for an interchange between what the human can experience in addition to the systematic functionality of the city. This offers unique insight beyond the master planning of such urban areas to actively engage with life on the ground. The reconfiguration and restructuring aspects of these areas allow for a variety of resolutions to both actively engage with public life within industrial areas and facilitate the release of trapped landscapes back into the surrounding context of these areas.

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Fig. 2: Site location

CHAPTER ONE | *Introduction*

Problem Statement

Within global cities, waterfronts are under increasing pressure to convert from industrial dominated edges to dynamic publicly orientated spaces. Certain components of these industrial edges however provide for city economically and internationally which supports the case for them to remain in such prime real estate. Due to their size and privatised nature, the contemporary urban port creates an imposing and negative experience in sociable spaces, ecological responses and public life of the space in which they lay. Due to the large scale of such industrial entities the surrounding areas in the immediate context become 'trapped' in a conglomeration of confusion and secondary developments to fill the area. These 'trapped landscapes' are not singularly associated to urban port settings, but are also attributed to large infrastructure, industrial precincts, transportation hubs, topography, and the urban context in which city spaces are developed.

Urban areas trapped by large functioning ports highlight a growing issue within the contemporary city with extreme potential to become something more than a combination of lacklustre developments. This particular urban area, known as the Quay Park Quarter suffers from the impact of its industrial surrounds which has resulted in confused development, poor public life, and an inaccessibility to public amenities. Ad-hoc developments are present in the site as an urban response that the city has made when catering for a need such as; cluster housing developments in a semi-private fashion, and a large amount of infrastructure catering for the vehicular and rail movement for the public from outer suburbs. More importantly this linear infrastructure blocks connectivity to the water's edge for the surrounding suburbs. These primary and secondary arterial routes that pierce through and trap the urban area, both function at the metropolitan scale to cater for the greater movement of the city, including the private urban port. The expansion/reclamation of the shoreline, the development of the city, and the growth of the global urban port have all been contributing factors and external influences into the area becoming such a detrimental environment.

Research Questions

The original research question that started to unfold the research problem was;

How can land trapped by functioning urban ports contribute to the public life of the city?

After initial research findings, a reformulated research question was asked, in order to hone in on the underlying thesis problem;

How do you transform historically industrial precincts, which are trapped behind functioning urban ports to contribute to the public life of a city?

Positioning

In order to position the use of this research towards releasing trapped landscapes back into the city fabric, the question must be asked as to how do you transform historically industrial precincts, which are trapped behind functioning urban ports, to contribute to the public life of a city?

Andrea Kahn's explanation of the urban site, the anti-urban, and the [non]urban, establishes a fundamental understanding of the type of areas within a city. For this particular site, the area has been identified as [non]urban in which it is perceived as failing to meet the image of the city, while being consistently overlooked and undervalued. In order to understand this area to create the image of the city, and for it to be valued by the public domain, one must avoid the negative tendencies associated to Kahn's notion of the anti-urban, which are areas that have been designed for one specific purpose and one target demographic. The result of this is that these spaces fail to meet conditions of the locality of the city and to fit into the overall image. This negative tendency of culturalisation is one to avoid in order to develop something more meaningful and suitable for the surrounding city.

By understanding the physical mobility and structure, as well as the current and future economic viability of Ports of Auckland, there is the opportunity to work alongside a functioning urban port instead of the traditional approach with past practices which is redesigning ex-port land. This creates a challenge, not only with privatisation and safety, but also with logistics, infrastructure and finding an ecological balance for all these systems to coexist, while releasing the trapped urban area. By utilizing all these various layers and systems there becomes an increase in leverage with discovering ways to restructure these spaces while creating a dynamic, co-existing environment between port and public life. Fully understanding how this comes about gives the ability to create a synergetic restructure of trapped urban landscapes and the changing nature of the contemporary urban port.

As part of the logistics of the port comes the logistics of the city and its linear infrastructure servicing the outer suburbs. One reason for this site to exist in the condition that it does is due to the infrastructure that caters for the city. This contributes to the confused nature of ad-hoc developments by creating a negative and conflicting atmosphere, which is dominated by these primary and secondary arterial routes and rail infrastructure.

These layers in the present state and condition in the area can be attributed to creating this unsightly site. The combinations of factors summarize the need to find synergetic relationships between a functioning urban port, public life, and the trapped urban site. The physical restructuring of the layers presented in the area will enable it to adhere to a more synergetic relationship with the immediate surrounds and help facilitate the open systems of the city. If this restructure never occurs the site will continue to be effected by the urban port, primary arterial routes, rail infrastructure, and a disassociation to the surrounding area in terms of public life.

As part of the Auckland City Council 2040 Vision for the city, there is a strong demand to complete the waterfront connection from the west (city centre end) to the eastern bays. The uniqueness that the Quay Park Quarter presents is that it has the opportunity facilitate the demand by the city and its people. This 'Harbour Stitch' is the missing link for the East by West connection that the Council and people of Auckland desire. The site shows the potential to connect to outer suburbs in both a network of open systems and structures allowing the trapped urban landscape to be understood at a variety of scales, and therefore be restructured at those same scales to fit back into the context of the contemporary waterfront city. Other desirable ideas and developments for the city as part of this vision is to create more inner city dwellings, recreational opportunities, office spaces, and leisure activities. The Auckland City Council and POAL, are both major stakeholders that can interact together in order to restructure the Quay Park Quarter and the Port boundary for the city development of the future.

The approach to this disciplinary problem will allow urban conditions to be formulated and distinguish as to why the city's rapid development has created these trapped urban sites, based upon historically significant events in the area and on-going development to the present day site. This in turn will enable insight into how the city is layered with these systems i.e. land and sea infrastructure and global trends of development in order to restructure these types of sites. The approach will then look into the context of where the site sits at a metropolitan scale, which will then allow understanding of the functioning city at a wider structure and system. As current and past conditions of the site display, trapped landscapes have suffered from ad hoc design intentions with an internal focus of the current site parameters, which is a temporary, hasty, and unjustified compromised solution between single stakeholders and the land owners.

Inevitably waterfront landscapes will become so publicly dominated that the opportunity for developers to influence the future of these areas will be overwhelming. Factors such as port efficiency, water depth for larger ships, and the inability to reclaim more land for expansion, will inevitably lead to the relinquishment of these sizable footprints and force cities to reopen these areas to the public or for expansion of the city centres. By considering the future opportunities that this restructuring can enable, it poses as a catalytic or armature response for the area. This thesis is positioned between the present day and the 2040 vision set out for Auckland. Because of this timeframe, a set of the catalytic/armature responses should solve current issues as well as inform future development within the ports urban footprint, without compromising the current day to day functioning of the port itself.

With the Ports of Auckland's future beyond 2040 unknown, the synergetic relationship between functioning ports, trapped urban areas, and public life ultimately has the potential to work together in order to maintain port functions as well as generate positive public life between the port and within the Quay Park Quarter.

Research Aims & Objectives

- *This thesis aims to challenge the role of the contemporary city port. This is argued through acknowledging global port trends, and urban port developments showcasing the contemporary role of the port within growing cities both locally and globally.*
- *This thesis aims to discover how trapped land arises within the contemporary city. By understanding historic and current site conditions, urban development, surrounding city infrastructure and systems, this thesis argues that external and internal influences have major influences on how these sites are shaped to present day conditions.*
- *This thesis aims to restructure [non]urban sites that have been trapped by functioning urban ports. This is argued by analysing conditions that make up the current site and future of the site including: infrastructure, reclamation, ecology, and re-reclamation. This thesis argues that through restructuring and reconfiguring aspects of the functioning urban port it will blur the boundary between the public and private realm.*
- *This thesis aims to increase the synergetic relationships between public life, trapped urban landscapes, and functioning urban ports. This is argued through deconstructing the private edge, re-reclaiming land, and increasing biodiversity and ecology, so that sociable spaces and public networks are formulated to contribute to the synergetic response of the site.*
- *This thesis aims to provide an armature response for the future of the area. Introducing the notion of armature will also be utilized as a device in order establish public life within the site and the port boundaries. This will be argued and challenged through a variety of bold moves; envisioning the future use of the site, involving the needs/demands the public have for the city, highlighting the positive values of the surrounds, and the impact that these can have internally within the trapped urban areas. This will then challenge the role in which the urban port functions within the future beyond the period of when this thesis is set.*
- *This thesis aims to restructure the urban port. By doing so this will create leverage for public integration. This thesis assumes that technological advances in port operations, future economic viability, and port cargo efficiency, that the port will be able to surrender strategic areas of land necessary for public development to follow.*

CHAPTER TWO | *Site Investigation*

The Waitemata harbour is one of the most significant harbours in New Zealand. Located in Auckland, this drowned river valley has many sandy bays and sandstone cliffs throughout the eastern shores, and tidal flats and mangroves spread in the upper reaches through to the west of the harbour (Te Ara: The Encyclopedia of New Zealand). The topography of the harbour and surrounding landscape comprises of many settlement sites in between the changing situations of bays, coastal headlands, and points that were used by the Maori as Pa sites (Waterfront Auckland). The harbour provided an abundant source of food for the local people in the form of shellfish, trout, and eel, while the volcanic landscape nurtured crop growth amongst the fertile soils (Waterfront Auckland). The volcanic influence on the landscape provided natural aquifers which later developed into streams systems feeding back into the inner bays on the southern edge of the harbour. It was due to these factors that Lieutenant-Governor Hobson determined the area as ideal for the capital of New Zealand in 1840 (Te Ara: The Encyclopedia of New Zealand). (fig. 3)

With Hobson's ambition for this site to become the capital, the inner harbour of the Waitemata on the southern shores, is where the city started to form. The intricate shoreline created sheltered bays and opportunities for sea trade to develop. Local wharfs started to emerge supporting marine trade, as well as local businesses, and warehouses being built along the foreshores of Freemans, Commercial, Official, Mechanics, and St George's bay's. This development rapidly influenced the way in which Auckland would continue to evolve over the decades; a Port City of the future.

Fig. 3: Original Shoreline showing natural bays, overlaped with present day aerial.

This notion of the Port City is very much indicated in the present day shoreline of Auckland. The city has undergone a massive scale of staggered reclamation in efforts to expand the growth that the port industry supports as well as house the cities ever growing population. In the span of 150 years Auckland city has seen its natural inner harbour bays, headlands, points, and ecology succumb to drastic reclamation. (fig.4,5)

In 1841, shortly after the beginning of colonization in the area, a plan was put in place to begin reclamation efforts in Commercial and Mechanics bay's, known as 'The Felton Mathew Plan of 1841' (Waterfront Auckland). Commercial bay grew rapidly with completion of various wharfs and street structures to support the port development in this area.

In 1851 the Wynward Pier, at 500 feet in length, was completed and the development of Queen St Wharf was underway. Construction concluded in 1852 and on completion the Wharf measured 1400 feet. Reclamation was set to start construction surrounding these wharf structures eight years later in 1860 and by 1879 this reclamation effort was completed. During the final stages of the first reclamation, Point Britomart was cut back to provide the necessary fill for Commercial and Mechanics bay's between c1876-1886.

The second and third sets of reclamation were completed between 1880-1888 and 1919 respectively. During this 29 year period major land was developed, filling Mechanics and St Georges Bay completely. Between 1905-1917 the area also saw the complete fill of Freemans Bay and the development of the Wynyard Quarter.

Queens, and Marsden wharves were constructed as the first major wharves to start considering bigger ships. The next step in creating Auckland's present coastline was the developments of Princes, and Captain Cook wharves as well as an extension to Marsden wharf by 1932. During the period 1920-1937 reclamation occurred which begun the formation of the present day Viaduct Harbour. The following 36 years created the recognisable shape of the present day port area owned by Ports of Auckland Limited

The reclamation of St Mary' Bay and Westhaven Marina completed the Harbour Bridge which opened in 1959 and Bledisloe, Jelicoe, and Freyberg wharves were completed by 1948, 1952, 1961 respectfully. The development of the Fergusson Container Terminal came about by 1971 and further growth to both it and Bledisloe Container Terminals in 2009 completed Auckland's coastline. (Waterfront Auckland).

Fig. 4: Reclamation Timeline

Fig. 5: Axonometric diagram of the reclamation timeline.

Reclamation Datum Lines

Fig. 6: Reclamation Datum Lines, showing the fragmented angles of reclamation compared to the natural coastline.

The Ports of Auckland currently consists of a number of facilities and services that enables the port to be a thriving and economically viable stakeholder for the city. These facilities and services include; multi-purpose cargo inclusive of steel, timber, dry and liquid bulk, containers, imported vehicles, custom gates, road and rail exchange areas, inter-wharf transfer service, administration buildings, and storage shelters. In total, there are four wharf structures and two container/cargo terminals facilitating the port operations. (fig. 8)

Fig. 7: Aerial View of Ports of Auckland and surrounding area.

