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MASTERING MAUNGAWHAU

BY F.R.CRAWFORD

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I would like to begin by thanking my parents. My mother Julie, you are the true MVP! Thank you for all of your support over the past six years, and for encouraging me to pursue my passion and switch majors after my first year of study. Having you live in the same city as me while I study has meant a lot to me, and I will always cherish these years.

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I would like to thank my Grandma Joan, and pay tribute to my wonderful grandparents Kevin, Peter and Margaret. Growing up my grandparents were my biggest supporters. I have always been inspired by their work ethic, generosity and overall their drive to create a better life for their families and give back to the community. Their legacies will always inspire me moving forward.

I would like to thank my amazing Architecture whānau, particularly the Land crew who are my day one's. The past five years together have been the wildest years of my life, I cherish all of your friendships and I am so proud of everyone!

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Aroha nui to you all,

With love,

Francesca x

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Language glossary of the Te Reo words I will be using commonly instead of the English:

Maungawhau, Mount Eden
Tāmaki-makau-rau, Auckland
Aotearoa, New Zealand
Pā, Māori village or settlement

ABSTRACT

The Aotearoa (New Zealand) housing crisis and environmental shifts have inspired this thesis, which will address contemporary issues regarding Landscape Architecture, housing and urban design in Maungawhau (Mount Eden), Tāmaki-Makaurau (Auckland). Certain design decisions and some areas of local and national policy have restricted property development (or allowed poor development to occur). These developments have also limited infrastructural progress particularly in regards to sustainable urban planning strategies throughout Tāmaki-Makaurau in the past two decades in particular. The population of Tāmaki-makaurau is rapidly growing, the 2018 census revealed a population increase of 11% in the past five years. Tāmaki-makaurau is home to roughly 1.6million people, which is 1/3rd of Aotearoa's population. House prices reached an all-time high in 2016, causing major concern at a national level.¹

To tackle these issues of improving sustainable infrastructure and high-density housing this thesis will create a design strategy which will form a new urban fabric for Eden Park. The Master Planning strategy will take a cross-disciplinary approach. Involving Landscape Architecture, elements of urbanism, architecture and hydrology. The landscape, and water sensitive design will be the key drivers in how the housing mosaic is formed.

Eden Park will be used as a blank canvas site of 105,300m². The applied design will evolve as the site challenges the aims of the thesis, methods will be tested and the project will adapt as the site develops, the implementation of precedent and methods will be displayed in the design development and final design. This will result in a robust Master Planning strategy. A detailed urban design strategy will be a solution to the challenges set out in the thesis statement. The design development for Eden Park will intertwine with the wider Maungawhau network, this will be displayed in the final design drawings.

The wetland will aim to treat a larger catchment of the area of 1,026,130.33m², this means that the wetland will need to be roughly 20,000m² so that the total catchment can be treated by this artificial wetland at 2%.

The design goal is to create a multi-layered high-density housing assemblage and mixed use space that will stand as an example of a contemporary water sensitive and high-density design in action. The final design will be strong, versatile, and have the potential to be developed and expanded into wider networks over time in regard to using similar design strategy. I envisage a successful landscape design framework as a tool that aims to design more cohesive, innovative, adaptive and local high-density urban plans, which will respond to the demands of a growing population, ever-changing environmental conditions, and overall enhance a better quality of life.

¹ J. Thompson, The root cause of the housing crisis.

INTRODUCTION

Maungawhau, Eden Park History and Māori culture: Assessing the site and the history of Maungawhau and its historical value to Māori was really important to me, before even attempting to design on the site. As I knew water and hydrology were going to be key components in this design, I thought it was really important to understand the geology, soil, vegetation and hydrology history of the site. New Zealand designers need to strike a good balance between historical value and modern needs. Historic value can be overlooked in architecture and I think that this is an area where Landscape Architects can attempt to use strong urban design methods that enhance history. I tried to do this as best I could with my wetland network through restoring a historic water body at Eden Park, formerly Cabbage tree Park.

Literature and precedent reviews: These reviews taught me a lot about methods that I wanted to use when designing. All of the precedents are international and respond to growing populations, water sensitive design strategies and also successful urban/ mixed use space. Although I did not use every method or design idea that I reviewed it was essential to study these texts and precedents as a lot of the ideas helped create a stronger foundation for my own design and also gave me more direction in areas I was initially unclear about.

Density study: When assessing the site and how to best design at Eden Park, I needed to first understand what density really meant in regard to housing. In Aotearoa cities there is a dominance of medium-density dwellings, and in more rural regions around the country there is an abundance of low density parcels of land. I needed to investigate what is being developed in Tāmaki-makaurau right now that is considered to be both medium-and-high-density residential and mixed use developments to gauge what I thought was successful and what was not successful. I then knew what to prioritise when developing a housing formation at Eden Park.

The key findings were that high-density buildings that were isolated from the ground plane had little to no connection to the wider street networks and did not add to the usability or atmosphere of the wider space. Whereas buildings which interacted with the landscape or urban space were a lot more versatile and user friendly. I have developed this style of design in my housing formation, by trying to activate as much mixed-use space as possible on the ground plane.

Water assessment, wetland development: I think it is also important to look back at a site before planning forward, and looking at the landscape history of Maungawhau and Eden Park informed and taught me a lot; this helped guide me with my design. When I found out that Eden Park is a natural basin due to the ridgeline to the north and the Mountain to the north east, and that it was a natural swamp/wetland originally, it was a no-brainer to try and recreate this function through an artificial wetland. Fortunately, many storm water pipes and waste water networks run through the park along with flood plain lines, so this network of lines made it easy when planning the wetland channel so that it complements the network that already exists. One of the key aims and objectives in this thesis was to make the artificial wetland large enough to treat the 1,026,130.33m² catchment of water at 2%, and the sites foundations allowed this to happen with ease.

Housing development: I let the density study dictate the types of buildings I wanted, in terms of shape and height along with residential precedents. However, key driver for the planning strategy for the housing was the shape of the wetland, I wanted the landscape to have full control over the plan of the housing. I developed a cluster structure with stacked housing around different nooks of the wetland. This created a space which has a lot of different zones, which make mixed-use space more interesting and versatile. I left a substantial amount of the site free from formalised design or structures, so that there is plenty of room for future development, either housing, urban amenities or planting. After my density study and multiple site visits to Eden Park, I decided not to design the buildings to be any higher than six storeys. The density study displayed that buildings around 8+ storeys lacked urban qualities on a horizontal level, which I wanted to avoid as this does not add to social tendencies for people and networks on the ground plane. However the final decision leading me to not wish to design higher than 6 storeys was influenced by the streets and the suburb surrounding the site, which are dominantly 1-3 storey properties. I did not want the park development to contrast negatively the existing suburb pattern.

Mixed use space development, garden testing: When it came to developing the ground plane I wanted to have considerable public space that was able to be used in numerous ways. I left the original No2 cricket fields as this is something that can be used to bring the community together. I added a few urban spaces, recreation zones such as play areas and tennis courts. The main study I took on was a garden study. This was created through the plan and I wanted to create a balance between private gardens and public gardens. The private gardens are for residents only but some of them are shared between two or three apartment blocks so that they could be a bigger area; whereas the public spaces include shared garden zones and also courtyards for everyone to use and enjoy. The stacked housing really complemented this level of design as people can walk underneath the stacked buildings to get to one of the shared courtyards or garden zones.

Summary: Fortunately, the sites natural landscape features and the hydrological networks in the surrounding area allowed for the artificial wetland to be designed with ease. The site itself was a good selection, and complemented the aims and objectives set out in this thesis. The existing urban grid structure in Maungawhau played a big part in planning pedestrian patterns for the site, and influenced how I designed vertically. Maungawhau as a suburb has a lot of historical and environmental richness, which will be explored in great detail.

THESIS STATEMENT

Aotearoa has many issues regarding housing development and sustainable practice within urban design. Presently Tāmaki-makaurau faces challenges of how to respond to the demands of a growing population, whilst designing to mitigate climate change

Can a Master Planning strategy driven by Landscape Architecture improve the way designers approach high-density design in Aotearoa, and create a successful urban fabric, with sustainable infrastructure and multifunctional space in Maungawhau?

SECONDARY QUESTION

How can high density development contribute to the public life of a city?

&

How can water sensitive urban design contribute to the public realm of the city?

METHODOLOGY

This is a method in which the method will be formed and the design will evolve based of a few key tactics.

1. Literature: Method and theory driving design ideas.

2. Precedents: Precedent study of successful water sensitive design, international mixed use space and high-density housing design to help with preliminary design concepts.

3. Site Analysis: Rigorous site analysis, historical, current and future planning from a Landscape Architecture perspective.

4. Density Study: Site visits, defining density study in Tāmaki-makaurau.

5. Phase one: Preliminary design- Constructing the hydrology system, wetland structure and the urban grid. This will dictate the shape for the site. (Mapping, writing, testing).
-Wetland shape: Maximum surface area/ volume of water (taking on a catchment size of 1,026,130.33m²), play with scale.

6. Phase two: Design development- Crafting the housing structure based off phase one. (Linear, geometric, Curved) (Mapping, 3D modelling, drawing).

Density Goal:

- 60% of the site as housing.
- 15 buildings per HA (60,000m²).
- Roughly 50 apartments P/HA.
- Roughly housing 800 people.

Housing Specifications: Public:Private ratio.

- Urban form (shape).
- Mixed use space
- Cars (underground)

7. Phase three: Urban sprawl and public:private garden test- This phase is all about the urban space of the site, and making it a successful mixed use zone. Coming up with a successful private:public garden ratio for the site is one of the main goals. (Drawing, sections, mapping).

Public Realm:

- Ideas for public interaction.
- Parks, boardwalks, recreation, play.
- Formal and informal urban space.
- Social entities.

8. Master Planning: Intertwining the review concepts and design strategies into one final Master plan. (Development, Final design).

9. Potential for- Wider Network Development: Applying some of the methods used in the Master Plan for Eden Park to the extended network of the suburb.

10. Solution: The final design will be displayed through a detailed Master Planning strategy on the site, this will feature the methods used to design on the site and will be shown through a mixture of drawing methods.

AIMS & OBJECTIVES

This thesis aims to create a robust strategy for high-density property development, which prioritises sustainable practice, infrastructure and urban design. By putting sustainable processes at the forefront of a development project, allows the landscape to lead and influence the built environment and how the two fields sprawl out into wider scale networks.

The Master Plan strategy is going to be made up of four intertwining processes:

- The landscape site strategy, which will shape and frame how to design within the landscape elements of Eden Park, (hydrology, typography, vegetation, climate conditions, etc.).
- The built environment site development, which will be influenced by the landscape and urban space.
- The urban design strategy, which will be a study of how the space between the housing and wetland works and what it allows and affords the user to do.
- The network strategy, this method is about assessing the existing urban fabric of Maungawhau and letting certain elements influence the design strategy for Eden Park.

The successful application of these strategies will develop Eden Park into a mixed-used space which includes residential buildings, public and private external space, becoming a hub for the community. The ideal result will be designing a space that aims to improve high-density housing, transportation, and green space, enhancing renewable energy and optimising sustainable infrastructure; and ultimately having all of these features work simultaneously together. The design will aim to act as a modern example on how we as a society can craft a cohesive design that focusses on both short and long term planning, meeting the demands of the community and the environment.

THE SITE

Eden Park and the Number Two Cricket field, Maungawhau, Tāmaki-makaurau

The selection of Eden Park:

Eden Park Trust who owns Eden Park are in major financial strife, making the future of the park uncertain. In 2018 it was predicted that the Trust was not set to make returns on loan interest in the 2019 financial year. In January 2019 ASB denied an extension of \$40 million on the Trusts existing loan. It has been calculated that the Trust will generate losses of \$80 million or more in the next decade alone.

"EY reported that the Trust will struggle to pay the interests of costs this coming financial year of around 50million."²

With strong support from the government, the council, developers and some of the wider community to remove the stadium and rebuild it elsewhere, this opens up the opportunity for planning on the 10.53-hectare site for the near future. There are already plans to build a stadium along Bledisloe Wharf on Auckland's waterfront. There are also plans drafted to develop the number two cricket ground at Eden Park for residential and commercial buildings (no public images of plans currently) and talk of a retirement village in Eden Park's place. Nothing is confirmed, and it raised the question of what the best use for the space is, particularly in response to the high demand for housing in the growing population of Auckland; additionally, it provides an opportunity to look at the sites history incorporate design features that are important to Māori culture into a new and improved design. Most importantly it provides an exciting chance to develop a site that enhances sustainable infrastructure and water sensitive design in a way that we have rarely seen in New Zealand before. This is what I will explore through this opportunity, by maximising the full potential of the site for the community while also solving relevant design issues.

**Thesis Statement
Abstract and Introduction**

Literature:

Methods and theory driving design ideas

Precedents:

Precedent study of successful water sensitive design, international mixed used space and high-density housing design.

Site Analysis:

Rigorous site analysis, historical, current and future planning from a Landscape Architecture perspective.

Density Study:

- Site visits
- Defining density study in Auckland City.

METHODOLOGY

Balan

Phase three:

Urban Sprawl & Public / Private garden test: This phase is all about the urban space of the site, and making it a successful mixed use zone. Coming up with a successful private/public garden ratio for the site is one of the main goals. (Drawing, sections, mapping).

Master Planning:

Master planning is the crux of this thesis and methodology. This stage will intertwine all of the concepts and design strategies into one final Master plan. (Development, Final Design).

Public Realm:

- Ideas for Public interaction
- Parks, boardwalks, recreation, play
- Formal & informal urban space
- Social entities

Dictating

LITERATURE & PRECEDENT

LITERATURE REVIEWS

Landscape Urbanism and its Discontents- Dissimulating the Sustainable City Edited by, Andres Duany and Emily Talen

This book is a collection of essays that explore unsolved debates around modern urban culture. Ideas such as “what is the position of humans, and the physical structure that humans require in nature.” Duany and Talen see this as a central question for anyone concerned with the future of cities. They assess the historical development of the American urban form in the 20th Century. American society forces the issue to develop buildings into ‘auto-dependent’ suburban developments compromising technologies. The technologies were made-up of finance, marketing and administration which formulated how America was built over 50 years.³

Two challenging ideas developed in this time period, New Urbanism and Landscape Urbanism.

New Urbanism:

New Urbanism has a centralised focus on lowering carbon emissions and warming the planet, which will eventually melt the ice caps (integral element in this theory, fire). The theory focuses on the importance of streets defined by disciplined frontages, viewing frontages as an essential component of walkability in an urban sprawl. New Urbanism's ideals are connected to the market regulators, and anthropocentric environmentalists who value ‘smart growth’, prioritising the middle class and housing. Developing suburbs and space through ‘populism’ and proven methods.⁴

New Urbanism theorists felt strongly that people should drive less, and live in compact typologies, this strongly links to the concerns about pollution, health, economics, social equality and energy use. The instruments to achieve this sort of urban fabric would be based on the pedestrian form, from here an urban pattern could then develop in which someone living in this environment could get all of their basic daily needs within walkability.⁵ These forms would be translated into regional transportation patterns, and would be accessed to all of society's needs.

In regard to New Urbanism building structures, there was a view that there is no need for ‘megastructures’ instead designing multiple and compatible designs that would respond to evolving circumstances. Such plans would be developed under the guidance of existing administrative protocols and codes, which could then be adapted and re-written where needed. This was a theory which was thought to cater for sustainable function and human need in a natural habitat.⁶

Landscape Urbanism:

Landscape Urbanism's primary ideal is the priority of water and hydrology. Simply put, how can we as landscape architects create direct connections to aquifers. Landscape Urbanists are also concerned with maintaining a high proportion of green space, regardless of the green spaces effect on the street life. Landscape Urbanism encompasses areas of biophilic design, and also focusses on a large-scale civil infrastructure, in which you can gain high-culture through experimentalism.

3 Duany and Talen, ‘Landscape Urbanism and its Discontents’ Page XI.

4 Duany and Talen, ‘Landscape Urbanism and its Discontents’ Page XII.

5 Duany and Talen, ‘Landscape Urbanism and its Discontents’ Page XIII.

6 Duany and Talen, ‘Landscape Urbanism and its Discontents’ Page 3.

Essay: Looking Backward, Notes on a Culture Episode.

This essay looked at both the history of New Urbanism and Landscape Urbanism, and how each theory cares about how the different ideologies challenge each other through contrasting theory and practice.

At the turn of the century a developing debate against conventional suburbia, shifted to be one between New Urbanism and Landscape Urbanism. Two paradigms with differing visions of nature and society.⁷

Landscape Urbanism is favoured within architecture design, as it is seen as a refuge from urban disciplines. Nature's 'indeterminacy and flux' was understood to allow freely designed buildings as freestanding objects within a landscape both buffering and unifying their individualism.⁸ Landscape Urbanism sees that the landscape becomes the structuring medium, rather than spatial definition becoming the program that dictates where we build. A city developed with the ideal of Landscape Urbanism would look like a combination of open space within which buildings are set.⁹

"Designers can activate space and produce urban effects without the weighty apparatus of traditional space making." Stan Allen.¹⁰ This quote by Allen was once seen as 'radical', against those who believed that building frontages were the primary component of a successful urban outcome. Landscape Urbanist's sought to systematically assert whatever positions they believed were contrary to New Urbanist thought.

The New Urbanism design syntax could be categorised into grids, blocks, and sidewalks, all directly associated to building frontages. These assemblages are all primarily associated with ground planes and these design techniques were seen to promote social and functional programs. Landscape Urbanism however, takes the idea that design should be displayed in an appearance of 'superior environmental performance'.

James Corner defines Landscape Urbanism as, "A response to the failure of traditional urban design and planning, to operate effectively in the contemporary city." This takes the view that an 'out of control metropolis' is to be seen as a strength, and crossing over with the terms of indeterminacy, openness and flux.¹¹ Landscape Urbanism dismissed metrics which were a big component in New Urbanism. Landscape Urbanism uses hydrology as the main ecological basis and measure for dictating design programming.

Reflection: Relation of theory and ideas to the site/scope, Maungawhau:

The ideas from New Urbanism of walkability and pedestrian tendencies influencing how we place buildings and design around frontages, are methods that could be implemented into my development at Eden Park. I want my development to let human need the ecological demands to influence the built and structural design, this could help aid human usability in the space and balance it out with landscape architecture.

In regard to Landscape Urbanism, the idea of hydrology being the key driver when it comes to designing and programming a site, is a method that will be a key driver in my study. As the artificial wetland I intend to design will be the foundation of my master plan, which leads-on to influence the built environment and urban space of the site.

⁷ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 1.

⁸ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 4.

⁹ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 6.

¹⁰ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 4.

¹¹ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 6.

LITERATURE REVIEWS

The Landscape Imagination: Collected Essays of James Corner, 1990-2010.

Part Three- Landscape Urbanism: Essay, Not Unlike Life Itself- Landscape Strategy Now.