- ① Prince's Wharf
- ② Queens Wharf
- ③ Captain Cook Wharf
- ④ Marsden Wharf
- ⑤ Bledisloe Container Terminal
- ⑥ Jelicoe Wharf
- ⑦ Freyberg Wharf
- ⑧ Fergusson Container Terminal
- ⑨ Road Exchange
- ⑩ Marine Rescue Centre, Mikano Restaurant & Bar, Coastguard
- ⑪ Straddle Carrier Area
- ⑫ POAL main building
- ⑬ Multi-Cargo Administrative Area
- ⑭ Engineering Team
- ⑮ Rail Exchange
- ⑯ Tinley St Customs Gate
- ⑰ Eastern Entrance
- ⑱ Empty Depot

The main vehicular mobility within the Port boundary are trucks, straddle carriers, and rail infrastructure. The straddle carriers are used to move container cargo from the ships into specified container grid layouts on the main terminals and overflow areas. The carriers are also responsible for loading trucks and rail cargo to facilitate and transport goods to customers, both local and regional. The straddle's movement patterns predominantly follow the routes indicated in blue on fig. 8 whilst the truck routes are indicated in red, and rail in brown.

Fig. 8: Ports of Auckland Layout

- 1 *Prince's Wharf; main berthing wharf for Cruise Ships. The Ports of Auckland Limited (POAL) Cruise Team manages the overseas passenger terminal for cruise ships on the two lower levels on the Eastern side of the Hilton Hotel.*
- 2 *Queens Wharf; main Passenger Ferry Terminal for public transit use. Ownership of the wharf changed from POAL to Auckland City Council in 2010.*
- 3 *Captain Cook Wharf; multi cargo wharf, imported vehicles from Japan, both in car carriers and roll-on, roll-off vessels. Vehicles held on wharf until cleared by Customs New Zealand.*
- 4 *Marsden Wharf; smaller fishing vessels, over-flow wharf for vehicle imports from Captain Cook wharf.*
- 5 *Bledisloe Container Terminal; originally designed for frozen export cargo, 2nd Container Terminal. Currently used as a multi-purpose terminal for vehicles, "break-bulk" (non-containerized) cargo, and small portion of over-flow container cargo.*
- 6 *Jelicoe Wharf; see below.*
- 7 *Freyberg Wharf; both Jelicoe and Freyberg Wharves are used as multi-cargo areas, for smaller berthing ships, a small amount of containers as over-flow, non-containerized cargo including bulk (wheat, gypsum, silica sand), and break-bulk cargo (rolls of steel wire, sawn timber). The ships that berth here have loading crane attached.*
- 8 *Fergusson Container Terminal; main storage for containerized cargo, five (un)loading cranes on rails costing between \$9-10 million each. The terminal has a berthing length of 610 metres. On the eastern edge of the terminal there is a public walkway that offers seaside views of the Harbour as well as insight into Port operations, particularly the Road Exchange area.*

- 9 *Road Exchange; serves the terminal and multi-cargo customers, VBS or Vehicle Booking System for both container terminals. This area is designated for the straddle carriers carrying containers to waiting Truck infrastructure to transport goods from terminal to customers.*
- 10 *Marine Rescue Centre, Mikano Restaurant & Bar, Coastguard Northern Region, with Teal Park directly south (owned by Waterfront Auckland).*
- 11 *Straddle Carriers; taxis for containers, human operated, diesel/electric combination resulting in greater efficiency and slightly quieter than older versions.*
- 12 *Ports of Auckland Limited building; corporate administration with marine, control, and planning departments.*
- 13 *Multi-Cargo Administrative Area; first floor holds administrative functions of the POAL multi-cargo facilities. These handle break-bulk cargo, steel, timber, dry/liquid bulk, containers, and vehicles.*
- 14 *Engineering Team; POAL maintenance area for facilities and equipment.*
- 15 *Rail Exchange; Four parallel rail lines which are 500 metres in length all servicing cargo needed to be transported by rail; up to 128 rail wagons at one time.*
- 16 *Tinley Street Customs New Zealand Gate; main entrance to the Ports of Auckland. Customs controlled 24 hours, 7 days a week. There are over 800 entrances per day on average, incl. weekends. This is the main hub for transport vans moving staff, shipping agents, contractors, and visitors.*
- 17 *Eastern Entrance; Trucks via. Fergusson Terminal Road Exchange utilize this entrance to access Grafton Gully Highway interchange, via. Quay St and The Strand.*
- 18 *Empty Depot; handles refrigerated containers, overflow of regular containers. Space used to service dirty and damaged reefers.*

It is important to outline the internal structure, patterns of movement, and activity that the Port utilizes on a daily basis. This is a key investigative tool in order to understand the impact this area has within the surrounding context, especially with the rail and road infrastructure servicing the outer suburbs of the city and the region. The main constraints that this area presents is the multiple entrances to the port which are either side of the site that this thesis is investigating. The eastern most entrance, carries the containers via trucks through Quay St and onto the road known as The Strand. This road is the primary connection between the port and the main highway to the south of the thesis site, known as Grafton Gully.

The present layout of the port displays a marked disjointedness in terms of efficiently categorising where their cargo lies within the port boundaries, terminals, and storage dedicated areas. This strongly impacts the port's operational performance in regards to internal cargo movement both to allocated spaces or overflow dedicated areas. Fig. 9 shows the current layout in a fragmented state with container terminals vs multi cargo wharfs and areas. A more efficient layout of the port would be to dedicate large areas for all container terminal cargo and one area for all multi-cargo. By restructuring the port in such a way, it eliminates the problem of double handling cargo, a direct correlation to increase efficiency.

Fig. 9: Ports of Auckland layout improvements for future considerations.
(image sourced from: http://www.poa.co.nz/about_us/PDD_interactive/index.html#12)

POAL Expansion Options

There are currently two options for POAL to consider for future reclamation development. Both of which would create more space for increased cargo, and longer wharf lengths for bigger berthing areas. Regardless of which option is chosen, due to the size of the reclamations and sourcing of materials, development of such an area would take between 20-25 years to complete (fig. 10). This falls well within the timeframe of the Auckland 2040 plan for the future development of the city, and in particular the East by West Waterfront area. Within that timeframe however it can be reasonably assumed that technology will have advanced even further so consideration must be made for whether or not the current options and plans for development may be obsolete by 2040.

In the end we narrowed it down to two. Design doesn't stop here, we'll no doubt refine these ideas further, but they show what's possible given the information we have available to us right now.

These are more compact, more efficient and cheaper to build than any of the others. They build on existing infrastructure and allow us to meet demand for the foreseeable future – thirty years or more.

Option 1

- Demolish some of the old structures on the east of Bledisloe wharf, to create one long straight berth, making it more efficient.
- Remove the piled structure at the northern end of Marsden wharf and deepen the berth in that area. This combined with a 135 metre extension gives us two berths on the west of Bledisloe.

This is a good, efficient layout, but assumes we keep the use of Captain Cook & Marsden wharves.

Option 2

- Extend Bledisloe wharf by 179 metres and demolish the old structures on the east of the wharf to create two efficient berths each on Bledisloe east and west.

- This layout is very efficient, and the extra 1.1 ha of reclamation over option 1 allows the release of 3.1 ha (Captain Cook & Marsden wharves) for public use. Total port area for option 2 is actually smaller than for option 1. This is our recommended option.

Fig. 10: Ports of Auckland expansion proposals

(images sourced from: http://www.poal.co.nz/about_us/PDD_interactive/index.html#17

http://www.poal.co.nz/about_us/PDD_interactive/index.html#18)

Rapid and significant technological advancement could mean that the anticipated space allocated may not be required in the future for use by the port, due to increased efficiency with handling of cargo as evidenced in their most recent published statistics below.

“Our ship rate, a key measure for improving vessel turnaround time, has increased 30% since 2010 and it hit a new average high of 86 moves per hour for the third quarter of 2013. This is the highest quarterly average achieved in New Zealand to date.” (Ports of Auckland Limited).

This could enable the intended land to instead be used for public development. A thorough examination into the reclamation options and, on-going investigations into the logistics and structuring of the port, will contribute to the areas development.

Due to the growing demand for more publicly dominated waterfront edges, and the increased efficiency in port logistics from technological advances, POAL investigated a potential alternative land use for the urban footprint as prepared by CBRE in 2013. In short summary, the report displayed an indicative analysis of the type of development to occupy the entire 77ha port area if POAL were to relocate elsewhere. Initial investigation into the site capacity showed that with dedicated infrastructure put in place and public open space areas already allocated, a 43ha area remained for future development of residential, commercial and retail opportunities. The total area of development would equate to a gross floor area (GFA) of 1,612,500 sqm of developable land made up of 29.5ha of residential development, and 13.2ha to commercial development. This created a gross realisation of \$3,513 per sqm, and would then equate to a Gross Realisation figure of \$1,510.4 million. (CBRE).

This shows that the POAL have considered their location as an economically viable space for future development that is and will continue to be highly sought after.

Edge Analysis

The Edge investigation consists of four key moments where instinctual responses were felt. Each moment possesses a unique character linking topography, urban condition, public life, and linear infrastructure within the site. This combination adheres to the current edge condition.

Judges Bay/Tamaki Drive

Visual Connection between Public edge and railway/ highway across Judges Bay. Contextually enhances the internalized harbor experience through a pedestrian scale but cuts off visual and physical connection to the greater harbor. (fig. 11)

Quay St/The Strand - Overbridge

Overpass connecting two main arterial routes. Creates experiential space at a harbour view scale, whilst allowing for functional programming underneath. This overpass is generous towards the transition of vehicular and foot traffic; more so than being a destination in itself, which could celebrate its context. (fig. 12)

The Strand - Topography

Commercial edge development going against a hill face. Fails to recognize the contextual benefits of visual enhancements of inhabiting slope top. This is evident throughout the trapped environment between the stretch of the commercial zone and rail yard. (fig. 13)

Quay Street - Retail strip

Mixed use building integration running arterial route. Bottom commercial floors induce public use while residents on top floors experience views of the rail yard and port. (fig. 14)

Fig. 11: Judges Bay/Tamaki Drive edge condition

Fig. 12: Quay St/The Strand overbridge edge condition

Fig. 13: The Strand topographical edge condition

Fig. 14: Quay St Retail strip edge condition

Ecology

The current ecological state that the Quay Park Quarter is in is very detrimental to the surrounding area, due to the industrial precinct that was established from filling in natural bays and basin areas. There is no current ecological infrastructure set in place in the form of storm water treatment, bio-retention swales, and industrial run-off from port activities. This current state of ecological imbalance correlates to the public life and well-being of people in the area. There is an aspect of 'nature' represented in the area, with beautification street trees lining The Strand, and Quay St. These trees share no ecological value for the site in terms of treating any industrial run-off from the port, or for the historically converted industrial precinct.

Pre-reclamation and urban development show historic streams forming through the natural topography of the gully's towards the bays. The Waiparuru ('shady or gloomy creek'), present day Grafton Gully, and Waipapa ('the waters of the flats') stream, which follows the linearity of the southern rail tracks merge together at the base of Mechanics Bay or Te Toanga-roa 'the long pulling or dragging' (of canoes), which is the present day intersection between Parnell Rise, The Strand, and Beach Road. The Waipapa stream served as an untouched ecological reserve with wetland systems and a natural estuary. The stream itself supplied the community with an abundance of native eels as a primary food source. The stream mouth was the first arrival place for the early settlers in 1842 (Auckland Regional Council). As development rapidly changed the environment and conditions of Mechanics Bay, it also changed the purpose for the stream. The stream itself is now piped along the southern rail line.

By indirectly analysing the type of ecology that is within the surrounding bay areas of the Quay Park Quarter it gives an insight into the historical ecology of the area, and the opportunity to reintroduce these species back into the environment to establish what was lost.

Fig. 15: 1938 George Kelly Map showing the Waiparuru (left most) and Waipapa (most right) streams (in blue) flowing into Mechanics Bay or Te Toanga-roa.
Map sourced from: <https://at.govt.nz/media/1168412/aeeappendix6culturalvalues.pdf>

Fig. 16: Ecological Significant areas.

To the east of the Quarter there are areas which hold significant ecological value, and outstanding natural features. Hobson Bay is a natural tidal water body which has been modified with infrastructure to ease the development of the sprawling city of Auckland. Over this time, mangroves have expanded and spread creating a different image for the area. It was once proposed to reclaim parts of the foreshore of Hobson bay, becoming detrimental to the sand bar and salt-marsh vegetation. This included species such as; Muehlenbeckia complexa (maidenhair vine), Salicornia australis (glasswort), Suaeda novae-zealandia (sea blite), Plagianthus divaricatus (saltmarsh ribbon wood, makaka), Apium filiforme (New Zealand celery), Cotula coronopifolia (yellow buttons), Apodasmia similis (jointed wire rush, oioi), Phormium tenax (flax, harakeke) among others coastal species (Gardner).

The natural ecological functions and character of the bay have largely been maintained, undeterred by the development around and throughout the area. The sequence of bays in this area are protected under the Auckland Regional Plan as it is an important breeding and feeding area for local fauna. These include; white-fronted terns, gulls, kingfishers, white-faced herons, pied stilts, mallard ducks, pukeko, and kereru (Orakei Local Board). The entirety of Hobson bay is an active open system of ecology and recreation provided and used for the local residents in the area and beyond.