In this essay Corner discusses the concept of 'design intelligence', assessing the contrasting fields of natural systems and non-organic form that create programs for intelligent design. Michael Speaks describes design intelligences as "A practice allowing for a greater degree of innovation because they encourage opportunism and risk-taking rather than problem solving."¹²

Corner believes that at this particular moment, contemporary designers need to use such advancements to generate a larger cultural efficacy in fields of landscape architecture, architecture and urban design.¹³ This essay addresses how designers often think in terms of end goals, and final project visions, but this can be an incorrect way to view design. As a good strategy for a project remains open and dynamic, allowing the project to be adaptable long-term. Additionally Corner sees a strong strategy standing as a highly organised plan, which has spatial programs that are logistical. This strategy must also be simultaneously flexible and able to adapt significantly in response to changing circumstances in the future.¹⁴

Corner discusses how 'life scientists' view a resilient system to be both robust and open, and thinks that this is essential for a successful adaptation, which will ensure the survival in an 'evolving open system'.¹⁵ This idea is seen to describe pathways and processes which construct specific forms of organisation. When used effectively, Corner thinks that such programs can be used in fields of business, ecology, urbanism and design of the public realm.¹⁶ The concept of a 'fitness landscape' is introduced, which is meant to display adapted conditions, a fitness landscape is seen in the health and is 'synthetically symbiotic' because of its certain material and organisation form.¹⁷

Corner says that architectural, landscape and urban projects inevitably become formal due to geometric form and materiality, but they also adapt due to time and processes, and contain complexities due to multiple forces. This combination is seen as a fundamental strategy for contemporary design.¹⁸

Landscape, Ecology and Propagation:

In this section Corner says that landscape and ecology serve as useful strategic models.

1. As both accept complex circumstances which lead into developed techniques such as mapping, diagramming planning, etc.

2. Both address issues at a large scale, of spatial organisation and 'relational structuring' to have systems that remain open and dynamic rather than fixed structures.

3. Both landscapes and ecologies deal with 'open-ended-time' periods, which means that the project needs to be viewed in regard to cultivation and setting up conditions, rather than the concept of completeness as often seen in the built environment.¹⁹

Corner addresses how landscape architects view sites in regard to the environment, culture, politics and economics. These components make up a program itself and the tendencies of each category can translate into future potentials of the site based on each section's needs.²⁰ PESTE analysis can be seen to prioritise fields such as agriculture, silviculture, horticulture and other 'adaptive management' techniques. Corner describes these material systems as being important areas which are all involved in urbanism.²¹

"In a sense, the landscape project is less about static, fixed organisations that it is about propagating organisations."²²

This in turn explains that landscape and other urban organisations can set-up conditions for life to evolve, as a landscape configuration has inherent potential for future growth. For a program like this to evolve, it involved understanding of the shaping and arranging of form for elements to maximise the effects of a given site.²³

12 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 285.

13 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 285.

14 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 285.

15 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

16 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

17 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

18 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

19 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

20 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 286.

21 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 287.

22 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 287.

23 Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 287.

The Landscape Imagination: Collected Essays of James Corner, 1990-2010.

Part Three- Landscape Urbanism: Essay, Not Unlike Life Itself- Landscape Strategy Now.

Dispositions: Materiality, Form and Design:

In this section of the essay Corner discusses that design practices that are contextually responsive. These practices are explained as design methods which enable 'temporal', open-ended, flexible and ecologically strategic views that do not overlook the importance of material precision within the practice of design.

This essay describes how designers give physical shape and form to the geometry and material that become fundamental concepts in the urban world. This can be seen as designers drawing based off existing strategy, which are driven from various disciplines that deploy strategic forms of organisation thinking. These 'modes' of organisation thinking are not necessarily used to become 'master strategies' but instead to help find greater efficiency and potential for the physical shaping of the natural environment.²⁴

Some of the strategic techniques which are paramount for designers to use are: research, survey, mapping, projecting, decentralising, bundling, networking, testing, shaping, sounding-out, etc. Corner argues that these techniques are all of huge value to designers who seek to expand both the efficiency and scope of their projects. Corner challenges people to find a symbiosis of these concepts with form, geometry and material, as these are precise metric mediums that will 'substrate' into any strategic plan. The summary of this idea is ultimately Corner declaring that there is no 'general strategy' when approaching a project, rather that there are specific unfoldings that are dictated by affordances and contours of the terrain and local conditions of the site itself. "Anything to do with the whole notion of free flexibility and adaptation does not make sense, in a world without specific material form and precise design organisations."²⁵

Corner concludes this essay by saying that the performance of life is dependent upon a highly organised 'material matrix', tied in with a landscape ecology which is both robust and adaptable. These strategic means can be used materially in diverse ways and enable the function of features such as wetlands, cities, and our economies to be able to transform and exchange information with their surroundings.²⁶ In summary design intelligence is seen as the stability and robustness of a site handling processes of movement, while also creating organisations of form that configure design arrangements.²⁷

Reflection: Relation of theory and ideas to the site/ scope, Maungawhau:

As I see it this essay covers a wide spectrum of ideas and areas of landscape architecture, architecture, urbanism and theory of ecology. Corner argues in favour of the landscape being prioritised over structural form, saying that strategic modes of practice should dictate the formal material practice in design. When looking at what I want to drive my design at Eden Park, this was a concept that resonated with me. Letting the historic hydrological body influence how to develop a new ecology, which then dictates how the public elements are organised and crafts the form of the built environment of the site. The symbiosis of design intelligence encompassing both ecology and material form are concepts that I would like a good balance of, in my design. Corner puts a lot of emphasis on strategy and organisation to form a site. With good organisation, this sort of method can encompass large scale societal issues and smaller scale site issues, this is a useful idea to implement into my own design as it would help me execute a balanced master plan.

²⁴ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 288.

²⁵ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 288.

²⁶ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 289.

²⁷ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 289.

LITERATURE REVIEWS

The Landscape Imagination: Collected Essays of James Corner, 1990-2010. Part Three- Landscape Urbanism: Essay, Landscape Urbanism

This essay addresses briefly the concept of Landscape Urbanism and the themes of it in practice for designers and what it can achieve. Corner introduces Landscape Urbanism as a hybrid discipline, this phase hybrid suggests that it is a new field with different possibilities in the design field. Potential possibilities which it includes are described by features such as: Eco-Metropolis (Green Cities), Vegetated roofs, Working gardens, Renewable energy sources (solar, wind turbines, stormwater wetlands), etc.²⁸

Landscape urbanism is said to be a 'paradoxical and complex' measure in which it involves an understanding of many components to create a strong urban ecology. Infrastructural landscapes: roads, utility networks and hydrological systems.²⁹ Corner expresses that Landscape Urbanism is more than a singular image or style, and instead it is a method, a way of both thinking and acting. Landscape Urbanism arose as a response to the failure of more traditional urban design and planning systems that were not seen to have effective operation in contemporary cities.³⁰

Corner explains the issue that designers have had, as there is a complexity of market-based real estate, community activism, environmental issues and short-term political mind-sets which have made it nearly impossible for contemporary urban planners to do more than just facilitate commercial development plans.³¹ Landscape urbanism offers alternative approaches to the urban practice, particularly by using entrepreneurial techniques (smart techniques). From using newer methods, Landscape Urbanism creates an end of old 'dualities' such as nature: culture and the classical planning notions of 'hierarchy, boundary and centre'.³²

Corner favours Landscape Urbanism as he argues that it is a productive attitude towards indeterminacy open-ended and mixing cross-disciplinary work. A more traditional and simplified view on planning is that a city is a static composition where the planner is the figure in charge. Whereas Landscape Urbanism views the emerging metropolis as what Corner calls a 'living mat' which is accumulated with patches and layered systems, with no single point of control or authority. An open-ended system like this cannot simply be operated upon with direct certainty of the outcome, because a system that is this dynamic can escape design and even more so, planning.

Corner expresses that the 'contemporary metropolis' is out of control, yet this is a strength rather than a weakness.³³ A Landscape Urbanism view of the city is as a 'living ecology'. At present the designer usually looks for opportunities to engage the dynamics of the city on their own terms based around a set-of values, this is the designer putting themselves forward as an agent for making a difference. But further than this, there is a demand and an opportunity for cross-disciplinary and indeterminacy for contemporary development.³⁴

The next part of the essay goes on to explain the features which are considered as the general themes of Landscape Urbanism, and their use in practice: Horizontality, Infrastructures, Forms of Process, Techniques and ecology.

Horizontality:

Corner looks at the shift of social structures from social and cultural theorists from the later period of the 20th Century. The shift was from vertical to horizontal, and arose due to mediums such as global economics, television, communication, mass-mobility, increased autonomy of the individual as some of the key factors which were a part of the general transformation; a transformation from hierarchical, centric and organisations of authority to more interconnected and expansive systems. Los Angeles is used as a case study of the horizontal shift, as Los Angeles made horizontal spread tangible, through elements of movement and flow in the cities interconnected urban sprawl. The shift at its crux from a Landscape Urbanism perspective is one that moves from the focus of one thing to the focus of many objects in numerous fields (open-ended networks). Horizontal design when done well can maximise opportunity for increasing connection, and assembling movement, while also catering for change to occur over time with the forces that operate upon a site.³⁵

28 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 291.

29 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 291.

30 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 291.

31 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 292.

32 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 292.

33 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 292.

34 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 292.

35 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 292.