The ecological history of both Mechanics Bay and St Georges Bay pre-reclamation have shown limited information being recorded, however the information that was found particularly involving the historic stream networks/wetland/estuary areas suggest similarities comparable to Hobson Bay ecology. It can be assumed that both bays would have similar characteristics to the Hobson Bay area with its tidal fluctuations, natural systems, ecological variety, and coastal fauna and flora.

Fig. 18: Photograph showing Thomas Bloodworth Park in the foreground with Shore Road Reserve in background, Hobson Bay.
(Image sourced from: 1_ <http://www.aucklandcouncil.govt.nz/EN/AboutCouncil/HaveYourSay/Documents/draftihobsonbayactionplan.pdf>, date accessed: September 2015)

i. *Muehlenbeckia complexa* (maidenhair vine)

ii. *Phormium tenax* (flax, harakeke)

iii. *Apodasmia similis* (jointed wire rush, oioi)

iv. *Suaeda novae-zealandia* (sea blite)

v. *Salicornia australis* (glasswort)

vi. *Plagianthus divaricatus* (saltmarsh ribbon wood, makaka)

Fig. 19: Plant Species found within Hobson Bay

- i. http://ketenewplymouth.peoplesnetworknz.info/image_files/0000/0003/7889/Muehlenbeckia_complexa__Small_leaved_pohuehue-001.JPG
- ii. http://ketenewplymouth.peoplesnetworknz.info/image_files/0000/0005/5894/Phormium_tenax__Harakeke__New_Zealand_flax-001.JPG
- iii. <http://www.maoridictionary.co.nz/i/photo/oioi1.jpg>
- iv. <http://static.inaturalist.org/photos/1210797/original?1413289008>
- v. https://upload.wikimedia.org/wikipedia/commons/3/3b/Salicornia_europaea_MS_0802.JPG
- vi. <http://static.inaturalist.org/photos/2833577/original.jpeg?1451681566>

Urban Fabric

Historical text and imagery express how this area, when first reclaimed, functioned, housing industrial facilities and services. This converted industrial precinct historically represents how influential these facilities and services were during the time of development. This is particularly shown within the infrastructure facilitating the area and port. During its conversion into the present day, the area plays host to a number of converted industrial facilities, mainly old storage buildings, and warehouses, which are positioned along The Strand. With the withdrawal of rail infrastructure from the southern and western ends of the site, this opened up the opportunity to develop the land and expand the CBD towards the eastern area (fig.20).

The image shows the huge infrastructure in place in 1940, before the retreat of certain railway areas. The discontinuation of the old railway station and platform had a significant impact on the future of the rail in site, reducing its industrial footprint for new development to occur in its place. Some rail lines were seen as future development opportunities which have remained in place to this day. The area consists of a mixed typology ranging from high rise residential buildings, light commercial spaces, converted warehouses, two-storey cluster housing units both in the western and eastern ends, some light industry/manufacturing buildings, and high end apartments (fig. 22).

These developments would be ideally suited for the area, if there wasn't such a mix of different combinations happening. The result ends up as ad-hoc development that has gone through time without evolving in a positive way. The cluster housing areas have a sense of 'not-belonging' to the outsider, emphasising that this area has negative connotations and aspects of public life. There is a need for such developments to exist in the city, but for this site with its locality to the harbour, established waterfront to the west, major infrastructure, and placement on the fringe of the CBD, it has the opportunity to develop into an area for the local/inner resident. Along Quay St there is an incredible demand by Auckland City Council to create a stronger relationship between the established waterfront (towards the west of site) and the eastern bays. This prompts a desire for this site to develop beyond a physical public connection jammed between topography and port infrastructure, but for this to advance further and create a desire to occupy this site.

Fig. 20: 1940 Aerial with Present Day overlay showing the rail infrastructure in the then Industrial Quay Park Quarter.
(historic aerial sourced from: <https://www.flickr.com/photos/135346658@N08/sets/72157654704268514>, date accessed 10/09/2015)

Fig. 21: Precincts and Quarters of Auckland

Fig. 22: Disjointed Building typology and use

i. Vector Arena, Multipurpose Venue.

ii. Auckland Rail Station, Converted to residential apartments.

iii. Residential apartments.

iii. Residential apartments.

iv. Storage Facility.

v. Furniture Showroom with office and apartments in background.

Fig. 23: Above images correspond to 'Disjointed Building typology and use' diagram.

vi. Two-storey cluster housing units.

vii. Quay St local businesses, eateries, and apartments.

viii. Local buisnesses, office spaces, and apartments in background.

ix. High Rise Apartments (dual towers).

x. Saatchi & Saatchi converted warehouse.

xi. Furniture Showroom warehouse.

Fig. 24: Above images correspond to 'Disjointed Building typology and use' diagram.

Topographical Influence

The topography of the Quay Park Quarter is predominantly flat land due to the formation of the area via reclamation. Development of rail and road infrastructure has manipulated the surrounding hillsides and flat land to cater for the roadways and rail respectively. This is evident within the site with bridges and graded roadways as well as rail platforms and lines. The site expresses that this vast area of flat land was once ocean space as the hills and valleys act like natural systems in the area. The Quay Park Quarter historically represents natural bay areas that were once formed along present day The Strand between the intersections of St Georges Bay Road and Beach Road (fig. 26).

Reclamation in this area has caused the trapped landscape aspect that the site is currently engaged with, as the natural surrounding hills are dramatic in slope (fig. 27) which limits the surrounding context to connect with the site.

The surrounding hills create major vantage points both visually and physically into the site, mainly at the Dove-Myer Robinson Park on the Corner of Gladstone Road as you enter the suburb of Parnell. The topographical influence on the site contributes to the nature of development on the flat areas, flat areas create a certain civic function for easily convertible space. For example, the elevated yet flat historic railway platform has been converted into a car parking space, yet because of its level separation to the surrounding area it offers a vantage point to the surrounding context. This creates a positive separation in comparison to the current site conditions feeling uncomfortable along roadside.

i.

ii.

iii.

iv.

Fig. 25: Photographs showing topographical Vantage Points, in reference to 'Historical bay sequence with topographical vantage points in area diagram'.

Fig. 26: Spot Heights within indicative site boundary.

0.0
+

Spot Heights 0m - 10m

Topography 0m - 10m

Indicative Site Boundary

Fig. 27: Historical bay sequence with topographical vantage points in area.

- *Vantage Point*
- Topography*
- *Site Boundary*

Public Life

The public life is created in the form of usable spaces that the public are drawn to or congregate at. These existing programs within the site consists of commercial areas, residential community areas, primary circulation routes, and limited public accessible green spaces. Within the surrounding context of the site there are particular viewshafts that create a public awareness of position within the city which builds a relationship with visible destinations. These sightlines open to the harbour from the streetscape. Walking distances in relation to amenities in the area, create a sense of engagement and disengagement dependant on the distance they are set part. A pedestrian desirable distance to walk to such amenities is scaled at 200m. (fig. 29).

There is very limited positive public life that occurs within the site as identified within the diagrams, however, the potential that is explored through vantage points creates a sense of placement within the site and city context.

Existing programs and primary demographic of users around site.

- *Primary Circulation*
- *Commercial Zones*
- *Residential Community Developments*
- *Public Accessible Green Spaces.*

Visual Connection

- *Sightlines open to harbour from surrounding streetscape. Create a public awareness of position within the city and builds relationship with visible destination.*

Walk- Distance- Amenities

- *Main public amenities in relationship to a Pedestrian scale 200m distance engagement. The considered distance of a walk-able environment.*

○ Significant View points

▬ Arterial Circulation

▬ Railway

■ Public Amenity

■ Commercial Zones

■ Institution

■ Residential Community Developments

Fig. 28: Influences on Public Life

Fig. 29: Top: Sightlines and Vantage Points.
Bottom: 200m radius for Walkability.

Mobility

Auckland has a diverse range of transportation options to cater for the urban sprawl of the city. These options include ferries, state highways, primary/secondary arterial routes, and rail servicing both the public and port infrastructure. Understanding these varying options highlights the importance of the mobility of the city in order to function in the wider region. This also highlights which transport options are directly correlated to the site exposing the conditions of the area. (fig. 30)

Fig. 30: Mobility of transportation movements through site

Linear Infrastructure

The site is divided and pierced by regional infrastructure that moves in a linear fashion contributing to the type of environment the site has resulted in. The large rail infrastructure is the predominant cause for limited access and movement in a north by south direction across site. The area is held by several rail tracks acting as overfill for the Ports of Auckland with use of transporting goods. Some of the tracks have been made unserviceable along with those which are unused, warranting their removal in the future. Alongside the rail yard, the double line passenger service commutes through to the eastern bay suburbs at a very frequent rate to Britomart Station, an underground station. Vehicle infrastructure borders the site with Quay St/Tamaki Drive running west to east servicing commuters from the eastern bays, and The Strand wrapping around the lower parts of the Parnell Suburb to the south-east. Quay St/Tamaki Drive are two-lane roads in both directions while The Strand has moments of single and double lanes. It is important to note that The Strand links to Grafton Gully, south of the Quay Park Quarter. Transit vehicles from POAL carry containerized cargo down this route to connect to the Auckland Urban Motorway.

The Quay Park Quarter falls victim to an infrastructural nightmare with congested roads and busy (private) railway infrastructure that creates an inability to expand beyond the bordered area. The linear infrastructure creates a sense of containment that contribute to the type of built environment in the area which ultimately disconnects public life.

Fig. 31: Metropolitan aerial view of Linear Infrastructure

A

B

C

D

i. Pedestrian Overbridge to Vector Arena from Quay St

ii. & iii. East and West view of Rail tracks through to the Railyard and Britomart Station.

iv. & v. Showing East and West view of Railyard and Public Rail tracks.

Fig. 32: < Aerial view locating focus sites for linear infrastructure

Fig. 33: ^ Photographs showing linear infrastructure.

Fig. 34: Diagrammatic focussed view of infrastructure at A

This diagram illustrates a major constraint that has been identified. The linear infrastructure at play here limits the accessibility to Vector Arena and surrounding buildings. The access to this area is in the form of a singular pedestrian overbridge that elevates over the rail lines as it descends gradually to the underground station. The overbridge is well utilized by the public when an event is held at the Vector Arena. The access to these public facilities has the opportunity to be strengthened to also facilitate movement across Quay St.

Fig. 35: Diagrammatic focussed view of infrastructure at B

This diagram illustrates a key intersection for vehicular movement contributing to the site and surrounds of the area. The linear infrastructure at play here consists of an overhead rail line crossing over the vehicle intersection and through the thesis site at the southern end. This rail infrastructure, although raised, contributes to separating buildings by passing through it. Not all of the rail line is bridged for easy movement underneath. In the spaces where roads do not pass underneath there is land banks holding up the tracks.

Fig. 36: Diagrammatic focussed view of infrastructure at C

This diagram highlights the rail infrastructure and limited access to the old railway station platform which has been converted to a controlled car park servicing the area. The railyard and corresponding public service lines contribute to a conglomeration of industrial history and function as a public transport area. This isn't a negative factor in the surrounding site but due to this large infrastructure in place it contributes to the surrounding development and the type of environment that is produced in a public life realm, and civic function.

Fig. 37: Diagrammatic focussed view of infrastructure at D

This diagram illustrates the second route of pedestrian access to Quay St along this stretch of trapped landscape. It also highlights the road network interacting with the rail lines and yard underneath the bridged road. As a pedestrian to the area, there is visual insight and connection to the surrounding area dominated by the rail infrastructure either side of the bridge. Towards the east, there are disrupted views of the water's edge towards Judge's Bay and Tamaki Drive.

CHAPTER THREE | *Literature Review*

Waterfront and port revitalisation is a relatively contemporary trend in the global restructure of waterfront spaces, to which there has been many discussions. We've seen a noticeable change in the way in which industrial waterfronts are converting to dynamic public spaces within the contemporary city. This brings into question the viability and roll that the urban port plays within the context and changing nature of waterfront cities. Within the article titled 'Cities and Ports: Concepts and issues', Dr. Brian S. Hoyle discusses contextual perspectives, the interrelationships concerning ports and cities in an idea of his titled the 'cityport concept', which discusses the port-city interface, and problems with waterfront revitalization.

Hoyle notes in his discussion within his idea of cultural perspectives that the cityport 'symbolises the interdependence of environment and society, and involves a fusion of cultural diversity and historical experience' (D. B. Hoyle). This dependence between environment and society is quite an important aspect which constitutes the relationship to ones self within the context around them. The immediate surrounds, the relationship of those surrounds to the city, and the city to the region. The marriage between the environment and society prompts the direct relationship between a city's cultural diversity with respect to the historical context and relevance that cities retain within these certain spaces. City systems will then come into play where the context of the urban grain brings about how the spatial port reacts to the environment it is in, in terms of topographical setting, surrounding built typology, linear infrastructure, and the viability of the port economically.

Hoyle's 'cityport concept' outlines various factors directly relating to the importance of locality, spatiality, and evolution of the port, in order to understand the 'use versus need' of ports in the contemporary city, and their associated disconnection or 'out-of-place-ness'.

"The original water site of the port has often determined the general layout of a port city; and decisions concerning port expansion have often affected the pattern of urban growth". (Hoyle , 266)

"Port-city development reflects the ever-changing uses of location and the continuous reassessment of locational values and interrelationships." (Hoyle , 267)

Urban Growth in the context of the site relates directly to the reclamation efforts that grew Auckland city exponentially. Alongside the reclamation stages through to the present day, the changing coastline of the harbour reflects the rapid development and industrial edge that, in particular, the Quay Park Quarter was becoming. Throughout the immediate surrounds of the quarter, rapid industrial growth is recorded showing considerable railway infrastructure, ship docking areas, and storage piers emerging from the reclaimed landscape. Technology advancements through the ages reflect how the area has become much more efficient in terms of industrial land-use and building typology, resulting in these areas to release land allowing for commercial and residential development to formulate the site. Understanding the particular land use problems and history of the area in the context of the land being previously used heavily for industrial and port use, generates an understanding into the 'culturalization' of ports and their cities. This 'culturalization' is explained in further detail by Han Meyer.

There are a number of distinct phases in development of the cityport (fig. 38). This diagram represents the stages of the developing cityport in relation to the period it is based in. Characteristics have been noted on the periods and stages as a fundamental explanation or cause for the stages to occur. Not all urban ports display this sequence of stages presented by Hoyle. There is a global trend of cities that follow this diagram where evidently the city's expansion and relationship forcing the urban port to relocate elsewhere, but while some ports have partially surrendered their land for waterfront revitalisation, others have remained on their current footprints, these can be referred to as 'port/city typologies'.

Stage	Symbol		Period	Characteristics
	○ city	● port		
(I) Primitive cityport			Ancient–medieval to 19th century	Close spatial and functional association between city and port
(II) Expanding cityport			19th–early 20th century	Rapid commercial and industrial growth forces port to develop beyond city confines, with linear quays and break-bulk industries
(III) Modern industrial cityport			mid-20th century	Industrial growth (especially oil refining) and introduction of containers and ro-ro facilities require separation and increased space
(IV) Retreat from the waterfront			1960–1980s	Changes in maritime technology induce growth of separate maritime industrial development areas
(V) Redevelopment of the waterfront			1970–1990s	Large-scale modern port consumes large areas of land- and water-space; urban renewal of original core

Fig. 38: Stages in the evolution of the port-city inter-relationships.
(imagined source: Modified from Hoyle 1988, 7).

Examples of these different 'port/city typologies' can be seen globally. London, for example has relocated their main urban port outside of the city and enabled waterfront revitalisation amongst its docklands, (fig.39), while Barcelona, on the other hand, has surrendered part of its port landscape away from the city, (fig.40). The last example is of the functioning urban port that is north of the site that this thesis is investigating, POAL. There are certainly reasons for ports to remain in their cities, this is attributed to financial and economic prosperity, the cost involved with relocating services being unjustifiable, and/or the inability to find, purchase, or reclaim land to relocate to. This discovery evidently shows that there is some flexibility within urban planning to allow for such movement from the urban port, or to force it upon the ports themselves to question the viability of their role in the city centre.

Fig. 39: London port/city relationship. Changing relations among urban areas(red), port areas (orange), undeveloped landscape (green), water (blue), and Harbour areas due for conversion/previous port areas (black).
(image source: Meyer 1999, 55)

Fig. 40: Barcelona port/city relationship. Changing relations among urban areas(red), port areas (orange), undeveloped landscape (green), water (blue), and Harbour areas due for conversion/previous port areas (black).
(image source: Meyer 1999, 57)

Another way of understanding how trapped landscapes occur behind functioning urban ports is with the idea of the port-city interface. This is an unfolding and unique scenario which diagrammatically and spatially represents a void space between the city and its port, see fig. 41. This void space or 'interface' is the resultant areas and relationship between the port and the city with respect to the 'development processes of change now being experienced in many port cities around the world', (D. B. Hoyle , 269). The diagram shows that with industrial migration there is a negative effect on the environment, but an incredible boost in the economy, meanwhile the port is expanding into the water, creating more space and more reclamation for the use of its infrastructure. With this expansion a conflict or cooperation zone emerges. This zone is known as the interface, the physical space that is created between port and city, which can either help aid the port in its infrastructure, thus being a cooperative zone, or be detrimental to the city and well-being of its people, thus a zone of conflict.

"the main reason for present-day changes and problems in this sphere is, of course, the inability of most cityport sites to absorb not only rapidly changing and expanding port development but also successive phases of urban growth", (Hoyle , 269).

Fig. 41: Characteristics of and trends in the port-city interface.
(image source: Modified from Hoyle 1988, 14. Diagram by Bob Smith, Department of Geography, University of Southampton)

Upon reflection and understanding of the port-city interface, the disconnection that is spoken of by Hoyle, in many cases, has varying degrees. With application of this method, in regards to the current site investigation, the disconnection that the port and city are experiencing, illustrates that there is strong reasoning and relationships that this interface or void space currently projects. A sense of entrapment. The space between the city and port, in order to create a connection or reconnection, needs to function on a metropolitan, neighbourhood, and intimate scale.

The developing network of dynamic waterfronts is influenced by the ever-changing face of ports in their city centres. The opportunity to acknowledge these obsolete functions and to create dynamic public space along the water's edge has been and will continue to be influenced by the emergence of the 'cultural factor'. The relationship between urban design and cultural factors is determined by the significance of the cultural status and changing patterns, perceptions, behaviours, beliefs, and important values and traditions that the area/or city pertains. Expressed in his book 'City and Port', Han Meyer describes the 'culturalization' of the city and how "the traditional function of city centers as essential concentrations of activity and facilities has shifted, or is shifting, to other places within metropolitan regions...", (Meyer , 44). In a sense the shifting of these activities and facilities elsewhere opens up opportunities to then create other developments in the city centres as an attraction for people that would not normally venture into the area.

Whilst these actions are evident within the contemporary city, where new developments are creating concentrated hubs within the metropolitan area to service such activities for the public, the developments as such represent a transformation of urban renewal. This urban renewal in relation to the cultural factor of the city falls short of the benefits for life on the ground, the community, and the uniqueness of place, creating an artificial interpretation of the city's 'corporate identity', (Meyer , 45)

Understanding the changing face of ports and their relationship to the growing contemporary city, is an important layer in understanding how Auckland's port has the potential to be restructured, especially if technological advances continue to make port efficiency even greater. This will reduce the need for such a large industrial footprint of land, and release areas for future development. The benefit of relinquishing land that is not in use by a large stakeholder explores a changing of public attitude towards industrial waterfronts in the heart of the city, thus, creating the opportunity towards catalytic responses to a global trend in the contemporary city. Enhancing public life, amenities, and well-being, clearing the area of the dominating industrial functions.

In order to conceptualise and categorize the site into a place within the city context there needs to be an understanding that differentiates certain areas based upon the characteristics, public involvement, and functionality of the place. Within the article titled 'From the Ground Up: Programming the Urban Site', Andrea H. Kahn, an Adjunct Associate Professor of Architecture at Columbia University, New York, discusses how there needs to be a new approach to describing sites, which brings about the concepts of 'the unsightly site', 'site construction', and 'urban narrative'.

Kahn notes within her discussion of a new approach to understanding the urban, that it "arises with the acknowledgement that even supposedly bounded metropolitan areas (...) defy simple description", (Kahn , 55). She continues by stating that, "they cannot be disengaged from their larger, regional surroundings or from smaller, local architectural elements. Given the unstoppable flows of the city, every urban site is part of an unchartable configuration", (Kahn , 55). In short, Kahn expresses the need for a varying approach to understanding urban sites much like the changing landscape of urban sites. Urban areas are made up of various intricate detailing that are as unique as the contributions the city, or people have to it. The ever-changing nature of the city deserves an equally diverse approach rather than a stock standard analysis to understand its setting.

Kahn continues by explaining three models to engage with the ever-changing landscape of a city in order to better understand and individualise different components that make-up the area. Kahn titles these ideas, 'the unsightly site', 'site construction', and 'urban narrative', with each of them having configurations and contributing layers to create the overall understanding of a new approach.

"The notion of the unsightly site corresponds to urban configurations deemed insignificant ("non-urban") by normative standards, and responds to a demonstrated need to focus on these overlooked sites prior to appraising their value", (Kahn , 56)

This concept directly correlates to Kahn's notion of 'site construction'. By recognising the urban configurations and then creating a focus in order to begin reimagining such areas, it allows the designer to understand the site in question for redevelopment or 'construction'.

"Site construction eschews abstract measures to develop site-driven design strategies unfettered by the shadow of outdated ideals and freed from generalized urban/suburban/exurban distinctions. They acknowledge the urban potential of the unsightly site, and in turn use it to raise questions marginalized by approaches to the city predisposed toward the composed and refined", (Kahn , 56).. Kahn continues, "By weaving urban characters found on site into urban programs, site construction is the critical hinge between how the city is seen and what it might become", (Kahn , 56).

This critical engagement that Kahn expresses is the epitome of how landscape architecture can engage with the underlying; seen or unseen, characteristics of the unsightly site towards the reimagining and restructuring of areas to generate the public life that is necessary for urban growth.

With Kahn, giving life and movement to the idea that site construction is the foundation of urban growth, she also expresses the multivalent nature of what site construction constitutes in terms of the definition of urban, and the role it plays within that realm. She argues that there needs to be 'a new distinction' between the idea of '[not]urban' and the 'anti-urban'.

"The [not]urban is posited here as an unrecognized urban condition – a neglected situation that nevertheless proposes the heterogeneous spatialities and scales of experience associated with the urban. The [not]urban is any situation perceived as failing to meet normative expectations based on traditional images of the city: it is overlooked and undervalued not because it lacks urban traits but because it is apparently incommensurate with idealized urban models", (Kahn , 56).

The idea of the [not]urban that Kahn gives life to, is directly relatable to trapped landscapes that exist within the urban fabric of a city. It describes the current situation, that it is structural. The site, or aspects of the site, might be currently seen or portrayed as wasteland, or underutilized space. As an example of this, the Quay Park Quarter illustrates the area being cut off from water activity by the large urban port and linear infrastructural systems facilitating the area. Trapped landscapes occur in parts of the city where development has halted, or an area that is compiled of confused lacklustre developments that underachieve against certain criteria for the area. This criteria in particular can vary based upon the urban setting, the purpose of the area in a commercial/business sense, of the suburb that the area is situated in, the location of the area and the immediate surrounding contexts, the need for public life to exist in the area, what type of public life the area is targeting, and the ambitions set out in city plans for the area's future consideration and development. All of this points to how the structuring of such sites disconnect from the systems and movements in a way that only suits the sorts of anti-public land-uses that can be found on the site.

The notion of the 'anti-urban' expressed by Kahn contrasts with the urban site – the condition in which change can happen, where there is no simplifying image, and the site, as designers, love to control – and the [not]urban condition, as expressed above. The 'anti-urban' concept arises from the schemes to fix the city that have been designed with main 'image' for the area, not being altered by other influences to respond to the systems of the city. For example, designed areas targeting one demographic or audience for the use of the space, resulting in 'cheesy', or 'token' interventions with a 1-dimensional view of the site.

“the anti-urban insists on singularity of scale and uniqueness of place (although anti-urban sites can be, and are, located anywhere). With designs to deflect the forces of larger urban field, the anti-urban impulse aims to stabilize the city's necessarily shifting ground.” (Kahn , 56).

This condition is very hard to avoid in contemporary port redevelopment schemes or 'water revitalization' movements, where the area has been opened up for the public domain. Designers in the past have imposed one image, which reduces the ability for the area to change and adapt to the growing condition of the urban, civic and public realms, which then contributes to the variety that use the area. Port developments often seem to fall into the habit of creating generic tourist destination areas that have a singular focus placed on them, not for local resident use which then falls out of the image for the overall city.

Giving trapped landscapes this similar comparison and character of Kahn's [not]urban brings a powerful theoretical layer in order to explore the make-up, the reason, and the future for these areas. It is especially important while investigating this area of trapped land that it does not fall into the tendencies expressed within the discussion of the anti-urban site. Kahn's application of these suggestive theories are quite critical when considering landscapes that are untouched, developed to their seemingly maximum potential, or areas that have yet to be designed at all. By identifying such areas and giving a title or name to it, it starts to generate perceived outcomes and insights as to what and why the area has been labelled this way. The labels therefore give an appropriation as to how the space functions in response to human occupancy, feeling, and life on the ground. For example, if a site is labelled as toxic, people would associate the place as; detrimental to the environment, uninhabitable, polluted, etc. Much to the discussion, Kahn sets a clear understanding of practical guidelines into the understanding of site, creation of site, and justification of site. The current site follows the patterns of the non-urban, with restructuring the site the doing-so needs to avoid the resultant spaces of the anti-urban, but instead become an urban site for the future.