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What dictates the horizontal in design? As I understood from this essay, physical features such as land division, allocation, separation, construction of surfaces are some of the functions that constitute the horizontal as Corner sees it. Such features establish the amenities in physical form like pathways, which in turn support future programming and future adaptation. A horizontal surface can permit more coherent fields, that allow a range of assemblages and organisational structures which can form new conditions for function as infrastructure.³⁶

Infrastructures:

Landscape Urbanism views infrastructure more as a means to both perform and produce within a field, 'infrastructural catalysts'. A more traditional landscape view of infrastructure is in assessing earth-works, grading, drainage, soil cultivation, vegetation procurement techniques, land management etc. These are seen by Corner as natural occurrences that the condition of the ground literally gives the designer to work from. From an urban planner's perspective, infrastructure is roads, utilities, bridges, subways, airports. These are described as more 'hidden' systems that support and instigate development. Traditionally planning infrastructure is often governed by codes and regulation which can form the infrastructural direction which might shape a development long-term.³⁷

Landscape Urbanism does not argue to overlook these infrastructures, but instead tries to put more emphasis on more dynamic structures and processes that aid the development of more 'object-based' ideals, Corner described that this will lead into frameworks which will create 'cityscapes', 'infrascapes' and 'green city' and any other hybrid mode of design.³⁸

The other key difference of Landscape Urbanism in infrastructure, is that it generates geology and materials by using less codes, this can enable the space to have less regulated control in regard to forming its composition, and instead it prioritises the social program and future for the site. Corner says that infrastructural programming influenced by Landscape Urbanism is seen as 'an art of staging' and as a result the art is concerned with the things that are formed from the materials produced, and is less concerned with spatial form and geometry.³⁹

Forms of Process:

In the forms of process section of this essay it was hard to get the point, as it seemed to tackle a lot of quite big and diverse ideas.

The section begins by looking at David Harvey's ideas about New Urbanism and how along with modernist formal determinism both concepts fail because of presumption that spatial order can somehow control history and process.⁴⁰ Harvey, a professor of anthropology and geography, argues that the struggle for designers and planners lies less in finding new spatial forms and aesthetic appearance with a shift into more social, political, and ecological advancements all mixing together in a production of processes.⁴¹ This is seen by Harvey as a new challenge and general focus, as in the past uncontrolled capital backed by class has generated major inequalities and political economic power in societies dictating city design.

The concluding point as I read it, is that processes of urbanisation relating to capital and an accumulation of deregulation, globalisation, environmental protection codes, market trends, etc. These issues are very significant in how we shape urban relationships and can create spatial forms in themselves.⁴² Harvey's argument backs Corner's idea of reorganising structure and cities, which should form a 'utopia of process rather than a utopia of form', essentially meaning we need to shift from what a design looks like to what the affordances of the design actually are.⁴³

Corner explains that an argument backing process, needs to recognise the profound effects of this process on form, space and materials and how these are all exercised in the built environment. More traditional planning is seen to be concerned with time and process = final goals, whereas Landscape Urbanism's process is about putting materials to work and seeing the instrumental and productive effects. This focus upon material is an agency which is governed by techniques, which is the next theme of Landscape Urbanism.⁴⁴

36 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

37 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

38 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

39 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

40 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

41 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 294.

42 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 294.

43 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 294.

44 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 294.

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Forms of Process, Precedent:

I enjoyed seeing Corner write about this design as it was the first design precedents I picked to learn from when establishing my thesis abstract.

London Olympic Park, Stratford London.

Corner says that this project is an example of a wholly integrated plan as the project began in 2003, with the Olympic Games opening almost 10 years later in 2012. The site is still undergoing transformation and urban redevelopment, this will be ongoing until 2020. The project uses interesting processes and physical design elements. Corner sees the central interest of this project as a 'fundamental-manner', in which the whole site was treated as a large-scale landscape. This management plan created what has been described as a 'tissue and bonding agent' that ties all of the different systems together. The project uses features along the lines of corridors, patches, mosaics, bridges, pathways, landforms, and these have created a fabric within a larger system which can grow overtime.⁴⁵

Techniques:

This section moves through to design techniques of how to actually use these themes in practice. Landscape Urbanism views techniques of operation as crucial components in practice, given the many economic and logistical difficulties which surround large-scale projects in society. Corner believes that modern designer must be able to take on a large capacity and work with multidisciplinary terms with a range of experts for successful contemporary collaboration (architects, landscape architects, engineers, ecologists, economists, artists, politicians).⁴⁶ This idea as in summary shifts design in a more collective approach to create ideas from different areas of expertise which create a new synthesis. A technique to enable this is enhanced through imaging and projection. Landscape Urbanism sees imaging not simply as a way to sell the completed project, but more to explore and reorganise the perceptions and different insights which the development may become.⁴⁷

Corner expresses techniques from landscape that we have seen before in his writing, mapping, cataloguing, triangulating surface modelling, implanting, managing, cultivating, phasing, layering, etc. These landscape techniques when combined with urbanist techniques which include planning, diagramming, organising, assembling, allotting, zoning, marketing, etc. can create a larger set of skills that traditional planners would have overlooked in the past. I liked the idea of Corner's Landscape Urbanism toolbox, as these will be ideas and people that I will research for my own work:

- Robert Rauschenberg's 'Flatbed' procedures.
- John Cage's 'Scorings'.
- Buckminster Fuller's 'Projections'.
- Michael de Certeau's 'Micro-techniques'.⁴⁸

Corner thinks that these techniques when combined can serve a new area of instrumentality, which may prove to be more relevant in the face of the world where cities are seeing exponential growth, and demand for better housing and transportation systems, and as we all have seen - more environmental stress. Cities are constantly becoming more complex, and these techniques are seen as a means to offer more compelling ideas when addressing and designing a site with future direction in mind.⁴⁹

⁴⁵ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 294.

⁴⁶ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 296.

⁴⁷ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 296.

⁴⁸ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 296.

⁴⁹ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 296.

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Ecology:

The final theme dictating Landscape Urbanism is ecology. Corner says that ecology teaches us that all life is bound into dynamic and interrelated processes of codependency. Codependency became the main plug word that stuck with me from this section of the essay, in understanding what Corner was trying to get across in his theme of ecology.

When understanding the fundamental concept of what an ecology is, Corner points that effects and changes produced by a single individual or ecosystem in one area, can and do have significant effects elsewhere, whether we the individual realise it/or even see it. While this makes the ecosystem seem simple, it is explained to be a complexity of influences and interactions, and these interactions can operate on a linear level, with 'mechanic models' and layers, these relationships among the ecosystem are seen to continually evolve into the physical realm developing new forms with time.⁵⁰

It is expressed that in a contemporary view on ecology everything is interconnected, and that if the environment is something which is always outside, then we as designers are now failing to recognise the full codependency and interactivity of exterior and interior things, and how both parties cause reaction upon each other. Corner addresses the common description of an ecology being simply put as 'nature', but now we need to shift to promote ecologies as 'soft systems' which are fluid and adaptive fields, which can be used to evolve long-term strategies. A soft-system is described as things such as wetlands, cities, and even economies. Corner argues that these mediums have the potential to absorb, transform and exchange information which can be translated into our surroundings.⁵¹

Corner sees successful codependency as a stable and robust process which will drive contemporary development, such developments will be able to process movement and change. I agree with Corner that this is an attractive idea for Landscape Urbanism, because it demands for cities and landscapes to become more adaptable, and capable of responding to quick change in demands. Corner summarises ecology as needing to be a revised activity in the design practice which can form a new order which in effect will transcend into new kinds of public space.⁵²

Reflection: Relation of theory and ideas to the site/scope, Maungawhau:

This essay is very dense and looks at a lot of ideas, concepts and techniques for landscape architects and urban designers to use. To summarise and simplify the essay, I took one technique from each section of the essay, which could be useful when designing my space at Eden Park.

In regard to the horizontal, the main thing I took away was the need to design with consideration of multiple layers in a site. When addressing these layers there is no vertical zone dictating the space in regard to older views of hierarchy, and now there is a need to create assemblages on a horizontal level that complement each other and work together in a certain synthesis. Whereas, I am interested in hybrid ideas and how to correlate concepts and functions, and viewing infrastructure more as an 'art of staging' as opposed to a final object or material form.⁵³ This is a concept that would be good for Eden Park, as it is not going to be a fixed and final design but an open-ended project that will develop over time due to the needs of the community and the environment.

Infrastructure was the section that surprised me the most, as it explored the traditional ways that landscape architects and urban designers view infrastructure as solid physical objects and functions.⁵⁴ For form and process the quote "utopia of process rather than a utopia of form" resonated with me, as I want Eden Park to articulate a network of intertwining processes that in turn dictate the form. Corner and Harvey's ideas about organising processes is something that I will consider when formulating my network of tendencies that are both at Eden Park and the surrounding suburbs.⁵⁵

The site analysis of London Olympic Park, Stratford was also good for me to read, as it was a positive critique of one of my existing precedents, and a real-life example of a successful process-orientated design.

50 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

51 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

52 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

53 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

54 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 293.

55 Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism 294.

LITERATURE REVIEWS

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The techniques section brought to light the importance of cross-disciplinary work, which I have always been supportive of and think of as imperative for a robust design at a larger scale. Research and using some of the techniques Corner discusses such as the 'landscape urbanism toolbox' will be a good place to start when addressing how to design a well-rounded and evolving plan for Eden Park, rather than simply going off traditional methods that are not as successful.⁵⁶

In regard to the ecology, I liked the simple concept of ecosystems. Ecosystems drive action that then causes reactions, which is of course one of the laws of motion. While this is simple, it is so much more complex than we think when designing in landscape. The idea of ecosystems being codependent was a strong concept, and I like the idea of the ecosystem being seen as something that influences spatial process from the outside-in.

LITERATURE REVIEWS

Post Urbanism and Re-Urbanism

Peter Eisenman vs. Barbara Littenberg and Steven Peterson, edited by Roy Strickland
Michigan Debates on Urbanism, Volume 1,2,3

Volume 1

Volume 1 of this series looks at the role of the market in urban design decisions, the text does this by exploring the concept of social capital, seen as the networks and affiliations that hold a society together. This social capital is seen to have a power and a role in driving spontaneous urban design decisions.⁵⁷ The first volume describes the social benefits of vernacularism, populism and hocrism in a positive opposition to more 'official architecture.