Ecology, in a city setting, has the distinct ability to generate human attraction, interaction, and sense of curiosity often resulting in a relationship between people and ecology or spaces that have been created within a city for the purpose of occupation; for example, public parks and street furnishings. The reason for this connection is that we as human's associate water, trees, open fields of grass, flora, and fauna as an intimate connection between ourselves and nature as a way to disconnect from the working world. This psychological connection we have is a powerful incentive to start to incorporate more often in our daily lives amongst the city fabric. But are these spaces a token piece of nature, or can they have more or a systematic relationship to ourselves, and the city? Kathy Poole, a renowned landscape architect and collegiate teaching professional, explores a way in which a framework of a cultural ecosystem – that of the built and natural organisms and systems – can highlight contemporary possibilities for revealing the city in built design. In her article titled 'Civitas Oecologie: Infrastructure in the Ecological City', Poole discusses that the city is never apart from ecology and the natural systems that have been buried under the city as closed systems.

Poole, suggests that the city consists of two integral sets of systems that allow it to function in the way that continues today. One set of these systems comprises of the built biophysical, which includes the manmade infrastructure to cater for our everyday living; water, waste disposal, sewage, street networks, electricity, and other alternate energy lines. The second system, as explained by Anne Spirn, is an open system which the city is 'dependent upon the importation of energy and materials which are transformed into products and consumed', this of course also produces by-products in the form of waste and materials which are released into the open system.

"These elements of infrastructure are the transporters of fluids and materials, nutrients, and the biochemical forces for its persistence and regeneration; like the natural systems, infrastructure also constitutes the structure, function, and dynamics of the city. Consequently, the significant relationships of the city are in the interactions between human and natural systems – reciprocating relationships that act in both cooperative and competitive ways in a continuous, vital evolution. Together, these systems form the 'built natural infrastructure,' the cultural infrastructure of the city", (Poole ,127).

The key point to note here is that just like the manmade biophysical systems for the city are required for sanitation, fresh water, and general health, well-being, and to live, what's equally, if not significantly more important is the human interaction between the earth's natural systems both cooperative and competitive to our continual evolution. As discussed previously, the human psychological response to wildlife, ecology, flora, and fauna is a way in which we can have a mutual respect and intimate connection as a way of disconnecting from the working world. Storm water pipe networking underground is creating a severe disassociation between the natural ecology systems and the systems of the infrastructural developing city. Therefore the links that were once associated between human and ecology in city is diminished without an open sourcing of discovery of the ecology itself. We are discovering more ways in which we can have these intimate interactions with our landscapes, that both belong in the city and in rural settings.

"By extending our contemporary understandings of infrastructure to include the city's natural ecology – and by reuniting the built and natural – we may find new and renewed understandings of the civic realm", (Poole ,127).

There is a need to not just beautify the city with token gestures of nature, but to envelope the city and create new developments with open natural ecological systems that start dictating land use, space, and civic developments to create our built environment for the future.

“(…) it is critical to recognise that ‘ecology’ is not equivalent to ‘nature,’ and that expressing ‘nature’ is not sufficient to the fulfilment of a contemporary understanding of the city. To meet this need, we must extend our considerations of ‘nature’ to the ecology of landscape, that is, the structure, function, and dynamics of the interactions between organisms and their environments”,
(Poole ,135).

With these ideas in place for the need of ecology in the city that wasn’t just a token beautification with street plantings and open grass areas, Poole created the connection between Paris and it’s phenomenon of the nineteenth-century infrastructure, in particular the research from the Prefect of the Department of the Seine, Imperial Baron Georges-Eugene Haussmann and his assistant Jean Adolphe Alphand. Their intention for Paris at the time of their reign was to expand the civic sphere by creating infrastructural developments that ‘transcended mere pragmatism or economics and offered public benefits’, (Herbert). They introduced that infrastructure not only had to be practical, but it was to be visionary, because without future considerations for predetermining growth in certain city’s, the city itself would have major infrastructural problems both in terms of the machine – the manmade systems as mentioned previously – and also naturally in terms of future ecological impact in the city.

“the city is an environment in which natural processes are significant structures that are not only worthy of consideration in functional terms but possess vital relationships that are latent with expressive potential, if only we extend our vision to their creative possibilities. But how do we draw emotive considerations from infrastructure?” (Poole ,135).

Utilizing ecology as infrastructure bodes an interesting position conceptually for the contemporary city. This infrastructure also refers to the city’s need to work and flow as an open system both traditionally in the sense of underground sewer piping, electricity cabling, telecommunications, etc. but also civically in the sense of ecology and public life relationships. The way in which ecological infrastructure can work in the civic realm is to highlight the natural conditions and functions of the biophysical element in nature. Storm water treatment is a prime example of this, where it can visually and physically treat, storm water, surface run-off, and catchment watershed in open wetland systems which integrate aspects of public life through the designing of these spaces. This is where ecological infrastructure can begin to not only deal with treating the biochemical from our built environment, but inform and construct the surrounding civic realm in the form of new development opportunities.

This thesis will look to reintroduce ecology as it once was pre-settlement, not as a token gesture to the heritage of the site, but to the notion of an ecological infrastructure treating the area and mending the relationship between ecology, city, and public life and well-being. This is a way in which the area can contribute to the city as a catalytic influence into the restructuring of such trapped landscapes.

CHAPTER FOUR | *Project Review - Case Studies*

Darling Harbour

Sydney, Australia

*Formally opened in 1988, continual developments ongoing,
last construction due 2016.*

Darling Harbour is situated a short distance from the city centre in Sydney, Australia. The area was once a thriving industrial port key to the economic success of Sydney up until 1950 when its success took a hit due to the road and rail industry taking most of the trade from shipping. By 1970 Darling Harbour was a series of abandoned warehouses, wharfs, and the rail tracks were hardly used. Six years later, The Western Distributor, an elevated highway, was built. The highway pierced through Darling Harbours southern edge connecting the western suburbs of Sydney to the city's CBD area. By this stage, the old industrial port lands were unused by many and was considered an area up for potential development. By 1984 a masterplan was proposed for the redevelopment of this area to return it back to the residents of Sydney after more than 150 years of industrial activity. With varying projects such as open space networks, exhibition centres, hotels, conference centres, and public amenities, Darling Harbour was reborn for the people of Sydney to experience (Darling Harbour Live).

The Darling Harbour redesign encompassed a range of civic buildings that is set to rejuvenate the area. These civic buildings include a 5-star hotel complex, world convention centre, exhibition and entertainment venue, and a renewed and extended public space network both alongside and set back from the water's edge creating open public space. The vibrant urban village encompasses commercial, retail, and residential opportunities in Darling Square. These programmatic buildings set the tone for the area with a lively community that utilize the space and the waterfront. The public landscape intervention is set back in the area as to not cluster the overall composition of the space.

Fig. 42: Darling Harbour. (image source: https://upload.wikimedia.org/wikipedia/commons/2/23/Darling_harbour%2C_new_south_wales_1234.JPG?uselang=en-gb)

Weaknesses: Darling Harbour's relocated all port functions to create public space. It doesn't challenge the integration of the private and public realm even though it's a good example of reprogramming private land to generate public life in the area. Elevated infrastructure pierces through the area and is used as a primary route from the outer suburbs through to the city centre, bypassing the publicly focussed area. Total restructure and removal of port functions generated huge costs for the port itself as well as huge cost to create the public space. It is somewhat disconnected for people approaching the area from the west via walking, running, or cycling due to the developments representing a wall of buildings. There are no small thoroughfares to allow movement through, only around at either end.

Strengths: It exemplifies a successful transition of trapped port landscape into a full-bodied public space; a dynamic amenity filled area that generates public life. It successfully represents a programmatic space targeted towards boosting the tourism economy of Sydney with hotels, convention centres and recreational opportunities set in place.

This case study represents how an industrial zone can transform into an inviting and programmatic functioning public space for life to generate on the ground. By having clear programs in place it allows for development to rapidly occur in the direction that it intended. This actively reimagines and restructures the space in order for public life to flourish, as well as synergetic relationships to form in a programmatic response first. By identifying desires from the public and involving private stakeholders, it creates the ability to design meaningful architecture and dynamic public space that is fit for specific purpose.

Fig. 43: Diagram of programmed space. (image source: <http://assets.cebit.com.au/wp-content/uploads/exhibition-centre21.jpg?9d7bd4>)

Barangaroo

Sydney, Australia

Construction began 2012 – 2023

Design Firm: PWP Landscape Architecture

Barangaroo is situated north of Darling Harbour, and is part of an extension of the city centre in Sydney, Australia. The northern part of the Barangaroo development area is historically known as Millers Point, a headland that thrived with exotic life and ecology. In the 1820's the first series of wharfs were erected at Millers Point. By 1900 the NSW Government were set to take over control of the precinct to rebuild the wharves and shipping infrastructure towards the growing trade industry of the new century. Large reclamation efforts were completed by the 1960's to create a 'concrete apron' to cater for containerization, a developing global trend for shipping. This 'concrete apron', continued to define the precincts parameters and sea edge until 2003. The site, due to the surrounding development, was deemed unsuitable and unsustainable to cater for the growing demand of railway infrastructure to transport the containers from the shipping trade. By 2005 an urban design competition was held in order to reimagine, restructure, and redesign the baron concrete port land into a thriving precinct for the city of Sydney. (PWP Landscape Architecture).

The Barangaroo redevelopment has been broken up into three areas focussing on a Headland Park [Barangaroo Reserve], Barangaroo Central, and Barangaroo South. The areas are purposefully designed in varying ways to allow different programmes within the landscape. The first talking point of this design would be the manufactured naturalistic headland that has been formed with historical links representing Miller's Point and the pre-1836 shoreline. The Headland Park or Barangaroo Reserve encompasses over 75,000 native trees, shrubs, and groundcovers in its 6-hectare landscape of which replicates the cultural and historical vegetation before European settlement (NSW Barangaroo Delivery Authority). Barangaroo Central, acts as an open recreational area lined with fields for people to occupy the space with family picnics, group outdoor exercise classes and so on. The 5.2-hectare space is intended for the user to create their own programme with the design being simplified to incorporate the boulevard connection to the water's edge. The area combines civic and cultural attractions, as well as space for the future development allocated for residential, retail, and commercial uses (NSW Barangaroo Delivery Authority). Barangaroo South encompasses the extension of Sydney's Central Business District. The 22-hectare site contains a very mixed use functionality with cultural facilities, international hotel, cafes, retail spaces, high rise apartment complexes, and commercial office buildings (NSW Barangaroo Delivery Authority).

Panorama of Sydney, William Collins Sons & Co, 1877

Existing Site

Fig. 44: Top Left: William Collins Sons and Co. 1877 Panoram of the Barangaroo area. (image source: <http://www.pwpla.com/7102>)

Fig. 45: Top Right: Before and After aerial. (image source: <http://www.pwpla.com/7098>)

Fig. 46: Centre: Barangaroo Masterplan. (image source: <http://www.pwpla.com/7098>)

Fig. 47: Bottom: Section view of Barangaroo Headland Park (image source: <http://www.pwpla.com/7187>)

Weaknesses: Because the development is on cleared port land, it does not challenge the integration of private and public space even though it is a great example of separating programmatic space. The ecology side of the design only focuses on restoring the natural headland with a stylistic and modern approach to what was historically, with large squared slabs of Sydney sandstone meticulously placed.

Strengths: The completion of the 'missing link' in the Sydney Harbour Circle Walk in order to create public life along the entire waterfront edge will be an incredibly powerful open space for the residents of Sydney and for the tourism industry. The re-creation of the historic headlands within the Sydney harbour creates a notion of history of where it has come from, to where it went, to the future of the precinct. It repairs the physical connections to the water's edge that was lost with the port's development. Actively separates ecology or naturalistic public domain, recreation or civic domain, and business or dense urban domain by creating three areas of development, and by doing so also maintains cohesion through public engagement along the waterfront promenade. There is interplay with artificial levelling at the Barangaroo Reserve that creates separation between occupants using the pathway network.

The case study indicates a notion of historical relevance as well as cultural representation amongst the design. This thesis will also take on this approach as the site investigation reveals that there are significant historical features to the chosen site. This is also a vital piece of knowledge that is key to this thesis's success in terms of seeing the representation to history but also to the changing culture of the present day and what it will become in the near future. This case study also addresses a fundamental issue by connecting the stretch of the waterfront area and restoring accessibility to the outer suburbs or areas surrounding the site. This is a crucial component to consider in this investigation, as there is a strong demand to connect the eastern suburbs and surrounding bays in Auckland to the existing waterfront in the CBD.

Fig. 48: Top: Perspective Render of Barangaroo Central (image source: <http://www.pwpla.com/7104>)

Fig. 49: Bottom: Perspective Artist impression of Barangaroo South (image source: <http://www.pwpla.com/7205>)

Toronto Lower Don Lands

*Toronto, Ontario, Canada
2007 Competition Entry by STOSS.*

The Lower Don Lands in Toronto, Canada is a 121-hectare waterfront territory comprising of large abandoned brownfield sites, former industrial port areas, a mixture of chaotic infrastructure, with a channelled and detrimental river flowing in close proximity.