Volume 2

The second volume, aims to place New Urbanism in the middle ground between Everyday Urbanism and Post-Urbanism. Calthroe who is a co-founder and director of Congress for New Urbanism ideology, argued whether New Urbanism should be an open-ended process or a guided, regimented process which is set out by sanctioned rules and codes. Calthroe concluded his thoughts on New Urbanism debating that the idea has 'high moral principle' with a key drive to create better neighbourhoods in societies.⁵⁸

Volume 3

The third book in the series has a focus on the ground zero. As the title addresses Post Urbanism, it is described as 'avant-garde' and 'auto-urban', seen as an ideology which is driven purely by aesthetics rather than normative principles. Eisenman debates that "architecture is supposed to be the locus of metaphysics of space".⁵⁹ The text covers three main forms of urbanism, every day, new and post urbanism.⁶⁰ It compares the three different areas of urbanistic thought, and argues for and against them based off different theorists and designers views on each. Additionally, the text looks at how each theory has developed and been used in the real world through design. Volume three also introduced the concept of 're-urbanism', which was first linked to Robert Fishman. The term Re-Urbanism describes the positive redevelopment and revitalization of American cities that happens over a period of time, but in an unsystematic way. It is the theory of urbanism that both Littenberg and Peterson use in their own process and practice in urban design work.⁶¹

Eisenman discusses that there are three major conditions in contemporary urbanism. Firstly 'Arcadian impulse', which is represented by New Urbanist thinkers such as Leon Krier and Dimitri Porphyrios. The general ideal of these theorists, is the return to an idea of the city of the past, of the 18th and 19th century.⁶² The second idea is the 'Utopian' meaning that the world is never the same as the present, and that designers must always strive to do better. Modernistic thought is all about the search for a utopian society. Eisenman thinks that modernism as a whole has failed in contemporary society. The third position is what Eisenman calls the 'realist/cynical position'. This realist theory is categorised by people such as Rem Koolhaas; urban theories of 'junk space'. This position is an extreme one in the field, which was brought about by both the Arcadian and the Utopian theories. Eisenman discusses the idea of a project in architecture and urban design as needing to be a source of reflection and a critical view of the status quo. The nature of this reflection is what splits the Arcadian from the Utopian, even though both are described as 'failed projects'.⁶³

⁵⁷ Architects' Journal, Michigan Debates on Urbanism Volumes, I, II and III.

⁵⁸ Architects' Journal, Michigan Debates on Urbanism Volumes, I, II and III.

⁵⁹ Architects' Journal, Michigan Debates on Urbanism Volumes, I, II and III.

⁶⁰ Eisenman, Littenberg, Peterson, Strickland, Post Urbanism and ReUrbanism Volume Three. Page 8.

⁶¹ Eisenman, Littenberg, Peterson, Strickland, Post Urbanism and ReUrbanism Volume Three. Page 9.

⁶² Eisenman, Littenberg, Peterson, Strickland, Post Urbanism and ReUrbanism Volume Three. Page 11.

⁶³ Eisenman, Littenberg, Peterson, Strickland, Post Urbanism and ReUrbanism Volume Three. Page 12.

Key Literature Reviews and Points:

(1) Duany and Talen's essay Landscape Urbanism and its Discontents- Dissimulating the Sustainable City, focussed on New Urbanism studied discussed pedestrian tendencies around building frontages.⁶⁴ This is a concept that would work advantageously against the challenges set out in this landscape led design project.

(2) Corner's essay, 'Not Unlike Life Itself- Landscape Strategy Now', covers a variety of methods when approaching design, and urban theory. The most relevant idea from this essay, which responds to the thesis statement is the idea of Landscape Architecture being prioritised over structural form. As it is argued that strategy and urban modes should influence the form of the built environment.⁶⁵ This will be a central idea that backs up the aims and objectives of this design moving forward.

(3) Corner's essay Landscape Urbanism, covered a wide scale of concepts and design techniques that have been reflected on, many of which will be used when approaching the landscape led design strategy for Eden Park. The limitations will potentially be that it might be hard to use all of the concepts for a site of this size, as a lot of Corner's methods are quite broad and would apply to a much larger urban scale. The key methodologies that will influence the design of this thesis will be, process rather than form, ecosystems driving actions and reactions on a site, the horizontal dictating the shape of an urban environment which will then influence the vertical, and using a cross-disciplinary design strategy to create a process-orientated Master Plan at Eden Park.⁶⁶

⁶⁴ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 3.

⁶⁵ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 285.

⁶⁶ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 295.

**RESIDENTIAL
PRECEDENT REVIEWS:**

RESIDENTIAL PRECEDENT REVIEWS:

Name: Sugar Park
Designers: DELVA Landscape Architects
Location: Veurne, Belgium (Proposal)

Description:

Two teams worked on this multidisciplinary project, DELVA Landscape Architects and ION. They created a master plan for the redevelopment of a historic Sugar Factory site in Veurne, Belgium. The design sets out to create a multifunctional use, with both residential and commercial buildings, green spaces and a natural park. The design utilises the dikes around the water bodies at the site to act as rainfall and infiltration zones. In relation to urban space, the park has a biking bridge which crosses the central axis of the site and makes the city center more accessible.⁶⁷

The main design features I find intriguing about this project are the sustainable and water sensitive design features and how they function. The buildings have PV-Panels that store heat and there are also green roofs which buffer slowly to discharge rainwater. The rainwater from the green roofs can also be stored in the housing for reuse. If there is a surplus rainfall, the water is collected in the infiltration zone. The infiltration zone forms the edge between the park and the housing, and when there is a surplus of rain the zone acts as an open canal system that allows water to flow into the drains. Additionally, there is a water wheel that pumps the water from one basin to another and then to the Lovaart.

This means that the rainwater does not cause strain on the sewage of the site, and instead has a positive effect on the decreasing of groundwater levels and also reduces the speed of the drainage of water which helps at a wider regional scale.⁶⁸

Reflection, How I can relate certain concepts to my project:

The emphasis on sustainable water infrastructure and green space is what stands out in this precedent. The function of the water infiltration zones and how they operate to cater and filter rainwater is a strong system, elements of this could be incorporated into the wetland system I develop at Eden Park. I also like the PV-panels that are used for heat storage on the buildings and the incorporation of green roofs. One of the key things I want to enhance in the built development at Eden Park is making sure that I utilise as many green building structures as possible, and there are some good ideas in this precedent that I can draw inspiration from.

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67 DELVA, A New Green Neighbourhood for the city of veurne.
68 DELVA, A New Green Neighbourhood for the city of veurne.
(1) DELVA, A New Green Neighbourhood for the city of veurne.
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(4) DELVA, A New Green Neighbourhood for the city of veurne.

Name: Wohnungsbau Hinterangerstrabe

Designers: GHIL

Location: Germany. 2017

Description:

This is a newly designed neighbourhood located 2kilometres south of Ingolstadt old town. The site has 100 residential units and seven commercial units, and is around 1000m2. The new blocks create a filter between these different forms and scales, one zone is designed to be a private neighbourhood area to the east, and the western end of the site is an open centre for the community.⁶⁹

The space is designed so that the ground level of the site is car free, all of the above round parking spaces are for visitors, and all waste amenities are at the edge of the block. The residents car parks are underground. During the construction of the site the ground plane was raised slightly to create pedestrian flow between the levels of the surrounding areas.⁷⁰ The inner garden system has a communal atmosphere, and there is a free flowing pathway system, which connects the buildings and the exterior zones.⁷¹

In regard to the shape of the site, there are seven L-shaped buildings which divide the plateau into a sequence of smaller spaces, and these buildings are designed in a way to create a diversity of heights which establish different light and atmosphere conditions. The biggest open space on the site has a playground, and a multifunctional area for community activities. Each building has a space for semi-public courtyards on the ground plane, which are meeting points for residents. The smallest open spaces are private gardens, which are enclosed by hedges for the ground floor apartments.⁷²

Reflection, How I can relate certain concepts to my project:

The key concepts that drew me to this precedent were the strong balance between private and public space in the master plan of the design. I like how GHIL have only allowed for temporary parking on the ground plane, and made the residential parking underground, this is an idea I want to take through to my own master plan. I also like how the buildings play with different levels to allow for diverse climate and atmospheric conditions on the site, this is something I would like to play with when exploring housing at Eden Park.

The way that this project explores communal open space and private open space is an idea I would like to explore in depth. This project creates multi-functional zones that can be used by everyone and then private garden zones for residents. I would like the ground plane of my own design to have a strong balance between private and public garden space. This project uses simple methods of form, height and planting to create a nice multipurpose development, and I will be able to apply some of these strategies into my own project.

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69 GHIL, Wohnungsbau Hinterangerstrabe.

70 GHIL, Wohnungsbau Hinterangerstrabe.

71 GHIL, Wohnungsbau Hinterangerstrabe.

72 GHIL, Wohnungsbau Hinterangerstrabe.

(5) GHIL, Wohnungsbau Hinterangerstrabe.

RESIDENTIAL PRECEDENT REVIEWS:

Name: Naerheden, Suburb of the Future
Designers: Karres + Brands
Location: Hadehusens, Copenhagen (Proposal)
Description:

The proposed site spans across 63 hectares. The team that took on the project was a multidisciplinary team made up of architects, urban designers, landscape architects, and engineers, etc. The team developed a strategic plan which aimed to achieve a unique quality of living to complement the suburbs that already exist in the surrounding area. The framework aims to create housing which is low-density with a green cluster structure that encompasses four different neighbourhoods, which reflect the varied local landscape characteristics and building structures. The cluster structure gives a robust framework that has a versatile urban fabric. This fabric was designed to cater for the needs of both small and large scale, developers, private initiatives and building groups.⁷³

In relation to cars on the site, the parking is designed in small scale parking houses, which are integrated into the clusters. This cluster system makes it easier to establish a much larger percentage of gardens and shared facilities on the ground level of the site rather than overly saturated concrete zones.⁷⁴

The masterplan structure allows social life to occur at different scales. The smaller scale interactions offer spaces to 'stay and play', there are also common areas and shared facilities in the car-free clusters. At a larger scale, there is a green loop which unites the entire Naerheden with the existing city through a ring of public spaces. Naerheden has a sustainable water system, which shapes the loop and makes use of the natural shifts in the elevation of the site. The site has a dense network of bicycle and walking paths, the loop contributes to a social and aesthetic place for the framework as a whole.⁷⁵

Reflection, How I can relate certain concepts to my project:

The main concepts that drew me to this precedent, were the fact that first and foremost it takes the time to assess what is already existing in both the landscape and built environment in the wider site network. I think this is really important in and multifunctional design project, as you want to ensure that what you are designing is needed and also complements what already exists in the area. I also liked that it was a robust multifunctional masterplan, which designed housing, public space, took on sustainable water infrastructure and allowed for pathways and cycleways to be prioritised throughout the site. I think the green cluster idea is something that I could try and test on my own site when designing the urban space, as this will allow me to create distinct zones and urban spaces that are not dominated by buildings.

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73 Karres + Brands, Naerheden suburb of the future.
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RESIDENTIAL PRECEDENT REVIEWS:

Name: Stora Sjöfallet
Designers: Urbio
Location: Royal Seaport, Stockholm, 2017

Description:

Royal Seaport is considered one of Stockholm's new ecological districts. Urbio have designed one of the largest residential quarters at this site. The buildings are climate-smart, and they have interesting architectural tendencies, which are embedded by green inner courtyards that have been designed with a high green-index.⁷⁶

Storm water is used as a strong resource in the design, the water collecting barrels are used as a part of an ecological strategy. There is also a wooden sitting sculpture that serves as a 'dead wood habitat' for oak tree break off and living organisms. These nesting boxes provide shelter for birds and bats. There are rooftop gardens on the buildings, and solar panels which are designed to create meadow-like vegetation.⁷⁷

Reflection, How I can relate certain concepts to my project:

The strong features of this precedent are the fact that it is an ecological design, with the buildings being climate-smart, utilising form to allow for features such as green roofs and solar panels to be placed; these are simple techniques that I could use in my own design. Additionally, the use of stormwater on the site is thoroughly organised. Although I am leaning towards a wetland in my own design, it is interesting to see how other precedents use stormwater to enhance the overall function of the site. Some of the simpler green tools are ideas that I will be able to play around with when testing on my own site.

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76 Urbio, Stora Sjöfallet Royal Seaport Stockholm.
77 Urbio, Stora Sjöfallet Royal Seaport Stockholm.
(10) Urbio, Stora Sjöfallet Royal Seaport Stockholm.
(11) Urbio, Stora Sjöfallet Royal Seaport Stockholm.
(12) Urbio, Stora Sjöfallet Royal Seaport Stockholm.
(13) Urbio, Stora Sjöfallet Royal Seaport Stockholm.

MULTIFUNCTIONAL URBAN SPACE & WATER SENSITIVE DESIGN, PRECEDENT REVIEWS:

PRECEDENT REVIEWS:

Name: Kokkedal Climate Adaption

Designers: Schonherr

Location: North Sealand, Denmark, 2017

Description:

This project aimed to develop a climate adaption, to promote an improved urban life. The challenge was to connect the existing split urban areas, create new meeting points and overall to bring the landscape closer to the residents in the area.⁷⁸ The site is 60 hectares, and the area contains two large subsidised housing associations, which border the Usserød River, as a result of the topography of the site it suffered from severe flooding in 2011. To mitigate this issue, the Kokkedal project contains an extensive catalogue of solutions for both climate adaptation and water strategy.

Rainwater was formerly hidden underground in the pipelines, but this project makes the rainwater visible, and this is done to offer recreational and urban possibilities. The recreational areas have increased a sense of security in the area thereby eliminating opportunity for antisocial behaviour, which used to dominate the area. The rainwater system is retained in the basins, where these volumes have the capacity to be retained for five years. Larger rainfalls can also be managed without serious flooding damage to the wider site. The rainwater works by being managed in a system on the surface, and this makes it possible for the water to follow its course from the smaller basins on to the 'soakaways' and trenches, it then finally reaches the larger basins and then the Usserød River. While the water flows, it is cleaned and filtered through the elements in the rainwater beds and basins.⁷⁹

The masterplan of Kokkedal consists of 35 individual projects, each of which is made to contribute to recreational activities for the residents in the area. This is seen as a 'dual function' which is an integral feature to the project. One of the smaller projects is a garden space which functions as a green retainment basin. There are also lots of local sports and recreation fields which have been 'walled' in by grass and clad earth mounds which means that large volumes of stormwater can be held. Other projects are the site area gardens, activity zones, exercise pathways, nature based playgrounds, etc.⁸⁰

Reflection, How I can relate certain concepts to my project:

This project is large, and covers a vast number of design elements. The main feature that I think are strong for what I am interested in developing in Mount Eden, is the fact that the site allows for water mitigation to become a strong ecological feature in the area to enhance the site rather than being a hazard. The strong rainwater and basin system displays strong sustainable infrastructure, which is relevant for the wetland/basin system I plan to develop at Mount Eden. Additionally, the multifunctional urban space and green zones are great examples of how versatile a site can become, and there are many interesting design features to take inspiration from, in this large development.

⁷⁹ Schonherr, Kokkedal climate adaption by Schonherr.

⁸⁰ Schonherr, Kokkedal climate adaption by Schonherr.

⁸¹ Schonherr, Kokkedal climate adaption by Schonherr.

(14) Schonherr, Kokkedal climate adaption by Schonherr.

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PRECEDENT REVIEWS:

Name: Laasby Sea Park
Designers: LABLAND Architects
Location: Jutlandic Town, Laasby, Denmark 2016
Description:

This project is a first of its kind Sea Park for Denmark, and was designed specifically to help combat climate change and also as a recreational space.

The site was originally somewhat of an abandoned old factory with overgrown vegetation. It was a very isolated space and also wasn't used. Nearby to the area, there is a retirement village, and in 2013 there was a flood which went into the basements due to excess rain caused from climate change. LABLAND Architects investigated how they could take the rainwater and transform it into a useful resource for the site. The Sea Park was constructed with three storm water reservoirs that strengthen the landscape against raising volume of rainfall in future. The reservoirs work at three different levels of water,
1) normal levels of rain
2) 5-7-year flood mitigation
3) 100 year flood mitigation. So the Sea Park has a long-term strategy in place.⁸¹

There is a 0.5 mile long pathway around the reservoirs which connects the path and the area and invites people to explore the park. The path takes you to features such as a beach volleyball court, a playground and skate park, and a resting area around the water reservoirs.⁸²

Aside from the water features, the other sole purpose of the site is to act as a recreational site and also a crossfit gym. A lot of cross-fit design elements are placed both around and within the reservoirs, with sculptures that can be used both for training and as play installations. In regard to the long term structure of these elements, when hit by the 5-year rainfall event, some parts of these structures will be submerged in the water but you will still be able to access the gym facilities. However, during a 100-year rain event most of the facilities will be under water and so the structures will stand as sculptural elements. This was designed with the intent that no matter what the water level, the structures are adding something to the site and also they mirror the changing elements of the landscape.⁸³

Reflection, How I can relate certain concepts to my project:

I think aside from the clever use of multifunctional structures in the space and the use of the water reservoirs to mitigate flooding and enhance the resource of rainfall, the main strategy of a long-term plan that mirrors a changing landscape is something really key to this precedent. I think I would like to try and mitigate flooding and rainfall with my wetland, and this can be something that adapts over time as the climate changes in Auckland.

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81 LABLAND, Laasby Sea Park.
82 LABLAND, Laasby Sea Park.
83 LABLAND, Laasby Sea Park.
(15) LABLAND, Laasby Sea Park.
(16) LABLAND, Laasby Sea Park.
(17) LABLAND, Laasby Sea Park.
(18) LABLAND, Laasby Sea Park.

Name: Hassett Park

Designers: Jane Irwin Landscape Architecture & Hill Thalys Architecture + Urban Projects

Location: Capital Hill/ Mount Ainslie, Canberra, Australia, 2015

Description:

The site occupies 5 sections, in a pivotal site, it is the junction between two major axes between Capital Hill and Mount Ainslie, Civic and Russell. The park is a new urban public domain framework for 'Campbell 5'.⁸⁴

"The design process explored what makes a civic park – through community consultation and comparative analysis of established local parks. The resulting design balances demand for recreation, culture and environment, so that educative and play opportunities, and environmental systems, seamlessly merge to form the aesthetic frame."⁸⁵

Framework- The park is overlooked by a mix of residential and mixed use space on all sides, the site has direct connections to the streets acting as a key public domain for the new and existing community. The movement within the site is connected to existing and planned cycle routes, and this links to the suburb of Campbell down to the lake. The park sits at the bottom of a large catchment which stretches to the top of ANZAC parade, and this encompasses a large part of the existing suburbs. There is a pre-existing drainage system and farm dam on the site which has been enhanced in the design to form an urban creek which is woven around the contours of an old gully.⁸⁶ There are a lot of curved walls and pathways which form the shape of the creek, and also the structural movement and use of the creek.