For the competition entry, STOSS aimed to address two primary goals in the design; “to provide an iconic identity for the Don River that takes into consideration key flood protection and habitat restoration requirements of the river mouth; and to establish a comprehensive urban design framework that integrates new development, bold and imaginable transportation infrastructures, dynamic new open spaces, and robust, multi-modal circulation networks” (Stoss).

The design itself shows comprehensive detail focussing on the ecological principles of the river mouth with tidal wetland systems, ecological habitats for aquatic and plant life, and naturalistic channels displayed at various tidal levels and their implications with the surrounding vegetation and open networks in site. The bold development displays opportunities to demand waterfront engagement, creating iconic and unique areas in the city. The various infrastructural groupings allow for an incredible amount of movement, both vehicular and pedestrian transitioning through the site which seamlessly integrates with the ecology as the founding infrastructure of the space.

Weaknesses: Again, the development occurs on cleared port land with brownfield sites, therefore there is no integration of the private working port and the public life of the space. The channels at the river mouth seem too constructed for the area and not as natural as could for the type of setting that the design takes place.

Strengths: The use of ecology as infrastructure generates public life not only within the wetland and tidal fluctuating systems but within the use of the river channels creating and dictating land parcels to address other developments in the system. This natural layering/condition form the space and foundations of the surrounding developments by generating public ecological infrastructure. The elevated highway allows for the continual movement between river channel and wetland promenades, to the dedicated open grassed sports fields. The design and development of this area has been created with climate change and rising sea levels in mind to future-proof the precinct. Designing such an area as a preventative measure whilst also allowing for greater space and level changes within the water area is a unique transition between low/high level developments. The pedestrian networks allow simplistic transitions between dedicated areas of development creating a cohesive network across the area.

Fig. 50: Sequence diagram showing varying layers of systems to create the overall scheme (image source: <http://www.stoss.net/projects/7/lower-don-lands/>)

Fig. 51: Top: Section view establishing material and typology of berm conditions. (image source: <http://www.stoss.net/projects/7/lower-don-lands/>)

Fig. 52: Bottom: Section view establishing plant palette for varying conditions of wetland/estuary depths. (image source: <http://www.stoss.net/projects/7/lower-don-lands/>)

With the Quay Park Quarter, and Ports of Auckland's future uncertain, an important device to direct any future development of the area would be the notion of an armature within port boundaries. This would then enable port activities to maintain function for the foreseeable future while interacting with the public and private threshold. This armature would also be strong enough to establish the potential for the area within future discussions and planning.

Fig. 53: Building typologies proposed in the competition entry. (image source: <http://www.stoss.net/projects/7/lower-don-lands/>)

High Line

New York, USA

2009, Design Firm: Field Operations (James Corner)

Section 1 & 2 - The High Line project is a converted elevated railway line in Manhattan's west side. Running the length of 23-city blocks, the dynamic public space has a mixture of ecology, history, and pedestrian focussed design that places the user above the busy streets of the city whilst still experiencing intimate connections to their surrounds. The design of The High Line integrates historic rail lines with modern concrete planters and pathways that intercept the surface in an industrial aesthetic. In parts this aesthetic is open and dominant while other moments are camouflaged by planting. The High Line is a critical case study for the thesis as it projects the ability for the public to operate at varying levels amongst the city and throughout the design. By creating separation in order to feel distance between the public and the chaotic streets below, the user can still be a part of the infrastructural system. This is a delicate balance worth examining and experimenting with throughout this thesis investigation. There is also an appreciation between retaining, adapting, and the removal of certain elements with historical relevance in the design.

Some rail lines have been highlighted with the use of modern materials and design solutions, while some parts of the new design completely cover the historical elements, whether it is an instinctual element in the design, or a deliberate feature. The design also highlights the opportunity for intimacy with the material palette shown throughout the project. These are created with the utilisation of space, select planting, and dictating areas for people for fewer occupants in certain areas. This aspect of The High Line is an important feature in the design as it relates to this thesis's investigation through a multitude of scale relationships and representations.

Section 3 – The most recent section of The High Line project to open is Section 3, which is situated at the Hudson Yards, with expansive views of the Hudson River and the Midtown skyline. This section of The High Line has been designed with the intention to integrate with the area's future. The Hudson Yards are set to undergo a massive scale of redevelopment in the future. The early incorporation of this section of the High Line acts as an armature for the future considerations of the site with the public integration as a priority. An armature in the sense that this expansion of the High Line will dictate the Hudson Yards development so that the intent is maintained within both design futures.

***Weaknesses:** Although The High Line engages both visually and spatially with its surrounds the design lacks integration with the buildings that are at the same level. This lessens the value of the space and doesn't allow for new developments, specifically buildings, to open up onto the raised public space. Aspects of the design steer it more towards a tourist destination rather than creating an engagement with the local people.*

***Strengths:** The High Line project works at a multitude of scales ranging from the metropolitan relationship of the infrastructure of the city, the neighbourhood scale relationship between the surrounding cityscape, and the intimate scale with pocket areas responding directly to the occupants experience. This is a crucial aspect in order to bring to fruition the key systems needed within the restructuring of the thesis site, where the area functions at these three interrelated scales. The armature effect within section 3 of The High Line, represents an important element into the investigation of this thesis. With future development plans coming to fruition in Hudson Yard, this section of The High Line illustrates how a balance between the public and private realms of the area can be found in order to influence the future of the surrounding areas.*

Fig. 54: Top: Photograph of Section 3 through Hudson Yard. (image source: <http://www.fieldoperations.net/project-details/project/high-line-section-3.html>)

Fig. 55: Bottom: Aerial Photograph of Section 3 showing extent of site and surrounding city development. (image source: <http://www.fieldoperations.net/project-details/project/high-line-section-3.html>)

CHAPTER FIVE | *Programme Analysis*

Industry

Ports of Auckland Limited is an industrial zone that economically provides for the city and a majority of the upper North Island. Unfortunately, due to this fact, there is no greater connection to the public and the amenities needed for the public in the rapidly growing city. This thesis seeks a synergetic connection and relationship between the public and port whilst still maintaining economic stability and viability of it. It is not, at this point in time, a viable option for the urban port to surrender all of its land and relocate to another suitable location. This would result in a huge financial cost to create the necessary footprint, facilities, and infrastructure required for Port operations.

The rise of modern technology, particularly in port infrastructure, has seen an increase in efficiency, handling more cargo in shorter increments of time. This allows a certain flexibility into challenging the amount of land that the port requires to operate, both now and in the future, therefore shrinking its overall footprint. This could contribute to creating the synergy between the public and private realms. As mentioned previously in Chapter two, POAL conducted an investigation prepared by CBRE into alternative land uses for the port area as there has been discussion of the future of the port in the contemporary city.

By identifying the layout of, and movement within the port in Chapter Two, this allows the possibility of restructuring certain areas in order to free up space to create the synergetic balance of the private and public realms. The most unique opportunities for this interaction is along the Quay St boundary and the eastern edge of the Fergusson Terminal.

The thesis will investigate these edge conditions in order to generate synergetic relationships between the private and public realms whilst maintaining safety in such areas as well as allowing for future development plans for either the port or the city.

Residential Development

With Auckland's population set to reach between 1.8 million and 2.5 million people by 2043, there is an ever increasing demand for affordable housing. Statistics New Zealand estimate that three fifths of New Zealand's overall growth will be in Auckland with the fluctuation in the above figures dependent upon three models; low, medium, and high (Statistics New Zealand). The growth in the city, both currently and the estimated future figures showcase the need for additional inner city dwellings. The advantage of inner city living is the experience of the city on a day to day basis; the thriving working environment and short commute during the day, with the benefit of the social scene at night. Many Auckland residents or those looking to make Auckland a permanent living option are confronted with a shortage of housing in the city as well as a record high in housing prices. The advantage of considering inner city dwellings in the thesis site is evident within the sites proximity to CBD amenities, not to mention the dynamic space that can be created here.

Residents face long commutes from the urban fringe due to the shortage of well designed, and affordable terraced housing or apartment options. In June 2015, 1167 properties around Auckland were sold by Barfoot & Thompson, averaging \$827,000 which, for most families in Auckland, is far too expensive (Barfoot & Thompson). Demand for low cost, inner city residential developments is at an all-time high for Auckland, and the issue will need to be addressed for its population and city to thrive into 2040. This thesis looks into investigating residential developments and the types that could be incorporated into the overall scheme. Looking at residential developments also creates opportunities for public amenities to arise in the area, generating layers of public life.

Recreation

Certain forms of recreational activity require reasonable sized buildings, services, and infrastructure to allow the public to utilize these services, for example indoor sports facilities and swimming pools. Other recreational activities that do not specifically require such services include; walking, cycling, skating, rollerblading, running, and some water sports such as kayaking, canoeing, paddle boarding, snorkelling, kite boarding, rowing, and paddle boating. These simple activities require careful designation of areas in order to be successful for the public. There is a demand set in the 2040 vision prepared by Auckland City Council to create a stronger East-West connection in terms of public activity, thus creating a better public network towards the eastern bay suburbs (see appendices)

The East-West connection is a significant factor in creating public infrastructure throughout the site for local residents which will also provide outstanding recreational opportunities. With recreational opportunities, related amenities could include family outings which require certain programmatic spaces such as; open grass areas, picnics, barbeques, playgrounds, and local eateries. Having integration of water and land focused activities creates a dynamic relationship between the users of the space and the surrounding context of the area. By incorporating these activities within the site creates the opportunity to link to the outer suburbs.

Urban Development

With the population due to increase between 1.8 – 2.5 million people by 2043, more people means more jobs, and the greater opportunity to explore urban development within this thesis investigation to provide necessary areas for this. These urban development's range from; office space, shopping 'strips' or clusters for retail, local businesses both eateries, and/or services for the public and workers. Within sizable residential developments, the grouping of resident's demand amenities within close proximity to living, especially with inner city developments. A number of Auckland businesses have a strong demand to relocate or expand to new waterfront office space as the business district continues to expand.

"more than 80 per cent of prime office space in the central business district was now in the waterfront's northern precincts. Better use of waterfront space was a global trend, and in Auckland this had begun with the Viaduct Basin and then the Wynyard Quarter" (Fairfax Media Digital).

The ability to provide great water frontage for office workers contributes to the public life and well-being of the people situated in this area. One benefit of exploring office and retail opportunities is the creation of destinations among the overall scheme for the area. A second benefit is to tie into the continuation of the East-West waterfront experience. This thesis will investigate the need for office space, the amount in which the area needs to cater for, as well as exploring various options to engage with retail and light commercial developments.

In 2006, a proposal for a new waterfront stadium was put forward to cater for the Rugby World Cup 2011 hosted by New Zealand. The new stadium would have changed the way in which the Auckland Waterfront would grow for the foreseeable future, questioning the role of POAL in the city centre. The construction of this new 60,000 seat stadium would have been located at Bledisloe Wharf, with the current owners of the site, POAL, ultimately releasing the land for the development to occur. The initial costs of this new stadium ballooned from \$350 million to \$700 million. Construction time and cost were significant factors, as well as POAL having a major influence into the decision, deciding not to go ahead with the new stadium.

Because of this proposal, the development of Eden Park, and its limitation in hosting smaller market sports i.e football, and national sports competitions, there is now significant interest into providing the city of Auckland with a smaller stadium targeting a multitude of sports.

“What Auckland does need, however, is a 20,000-30,000-seat, multi-purpose, covered stadium close to the central city. A home for the Blues, Auckland Rugby and the Warriors; a major destination for the Phoenix. A venue for the really big concerts.” (Bauer Media Pty Limited).

The need for a waterfront stadium is still within the workings of the city as a whole. The stadium shows potential to have a positive impact on the Auckland waterfront as an architectural monument, similarly to how the Sydney Opera House in Sydney, Australia has.

Internationally there is no shortage of iconic architectural pieces amongst city skylines as well as waterfront locations. Auckland is no different with high rise buildings occupying the skyline and architectural pieces decorating the waterfront down the western end towards the Wynyard Quarter. The development of a new and iconic building to house additional exhibition space for New Zealand’s national Museum Te Papa Tongarewa is one such suggestion. While Te Papa Tongarewa and all its collections are currently located in Wellington the suggestion of “Te Papa North” (as it has been labelled) has backing from current chief executive Mike Houlihan and also veteran arts commentator and Te Papa Tongarewa critic Hamish Keith (Fairfax Media Digital). There is a current demand to showcase Te Papa Tongarewa’s collection at a national level as at the moment the museum pieces are based in one city. Te Papa North would circulate certain exhibits providing viewing and engagement opportunities to Auckland’s 1.2 million residents as well as the greater community beyond the city limits.

Estimated to draw at least one million visitors annually, compared to Te Papa Tongarewa’s 1.5 million, this opportunity can be as unique to Auckland as the national museum is to Wellington. The museum itself does not have to be a secondary exhibition space to the national collection, but could take on international exhibitions like that of its Wellington counterpart, as well as cater for the founding history of Auckland and highlight the significant events in the city’s development.