Stormwater - The design captures stormwater from within the new development of the site, and also from the existing wider suburban catchment. How it works - The first flush from the piped system is brought to the surface, and then flows are contained and filtered through the stream and wetlands. There are tanks where the water is stored beneath the bridge, and then it can be reused for irrigation and released into the lake once it is filtered. The parks offer a functional and aesthetically structured system. The water harvesting creates clean and healthy water for the environment and also mitigates flooding, which results in reduction of water use for maintenance. It also filters water before it enters the lake. The design offers a seamless integration for recreation and water quality systems which sets a new benchmark for a civic park design - the park won the Stormwater Award of Excellence in 2016.⁸⁷

Reflection, How I can relate certain concepts to my project:

The way that this site uses the existing pipeline and stormwater catchment to create an artificial wetland is very interesting to learn from, as this is what I am going to try and achieve at the site in Eden Park. Using the existing pipelines and stormwater catchment to filter stormwater into the larger catchment of the area. I also like the mixed-use elements of the park, and how it allows for community functions and also social and recreational use.

⁸⁴ Hill Thalys Architecture + Urban Projects Jane Irwin Landscape Architecture, Hassett Park.

⁸⁵ Hill Thalys Architecture + Urban Projects Jane Irwin Landscape Architecture, Hassett Park.

⁸⁶ Hill Thalys Architecture + Urban Projects Jane Irwin Landscape Architecture, Hassett Park.

⁸⁷ Hill Thalys Architecture + Urban Projects Jane Irwin Landscape Architecture, Hassett Park.

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HISTORICAL CONTEXT &

SITE ANALYSIS

SITE ANALYSIS

Eden Park + Historical Timeline

Eden Park is just over 100,000m², surrounded by 3 primarily residential streets and one main road.

Walters Road is 330metres long and has a steady flow of traffic as it leads into the Mount Eden Shops from the main road.

Cricket Avenue is 287metres long and is utilised by medium-density housing and the park, it also is where a lot of the water networks enter the site.

Reimers Road is 300metres long and is similar to Cricket Avenue in terms of use but is flatter.

Sandringham Avenue is potentially the most problematic street but also holds a lot of potential too, as it is a main road that leads through to the city and also public transport hubs. It currently has a lot of dead space along the western side of the road.

Historical Timeline: (This goes with the diagram on the following page)

-1900's Eden Park was a swamp and natural wetland which had an abundance of Tī Kōuka. The park sits at the basin between steep ridgelines, so it would have naturally acted as a place that water flowed down to due to the site's topography.

-In the early 1900's there was a tramline which ran across Sandringham Road - it was a loop holding 35 trams transporting people to and from rugby games.
-1920's Eden Park was filled with land and drained to create a rugby field.

-2010's-Eden Park got into a lot of trouble financially because the residents in the area complained about the public events and noise issues that came with living next to a stadium. This led to restrictions on how often the Park could actually be booked out for large events, increasing its debt and also detracting from its purpose - it isn't being used as much as it could or should be.

-2018 The idea for a waterfront stadium is drafted, a 'sunken stadium' across the viaduct.

-2019 Numerous reports and public documents about the Eden Park Trust's ongoing lending and debt.

SITE ANALYSIS

(1) (3) Scoop Culture, (original source unknown), End of an era for Eden Park, 1900's.
(2) Auckland City Libraries, Sir George Grey Special Collections, Kingsland Cricket ground, 1907.
(4) Auckland City Libraries, Sir George Grey Special Collections, Cabbage Tree Swamp, Photograph, 1907.
(5) Mount Eden Borough Council, E.C. Franklin, Mount Eden's First Hundred Years, 1956.
(6) Grantham House Publishing, Graham Steward, Around Auckland by Tram I the 1950's'.
(7) Kingsland Business Society, Kingsland, Eden Park, Nixon Park.
(8) Mount Eden Borough Council, The Changing face of Mount Eden.
(9) Auckland Cities Libraries, Sir George Grey Special Collections, Eden Park 1924.

(12) 2011 Rugby World Cup Final, All Blacks vs. France

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(13) Sunken Stadium, waterfront stadium proposal 2018

Aucklanders being asked to support a \$1.8 billion stadium on the waterfront

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NEW AUCKLAND

Auckland's \$100m Eden Park dilemma

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Source: EY report for Auckland Council / Herald graphic

(14) EY report, 2018-2019

- (10) Mount Eden Borough Council, Brent McAlister, From Farms to Flats, 1983.
(11) (11.1) Robin Morrison, Facing off 1981, Mount Eden. and Behind the wire 1981, Kowhai Intermediate Mount Eden.
(11.2) Te Papa, purchased from Peter Black, Rugby Park 1981.
(11.3) Ministry of Culture and Heritage, All Black prop Gary Knight is felled by a flour bomb.
(12) Dave Lintott, Eden Park, All Blacks vs. France final.
(12.1) Brett Phibbs, Richie McCaw holds the Webb Ellis Cup.
(13) Todd Niall, article writer) (unknown original source), An artists impression of the Bledisloe Wharf stadium.
(13.1) Todd Niall, article writer) (unknown original source), An artists impression of the Bledisloe Wharf stadium.
(14) New Zealand Herald, EY report, Eden Park trust's numbers.
(14.1) Tim Murphy, Auckland's \$100m Eden Park Dilemma.

The History of Maungawhau

Maungawhau pre-European settlement was seen as the Tāmaki-Makaurau isthmus, and offered many environmental advantages to Māori. The climate was good, it had fertile volcanic soil and the mountain was easily accessible to the two harbours, it was a favoured area by Tāmaki-Makaurau.⁸⁸

Both Maungawhau (Mt. Eden) and Owairaka (Mt. Albert) were the two dominant volcanic cones on the isthmus that were historically used as villages and Pā sites. It is noted that there were possibly traditional Māori buildings on the site as early as 1200AD. An ariki of great renown, Chief Titahi (Ngāti Awa; an expert Pā builder) taught people how to design and construct terraced gardens on the sides of the mountain. He also knew how to make ditches, palisades and stone walls, which provided protection from strikes. The area is said to have been visited regularly by the Waiohūa tribe who intermarried with visitors from Tainui (Waikato region), Kawerau, and Ngāti Whātua (Northland and Auckland).⁸⁹

European settlement:

With European colonisation came the first recorded land purchases. Auckland was settled in the 1840's, becoming the capital of the new colony, New Zealand. Governor Hobson secured a 300 block of land from the government, this land was purchased from the local chiefs and included the northern part of the suburb of Mt. Eden. The following year roughly 13,000 acres were additionally purchased by the crown. This block of land was then surveyed, divided and offered for sale as colonisation grew and the landscape developed and changed. The area was farmed and the volcanic soil being fertile produced a variety of crops, dominantly wheat in the 1850's. Mt. Eden's first official industry was the Eden Flour Mill, which was established in 1844.⁹⁰

Suburban development:

The original suburban development of Auckland largely depended on the availability of land, affordable transport and the desire for the growing middle class to move out of the crowded inner city.⁹¹ The population of Mt. Eden grew from 1135 people in 1881 to 3144 within five years.

At the beginning of the 20th Century the farms had largely been replaced by housing, and the area was where many of Auckland's professionals and businessmen built their 'country residences'. In the 1870's more subdivisions occurred, and there was a gradual rise in the development of villas and bungalows in the area. By the 1930's a new form of housing was visible, and much of it is still seen today. New buildings which contained several flats were seen as stylish homes.

The population increased 63% from 1886 to the early 20th Century. Due to the area having an abundance of volcanic stone, this was used for road making. Mt. Eden additionally had a labour resource which actually prepared the stone for the roads - this was one of the only advantages of having a prison in the area. Horse drawn buses were the first form of regular public transport in the late 1870's, and in the 1880's there was a railway transport service built which connected Newmarket with Helensville, with stops in between, including Mt. Eden. Electric trams began connecting Mt. Eden with the city by the early 1900's, with the original tram shelter still remaining at the base of Maungawhau.⁹²

88 Mount Eden Village, About us- History.

89 Mount Eden Village, About us- History.

90 Mount Eden Village, About us- History.

91 Mount Eden Village, About us- History.

92 Mount Eden Village, About us- History.

Maungawhau Village and Housing History:

Once Tāmaki-makaurau was colonised, the once primarily farmland area became a housing area, mostly housing professionals who moved to Maungawhau from the city centre. Between 1870-1875 most of the farm land was subdivided into large suburban plots, and the main roads were defined, by the transport board (Mt. Eden Road). Maungawhau itself was named a public reserve in 1879. The majority of housing construction happened from 1870-1930, therefore today these historic houses reflect the architectural and colonial influences of the time.⁹³

Villa:

During the 1900-1910's a lot of land in Maungawhau was subdivided and the construction of English style villas began. A lot of the original villas were built front facing along Mt. Eden Road. Over time the front yards of these sites were taken over by commercial buildings, and Mt. Eden Village the established shopping centre was built by the 1920's.⁹⁴

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⁹³ Mount Eden Village, About us- History.

⁹⁴ Mount Eden Village, About us- History.

(1) NZ Post, Construction of Nation.

(2) NZ Post, Construction of Nation.

(3) NZ Post, Construction of Nation.

(4) NZ Post, Construction of Nation.