These types of developments often dominate an area both with its presence and infrastructure requirements. This thesis will investigate certain “armature” developments such as stadiums and museums in order to draw people to the area, as well as generate bold suggestions in the overall scheme to reactivate and restructure the urban realm.

Fig. 56: Top: Aerial Render of the Waterfront Stadium proposed for the area. (image source: http://www.warrenandmahoney.com/images/processed/images/slideshow/NZStadium_Slides_2-939x532.jpg)

Fig. 57: Bottom: Artist impression of Te Papa North. (image source: <http://static2.stuff.co.nz/1321437512/430/5981430.jpg>)

CHAPTER SIX *Preliminary Design*

Restructuring Experiments

A way in which to begin the restructuring of the site was to separate the major contributing factors to the current site condition and create layers showing potential influence for the site. These restructuring experiments explored various options within the different areas which help to identify possible problematic logistics, discover potential possibilities, and to manipulate the current site layout to enable design thinking into the physical problem at hand. These restructuring exercises form the foundations necessary for development into preliminary design experiments.

Fig. 58: Potential water inlet created by re-reclaiming land. Histoic coastline in black with present day aerial image.

Re-Reclamation Zones

This exercise looks into the potential to re-reclaim the already reclaimed land in the area. The intention was to make bold moves in order to generate as much potential for the space, reintroducing the historic shoreline pre-reclamation. A way in which the area became trapped was due to the vast reclamation stages that encroached development into the waters space with topography effecting the amount of growth that could occur laterally. Returning aspects of the original shoreline and bringing water to the people is a way in which to generate people to the site, especially with the current layout and difficulty for near by suburbs to reach the waters edge. The restructure also considers the historical ecology and the potential treatment of some of the ports hazardous surface water and filtrate the area. (figs. 58-62).

Fig. 59: Re-reclamation stage 1 - removal of unused and unserviceable rail infrastructure.

Fig. 60: Re-reclamation stage 2 - removal of Quay St mixed use buildings.

Fig. 61: Re-reclamation stage 3 - removal of cluster housing developments .

Fig. 62: Re-reclamation stage 4 - removal of all buildings and rail.

Infrastructure Restructure

This exercise looks into the possible rail and vehicular transportation routes that could facilitate the outer suburbs without prohibiting public movement via cycling, running, or walking along the site parameters or through the space. These options vary with different typologies of infrastructure. Elevated roadways - which would then facilitate public movement underneath. Tunnelled roadways – allowing public life, open spaces, or development to occur on ground level to which the road would have been. Bridged roadways – allowing for vast open space to be created underneath with minimal impact in terms of structure depending on bridge typology.

Alongside these typologies of infrastructure, there were certain approaches to understand the functionality of the rail infrastructure. These include options illustrated in the diagrams displaying variations to the original rail tracks, introducing new station near the old platform, raised rail levels, and tunnelling certain parts of the tracks. These options were investigated with respect to the previous set of exercises which dealt with re-reclamation. (figs. 63-66)

Fig. 63: Infrastructure Restructure, option 1

Fig. 64: Infrastructure Restructure, option 2

Fig. 65: Infrastructure Restructure, option 3

Fig. 66: Infrastructure Restructure, option 4

Catchments, Storm water & Wetlands

This exercise looks into the possibility of reintroducing natural and constructed wetland systems at various significant storm water junctions (fig. 70) to fully treat catchment areas, and the possibility of redirecting storm water pipes in the port area to this new location (figs. 71-74). The options explored were formed based upon the catchment size and calculated to incorporate two options of 2% and 4% for wetland design (figs 67-69). These options would either partially or fully filtrate the storm water and surface run-off of the overall catchment size. The various options took shapes that created mass amounts of wetland zones as well as considered the external orientations of the spaces remaining. For example the first wetland option shows the potential axis perpendicular to the ports orientation.

Fig. 67: Catchment areas which affect the Quay Park Quarter

Fig. 68: Catchment area and Wetland calculations

Fig. 69: Wetland Area calculations positioned on site.

Fig. 70: Stormwater piping and surface run-off major intersections

Fig. 71: Wetland option 1

Fig. 72: Wetland option 2

Fig. 73: Wetland option 3

Fig. 74: Wetland option 4

Port Reclamation Restructure

This exercise looks into variations of reclamation on the ports eastern edge to generate opportunities for the newly created land to be occupied and dominated by the public and certain amenities. By implementing these bold moves, it enables the combination of potential water inlet areas to create a continuous walkable water front edge around the port edge and out towards the Eastern suburbs. The exercises also provided adequate alternatives to the port's consented plans for reclamation that is currently underway. Some of the reclamation for the public's use expanded the port grid matrix used within the Fergusson Terminal, as illustrated in the diagram (fig. 75-79)

The lamp posts in the container terminal create a grid matrix in contrast with the reclamation shape and cargo layouts. This creates an internal focus that can work with external influences.

Fig. 75: Fergusson Terminal grid format with light towers creating the matrix.

Fig. 76: Port Reclamation Restructure, option 1.

Fig. 77: Port Reclamation Restructure, option 2.

Fig. 78: Port Reclamation Restructure, option 3.

Fig. 79: Port Reclamation Restructure, option 4.

Design Experiment ONE

Fig. 80: Top: Section cut showing overbridge to University of Auckland through the Wetland Park.

Bottom: Section cut showing residential housing and interaction with water, flat public space on other side with tunnelled infrastructure.

Fig. 82: Preliminary Masterplan of Design Concept One.

This design experiment focussed on utilizing some aspects of the restructuring exercises. Mainly focussing on wetland and ecology regeneration as well as cycleway and pedestrian movements through the site. (figs. 80-82)

Pros

- 1) Wetland park calculated to treat 3% of total catchment storm water run off*
- 2) Path network created movement around the northern and southern edges of the site, which connected to existing networks towards the East and the West.*
- 3) New development supporting Vector Arena with offices, cafes, restaurants, and apartments*
- 4) Quay St Tunnel enhanced safety for more public expected in the area, as well as creating opportunity for stronger engagement with the Port edge.*
- 5) Rediscovery of historical St. George's Bay*
- 6) Boulevard and Slow Traffic zone, reinvented The Strand. This also repurposed the existing light industry buildings and warehouses to suit.*
- 7) Fresh water inlet & saline inlet with wetland integration*

Cons

- 1) Pathway network has lost strength connecting to the existing Western Waterfront area*
- 2) Lack of public integration/restructure of port activities itself.*
- 3) No desire to head out to this new bay public space area because of the seemingly separate attachment to the side of the port terminal.*
- 4) Uncertainty of ecological side effects with tidal erosion on Judge's Bay, with the incorporation of the Tamaki Drive/Quay St Tunnel.*
- 5) Converting the Quay St/The Strand bridge to pedestrian only limits the connectivity to the Parnell Suburb, as well as the amount of people*

Generally, there is a lack of engagement with the water's edge aside from walkways as first envisioned. This shows a lack of recreational areas to engage with water activities or services to provide for the public life of the place. The overall scheme lacked a certain metropolitan relationship to the city and the larger systems in place. There was limited interaction with the port edge along the east by west area as well as next to the terminal. Orientation and edge of new water inlets need to be challenged to cater for other developments in place.

Design Experiment TWO

Fig. 83: Top: Closer scale of cascading wetland system into open wetland park.
Bottom: Section cut through open wetland park with overhead rail infrastructure currently in site.

Fig. 84: Top: Section cut through proposed development near Vector Arena. Building hosts a retail/eatery ground floor, with office spaces for storeys two and three, with residential apartment on the fourth storey. Bioretention swal runs through the middle of the space, with public recreation areas alongside, in this case an outdoor basketball court.

Fig. 85: Section cut showing raised Raised public level (mound), slightly raised Quay st, and ground level port infrastructure. the public level continues on the opposite side of the road to occupy port airspace with storage underneath for port facilities.

Fig. 86: Preliminary Masterplan of Design Concept two.

This design experiment focused on improving the cons of the previous design experiment, placing particular focus on the infrastructure, and external public connections of the site. The experiment also aims to engage with the port edges more, and add destinations for wanting to experience this unique stretch of landscape. (figs. 83-86)

Pros

- 1) Removal and combining of Port buildings and facilities, restructures port areas for armature impact within the port boundaries.*
- 2) Level change along Quay St created the ability for people to experience views into the inlet and also outside the surrounding areas.*
- 3) Dedicated marine and aquatic reserves, adding to public life aspect and destinations*
- 4) Path networks better integrated which also includes a tram line to access across the site.*
- 5) Support buildings for Vector Arena to create an entertainment/recreation hub; with plaza space, outdoor basketball courts, cafes, restaurants, apartments, and offices.*
- 6) Open field area for local club sports and/or public use integrated with wetland open system with raised walkways through space. The area can also host outdoor cinema events, and carnivals etc.*
- 7) Rediscovery of historical St. George's Bay*
- 8) Dedicated recreation area for kayaks, light boating, and various other water activities in the inlet.*
- 9) Rediscovery of Point Resolution*

Cons

- 1) Raised infrastructure forces public level to be higher still, sense of disconnection from inlet area and surroundings.*
- 2) This dramatic land slop cuts off the attempted integration with the port, trapping the area from future development*

This design scheme started to investigate destinations as a way of generating public life and interest around various points of the site. Inclusion of an elevated walkway through some port land created an intriguing relationship whilst still maintaining a functional port area, this in particular should be challenged further especially if efficient restructuring is happening within the port. Manipulation of the infrastructure in place created an opportunity to develop this layer further and integrate it better with port operations.

The Developed Design expresses an overall masterplan for the area determining key interactions and points of impact for the surrounding context to create a synergetic relationship between the contemporary urban port, trapped urban landscapes, and public life.

The Quay St/Port Boundary. Raised Public Level and development.

The first step to leverage space to begin integrating the public realm within port land was to reorganise the ports overall layout. By dedicating certain areas for particular types of cargo/storage, it allowed for a variety of port facilities and storage to occur below the public level that has been designed. This public level is a 7m high structure that facilitates recreational movement on the northern and southern edges which balances with residential, retail, and office developments . A new 40,000 seat stadium has been proposed as an armature response to justify the economic viability of the public raised level and surrounding new development opportunities. The stadium will host numerous local and international events from sport, festivals and concerts, which ties into the entertainment precinct that the area has transitioned into. A light rail/tramway system has been introduced to facilitate quicker movements along the raised level and out to the eastern bay suburbs. In the future a connection would be made to the western waterfront. (fig. 88-93, 102)

Eastern Edge. Tamaki Drive/Fergusson Terminal

Major infrastructural changes show Tamaki Drive and the existing rail line to be tunnelled from Parnell baths site. This is to recreate the historic coastline headland. Coastal planting develops the space into a naturalistic area. With the headland being created it allows for people to experience the eastern water edge providing views out to the entrance of the Waitemata Harbour and surrounding topography. Incorporated in this area are new pathway networks linking to the existing Parnell Baths walking overbridge, as well as a new light rail/tram overbridge with cycle path over to the proposed marine museum situated on the Fergusson Terminal edge. (fig. 94-96)

South of this area is the existing Judges Bay. This area showed a great potential to connect walking and cycling tracks to the edge of the inlet which then links to the Strand and its new boulevard walkway.

CHAPTER SEVEN | Developed Design

The Strand. St George's Bay and Boulevard

The Strand roads have been slightly altered to cater for more pedestrian traffic in the area. The reason for this increase is determined by the retrofitting and repurposing of the current buildings, facilitating the rediscovery of St George's Bay. The majority of the existing buildings are three storey's high which now accommodate a retail or eatery space on the ground floor, middle floor occupying office space, and top floor residential apartments. Across the road along the inlet edge a proposed separated boulevard and swale system which is below street level to treat surface run-off from the road, which will filter into the inlet. (fig. 97&98)

Wetlands. Beach St/The Strand Wetland Park

The Wetland park utilizes ecology as an infrastructural system determining the type of public life that occurs within the area. The wetland system is a mixture of open water systems and constructed channels each of which treats storm water, surface run-off and catchment systems. The wetland park caters for 2% of the overall catchment size which is the minimum requirement of wetlands to treat contaminated water with an area of approximately 21,000sqm. The wetland area is associated with raised paths that cross the area, giving the ability for the public to interact within the central space. An overbridge from the University in the western corner encourages students and people in the area to safely enter the park and experience it throughout the day. The treated water moves through the site and into the inlet basin. (fig. 99-101, 103)

Fig. 87: Developed Design Masterplan of the Restructured Quay Park Quarter.

Fig. 88: Section Aa

Fig. 89: Section Aa - i - separation of experiences on the ground and on public raised level.

Fig. 90: Section Aa - ii relationship between public raised level with port storage underneath.

Section Bb - i

2m 4m 10m

Fig. 91: Section Bb

Fig. 92: Section Bb - i - relationship between the public and inlet edge, with three separated spaces offering various benefits.

Fig. 93: Section Bb - ii - Open active market space when Stadium is not in use.

2m 4m 10m

Fig. 94: Section Cc

Fig. 95: Section Cc - i - relationship between tidal marshland and the public. With detail showing the proposed vehicular tunnel.

Fig. 96: Section Cc - ii - relationship between the proposed Eastern piers to interact with the harbour edge.

2m 4m 10m

Fig. 97: Section Dd

Fig. 98: Section Dd - i - showing the relationship of the swale system with the boulevard and beach edge.

Fig. 99: Section Ee

Fig. 100: Section Ee - i - relationship between the public and the channelled wetlands.

Fig. 101: Section Ee - relationship between the public and open wetlands.

Fig. 102: Perspective from Raised Public Level, Viewing North to Devonport

Fig. 10.3 Perspective View of the channelled wetlands looking north towards the proposed stadium on the raised public level.

Developed Design Vs Research Question

The research question evolved as an investigation with new discoveries being made throughout the development of this thesis. This particular evolution of the question aided in the process of figuring out the issues, both in the present day, and the historical evolution of the site in order to get to this point. Understanding these vital issues and then applying these within the restructuring exercises resulted in the development of these bold preliminary and developed design moves.

*How do you **transform** historically industrial precincts, which are **trapped behind functioning urban ports** to contribute to the **public life** of a city?*

The transforming aspect of the thesis question implies the need for the space to change in ways that can be seen as drastic or beneficial for the site and surrounding context. The transformation of the trapped urban site involved a radical exploration of restructuring through a means of re-reclaiming land (creating a tidal inlet) attributing to what previously existed pre-reclamation with the contemporary outlook into providing public life to the area. With the impact that water bodies have, it brought about a combination of development opportunities explored through Chapter 5.

These opportunities implicated within the developed design resonate public life, by creating recreational opportunities along the edge, within the inlet, retail strips, boulevard typologies, inner city living, office spaces with harbour and inlet views, an entertainment armature response with the 40,000 seat stadium, and a marine museum situated on the eastern edge of the Port.

These opportunities invites public life to flourish within each of the designed areas, whether it is within the inlet, along the edge, or through the wetland park. By reintroducing these public amenities, it starts to generate the need to restructure the infrastructure to facilitate for the area. The primary issue that resulted in this trapped urban site behind the functioning port was the linear infrastructure that contained the site. This issue was addressed with restructuring the infrastructure in place, removing the unused and unserviceable rail tracks in the yard, and exploring the combination of tunnelling and bridging certain aspects of these infrastructures. A 7m high raised structure that stretched across Quay St towards the eastern Edge allowed for this bridging of infrastructure to occur of road, rail, and port infrastructure whilst enhancing usable and developing space on the areas above.

There are various combinations and interactions of public life along this raised level, with the introduction of a light rail/tram system facilitating linear movement across the edge and out to the eastern bays, connecting the public to the surrounding area. This light infrastructure will allow easy access to amenities such as the proposed stadium, retail strips, office spaces, inner city dwellings (which are integrated with the 7m high structure), the water's edge, and the eastern bay area. The transformation of this space by using restructuring as an investigative tool, it allowed the raised structure to occupy port air space, and to physically encroach and challenge the private port boundary. The original area below the structure is owned by the port, while the space above, with the development, by investors and Auckland Council. This raised structure in the sense of public life allows for people to occupy port areas at a safe level, gaining insight into the ports functionality and to experience the industrial aesthetic. The intended use of the underneath space within the port area is for public parking in some designated areas and port multi-cargo storage facilities in others.

The developed design reflects the research question in a coherent and tangible manner as there is a synergy created with using restructuring techniques to transform areas of historic significance that have been trapped by large and imposing functioning urban ports, that then reintroduces public life into the space.

Analysing the project reviews against a particular set of criteria enabled the development of the design to evolve beyond a site responsive iterative process. By examining a mixture of designed works and competition entries that were at various stages of their developments, an insight was gained into the framing period that the thesis design will be based within. This was a critical point to explore due to the unforeseen future of the port as well as considering the 2040 vision for Auckland.

There was importance in critically engaging with the development of the design experiments by understanding Kahn's notion of the anti-urban and [non]urban sites. By defining these spaces, it shaped the developed design into considering moves that would generate multiple functions within the site. These decisions were finalized based upon how singular anti-urban sites come about with only one vision for the area, and catering for one demographic. By avoiding these negative connotations within the developed design it helped guide the process into creating series of spaces for a variety of use, and multitude of people, both tourists and local community. Analysing aspects of the High Line, and in particular Section 3, explored the creation of an armature response. This aspect of this case study, in particular, allowed for the thesis design to develop and manipulate level change as a way to create a separation of space but also to occupy the air space of a privatised area. This was a key principle as the design continued to develop.

The competition entry proposed by STOSS for the Lower Don Lands in Toronto's waterfront informed a synergetic connection with Kathy Poole's concept of utilising ecology as infrastructure. Within the design, ecological infrastructure informed and reinforced the instinctual response of filtering storm water and surface run-off from the port and surrounding catchments.

Upon reflection, the developed design experiment proposes a bold armature response that creates possibilities into reoccupying private port areas and releasing trapped urban areas back into the light of the public.

Strengths:

- *Wetland park facilitating storm water drainage from the surrounding catchment, highlighting the entry points of historic stream networks, and reintroducing ecology into the area.*
- *Public boulevard and swale systems along The Strand reinvents the area, creating separation for the public and road. The change in building zones from mixed use/light commercial to retail, boutique eateries, local businesses used by surrounding suburb, and recreational facilities including water equipment hire.*
- *The developed design provides the missing pathway networks to link to existing paths. This creates a network of public life along the parameters of site and alongside the water inlet.*
- *Water inlet provides incredible views to the east and internally, as well as providing recreational activities. Bringing water to the area rejuvenates and releases the trapped urban area.*
- *The Stadium and Public raised structure act as an armature response, providing areas for necessary development to inform the future of Auckland. The raised public levels in the site highlight the viewshafts in the thesis investigation in Chapter 2. The ability for the port to still function underneath is a dramatic realisation that it's a possibility for future development.*
- *Public access across and through site focuses on destination points and viewshafts both internally into the inlet and externally to the surrounding city context. The way in which they are structured allows for cycling through the space with either leisurely journeys or fast routes.*

Weaknesses:

- *The eastern edge of the port seems as if it is less successful than the other components of the developed design as this area within the instinctual response when visiting the site was an incredible spot to appreciate the surrounding topographical views of the Waitemata Harbour. In attempting to strengthen this, the real essence of the space has been partially lost.*

CHAPTER EIGHT *Conclusions & Critical Reflection*

Urban ports create a negative effect on the ecology, public life, and waterfront connection within cities on a global scale due to their mass, privatisation, and the dominating infrastructure required to cater for port functionality. Urban areas situated in close proximity to the urban port absorb these negative tendencies that are produced as well as other surrounding factors. These influential factors act as a gathering space for ad hoc developments in the area, the result of which is the confinement and trapping of such sites. These areas are the spaces in cities in which there is uncertainty of future development and are routinely overlooked. In order to occupy the site in the short term, the city uses the area to cater for urban responses when it is in need of a short term solution.

Instinctual decisions and responses are a part of us; this draws upon our own understanding of the world and where we are presently situated. The same can be said as to how we feel and respond in particular scenarios. The trapped urban landscape which was developed by these contributing factors, emits a response from the user of the space in particular reference to life on the ground. These responses are instinctual and based upon the atmosphere that is created by being in such spaces. The ability to react to these environments and scenarios can be enhanced through landscape architectural principles in the form of opportunities being created for positive impact on the user of the space and the domain (the trapped urban landscape). The landscape architecture discipline ranges in scale from the intimate details to the regional planning of developments. As part of this thesis the research addresses the investigation of such a site through multiple scales showing how restructuring can occur on a systematic level as well as life on the ground.

Conclusions from Investigation

Global Port trends represented a determined position and direction of where contemporary cities and their urban ports stand. Within Chapter 3, Hoyle spoke of the characteristics of the shifting port within varying time periods. In conclusion of the role of the contemporary port, POAL has fallen behind in terms of the type of port it is, the size, and the location in relation to the time period that the global trend trajectory shows. By understanding this, the thesis continued to challenge the future role of the port with particular documents from the Auckland City Council and POAL, showcasing the future ambitions for the area, where it was determined that the port will not be operating at another location for the foreseeable future.

The research investigation displays a variety of reasoning and information that are associated with trapped urban areas arising in the city. History showed the dramatic development of reclamation, the stages of the site from an industrial precinct dominated by facilities, warehouses, and rail infrastructure. And the current layout and use that is all attributable to the rise of trapped urban areas within the city.

The factors that affect these trapped urban areas were needed to be restructured in order to start the process in determining the best way to release these trapped urban landscapes. Involving the notion of armature, within a landscape architectural approach, informed the way in which specific design functions can determine the viability for bold moves of these experiments. This established its own public life in respect to the area of where it was positioned and type of development that is implemented. For example, the raised public structure allowed for the linear infrastructure to restructure in a way that catered for the new developments and public life occurring upon this level, notably the inclusion of the stadium, office spaces, and residential dwellings. Port functions were maintained underneath this level which then determined what other port systems, facilities, or storage can occur beneath this raised structure. This also provides evidence for how synergetic relationships are formed between urban ports, public life, and the trapped urban landscapes.

POAL have development plans set in place to establish and anticipate future growth as these expansion options take roughly 20-25 years. Understanding these plans as well as information from their public domain, was a key turning point in discovering the ability to gain leverage into adapting their future ambitions. This was achieved by providing services for the private entity in exchange for surrendering land back to the public.

Constraints and Limitations

The physical context that this thesis is based upon is in Auckland, New Zealand. Due to the nature of the design research, that of investigating trapped urban landscapes, the methods, approach, and conclusions can be applied to other areas across the world that deal with similar fundamental issues. Limitations to the research include no consideration for resource consent to construct some of the concluded designs as well as the necessary economics in creating the masterplan. This is because this thesis poses as a speculative tool in order to generate conversation into the real issue of trapped landscapes, evident in most cities across the world. In regards to the viability and foreseeable future of the Ports of Auckland Limited area, it is assumed based upon POAL and Council documents that the efficiency of the port is improving each year, which relates to the opportunity that the port can operate on a smaller urban footprint. Certain data and information has been restricted due to the nature of the large stakeholder involved (POAL). It is also important to mention that this stakeholder has recently been in the news for controversial reclamation expansion work, and due to the nature of the controversy, communication and information sharing beyond publicly available sources has been very limited.

Applications of the Research

This research can be applied to generate public life and positive development for the city context in areas that have been negatively affected by imposing and large entities with circumstances similar to the scenarios and problems discussed in this thesis. These entities could include, but are not limited to, private residential mass developments, industrial precincts, ground level space under elevated highways, or areas that have suffered ecologically outside of inner city context. Similar scenarios could be inclusive of areas with major infrastructural surrounds, influenced topography, or behind large privatised developments that limit access through or across the site. Discovering how such sites are trapped by these major factors in the first place creates a better understanding to the underlying construction of a present day trapped urban area. There is unlimited potential, once justified, to restructure certain layers within the varying sites, directly relating to the site conditions that cause the area to be categorized as a trapped urban landscape.

Future Advancement of the Research

This thesis investigation, in order to advance beyond the parameters initially set, could look into in more detail surrounding possible alternative areas outside the city that can be viable options for a new port to be established. This would require projections and estimations in terms of cost, area of land, up keep in terms of dredging water channels and berthing areas, as well as set up the necessary infrastructure to transport cargo to various parts of the country via road or rail.

The investigation could further contribute to the synergetic balance created by introducing phase planning. The initial armature response in creating this balance has been utilized in order to generate discussion involving the future of the area, and with the introduction of phasing the port out of the city would determine and create the best possible result ultimately creating a revitalised waterfront for the city of Auckland.

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Appendices

Auckland City 2040 Vision key points

Fig. 104: Auckland's 2040 Vision applicable information for investigation

VISION

Our 2040 vision is to deliver the first phase of a city centre-wide blue-green main route network from the eastern waterfront and the Auckland Domain through to Albert and Victoria Parks and on to the Wynyard Quarter and the western waterfront. It will include:

- Turning Dally Street in the Wynyard Quarter into a linear park, connecting the quarter's Regency Shaded Park with Victoria Park at its southern end
- Transforming Victoria Street into a high-amenity green link that will connect Victoria and Albert Parks
- Activating better links for pedestrian and cyclists across Grafton Gully and better connection of the Domain to the city

Fig. 105: Auckland's 2040 Vision applicable information for investigation

Site Condition Axonometric Understanding

Fig. 106: Axonometric exploration of site conditions.

Fig. 107: Axonometric exploration of site conditions.

Examples of Trapped Areas in NZ Cities

Fig. 108: Port Lyttelton, Christchurch, NZ. Exploring trapped areas behind urban port settings nationally.

Fig. 109: Picton, NZ. Exploring trapped areas behind urban port settings nationally.

Fig. 110: CentrePort, Wellington, NZ. Exploring trapped areas behind urban port settings nationally.