Californian Bungalow:

The Aotearoa take on a Californian Bungalow arrived in the 1920's, it was strongly influenced by American housing trends. The typical features of the bungalow were its low-slung formation, the asymmetrical composition which contrasted to the traditional villa. The bungalows had deep porches and bay windows, all of the features collectively created an informal open place within the building.⁹⁵

(3)

(4)

State Housing:

There is by no means an abundance of state housing in Maungawhau's suburban fabric, but it is still important to acknowledge why it came about. Following WW1 several hundred state houses were built, this was largely influenced by the growth of railways along the area where timber and building materials were pre-cut. However, when the Great Depression hit in the 1930's the suburban building boom receded. In 1935, the government loaned money for private house purchases and rentals. 5,000 houses were built by 1939. Following the end of WW2 up to 10,000 state houses were being built annually, and suburbs developed local shops and amenities with the rapid growth. The main area of Tāmaki-makaurau that was influenced by state housing within its urban fabric was South Tāmaki-makaurau.⁹⁶

⁹⁵ Mount Eden Village, About us- History.
⁹⁶ Kainga Ora, History of State housing.

Building Zoning + Pedestrian Networks

By examining the buildings around Eden Park and the wider streets it is clear that there is an abundance of medium density development, with some commercial development and very few high-density dwellings. There are also some special purpose zones such as schools and parks.

This diagram explores the existing urban grid that has been created by the housing in the area which are mainly 1900's Edwardian villas and bungalows. These buildings and their street frontages create a sense of character uniformity, the way the houses front the street creates quite a pleasant pattern with wide footpaths and greenery for pedestrian use at a ground level.

Building Zoning: 1:500 at A3

- (1) Industrial space
- (2) Mixed Use Public Space
- (3) High-Density Housing
- (4) Commercial Buildings
- (5) Medium-Density Housing
- (6) Eden Park

Currently there are simple pedestrian networks around the site: footpaths, and also along the site boundaries there are pedestrian zones that allow people to get in and around the park. The formation is a simple grid-like pattern.

Pedestrian Networks:

- (1) Eden park
- (2) Eden Park, Exterior Space
- (3) Residential Dwellings
- (4) Public Space
- (5) Pedestrian Flow (Interior)
- (6) Vehicle Flow (Interior)
- (7) Pedestrian Crossings
- (8) Street Trees
- (9) Train Lines
- (10) Pedestrian Flow (Boundary)
- (11) High Density Dwelling

SITE ANALYSIS

Auckland- Built up area 1871

Auckland- Built up area 1915

SITE ANALYSIS

Auckland- Built up area 1945

Auckland- Built up area 1964

SITE ANALYSIS

Auckland- Built up area 1975

MAUNGAWHAU

Auckland- Built up area 1987

SITE ANALYSIS

MAUNGAWHAU

Auckland- Built up area 1987-2008

Season Sun Path and Environmental Conditions:

The site is relatively exposed to the sun, wind and rain, which will be good when designing high-density developments and while also taking into account water sensitive infrastructure in the area.

These diagrams show the abundance of sun at the North West, which will help when deciding where to plot apartments. As I want to have lower levels of housing in the sunnier areas, and could potentially make the buildings more elevated at the southern end of the site.

SEASONAL SUN PATH

Summer

20% Rainfall, December-February
Sunlight
-December 1st, 14hrs29mins
-January 15th, 14hrs25mins

Autumn

Dominant Wind, South-Easterly
-Speed, 14.5mph
Sunlight
-March 1st, 12hrs55mins
-May 15th, 10hrs11mins

Winter

32% Rainfall, June-August
Sunlight
-June 1st, 9hrs49mins
-July 15th, 9hrs51mins

Spring

Dominant Wind, Westerly
-Speed, 12.5mph, May-Dec
Sunlight
-September 1st, 11hrs17mins
-October 15th, 12hrs59mins

Road Networks

The road networks are based on the dwellings that surround them, which are primarily two lane residential streets, with one four lane road which has heavy traffic. There is also a train station only 100 metres northwest of the site.

In regard to the train station and public transport there is potential to bring back a tramline or improve the connection with public transport for Eden Park.

Road Networks: 1:500 at A3

- (1) Areas of Interest
 - Commercial hub
 - School
 - Train Station
 - Park
 - Eden Park Transport Hub
- (2) Main Roads (4x lanes+)
- (3) Main Roads (2+ Lanes)
- (4) Residential Roads (2x lanes)
- (5) Train line (to CBD)

Hydrological Networks:

I decided to make hydrology a key driver in how to design on the site. I see water as a means to utilise sustainable infrastructure in an urban environment, and it is also a historic and sacred part of this site and Māori culture.

Eden Park was historically a swamp, giving it some interesting tendencies when looking at historical flood paths and current storm water networks, as they cut right underneath the site. Wastewater and stormwater pipes run directly underneath the sites at present, these pipelines will be used in the design of an artificial wetland for the site. Due to the basin like contours of the area, there are dominant flood lines and flood prone areas at the site, there has been a lot of work done to reduce these tendencies due to the function of the site as a park but there is always room for improvement.

Catchments:

I then went on to examine the wider catchment of the area, which is around 1.5million-m². To treat this area at 2% you will need around 20,000m² (volume is an additional size feature) of wetlands and other similar water treatment networks. There are six major sub-catchments, and 18 sub-catchments within the six major sub-catchments, five of which are across the Eden Park site.

I then went on to examine the wider catchment of the area, which is around 1.5 million-m². To treat this area at 2% you will need around 20,000m² (volume is an additional size feature) of wetlands and other similar water treatment networks. There are six major sub-catchments, and 18 sub-catchments within the six major sub-catchments, five of which are across the Eden Park site.

It makes sense to treat the water as it is a central meeting point for some of the catchments and the water also flows directly downhill west towards the Park from Maungawhau.

Wetland Structure:

A wetland structure will be implemented at the site aiming to be as large as 20,000m² channelling across key flood prone areas and also networking across the existing pipelines to encompass where the water flows presently and also naturally.

Wetland Channel:

What it covers, SW pipelines, SW connection lines, WW pipelines, Water pipes, catering for overland flood plains.

Housing typologies:

Geometric, Linear, Curved

Write a line about what each development 'tends' to do form its design.

What's next- Phase One Framework:

- Treat 2% of the larger Mount Eden Catchment with a wetland system, (around 20,000m²).

- Work with Water in different areas of the site.

- 50-60% of the site encompassed by high-density development

- 20-30% of the remaining site public realm, urban design space

- No permanent cars on the site, potential for underground car parking

Mount Eden Flood Sensitive Area (within the flood prone area)

Area = 31,759m²

Treatments = (2%) 635.18m² (4%) 1,270.4m²

Mount Eden Flood Prone Catchment:

Total area = 82,732.85m²

Treatments = (2%) 1,654.7m² (4%) 3,309.3m²

East Mount Eden Flood Prone Catchment:

Area = 11,277.4m²

Treatments = (2%) 225.5m² (4%) 451m²

West Mount Eden Flood Prone Catchment:

Area = 43,978m²

Treatments = (2%), 879.6m² (4%), 1,759.12m²

Hydrology Networks: Flooding, 1:500 at A3

(1) Flood Prone Areas

(2) Floodplain

(3) Overland Flood Paths, 3HA and above

(4) Overland Flood Paths, 4000m² 3HA and above

(5) Overland Flood Paths, 2000-4000m² 3HA and above

(6) Stormwater Connections

(1) (2) ↑ (3) ↑ (4) ↑ (5) | (6) | (7)

SITE ANALYSIS

Catchments: 1:500 at A3

Full Catchment:

Area= 1,577,627.46metres²

Treatment Area= (2%) 31,552.55m² (4%) 47,328.8m²

Sub Catchments:

(1) Area= 2,88,423.5m² (2%) 5,768.5m²

(4%) 11,536.9m²

(2) Area= 6,14,29.13m² (2%) 12,285.9m² (4%)

24,571.8m²

(3) Area= 2,21,504.9m² (2%) 4,430.1m² (4%) 8,860.2m²

(4) Area= 1,84,032.9m² (2%) 3,680.7m² (4%) 7,361.31m²

(5) Area= 1,45,204.9km² (2%) 2,904.1m² (4%) 5,808.2m²

(6) Area= 1,25,535m² (2%) 2,510.7m² (4%) 5,021.4m²

SITE ANALYSIS

Sub, Sub-Catchments: 1:500 at A3

- (1) Area= 35,691.7metres squared
(2%) 713.83m² (4%) 1,427.67m²
(2) Area= 26,717.8metres squared
(2%) 534.36m² (4%) 1,068.7m²
(3) Area= 40,718.67metres squared
(2%) 814.37m² (4%) 1,628.74m²
(4) Area= 44,574.76metres squared
(2%) 891.5m² (4%) 1,782.9m²
(5) Area= 25,046.4metres squared
(2%) 500.93m² (4%) 1,001.86m²
(6) Area= 28,135.55metres squared
(2%) 562.71m² (4%) 1,125.42m²
(7) Area= 31,295metres squared
(2%) 625.9m² (4%) 1,251.8m²
(8) Area= 36,124.2metres squared
(2%) 722.48m² (4%) 1,444.97m²

(1) (3)

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- (9) Area= 49,681.9metres squared
(2%) 993.64m² (4%) 1,987.28m² (10) Area= 39,518.2metres squared
(2%) 790.36m² (4%) 1,580.73m²
(11) Area= 58,152.6metres squared
(2%) 1,163.05m² (4%) 2,326.1m²
(12) Area= 15,533metres squared
(2%) 310.66m² (4%) 621.32m²
(13) Area= 28,682.9metres squared
(2%) 573.66m² (4%) 1,147.32m²
(14) Area= 23,090.7metres squared
(2%) 461.81m² (4%) 923.63m²
(15) Area= 40,240.28metres squared
(2%) 804.81m² (4%) 1,609.61m²
(16) Area= 12,187.2metres squared
(2%) 243.73m² (4%) 487.49m²
(17) Area= 25,651.54metres squared
(2%) 513.03m² (4%) 1,026.06m²
(18) Area= 19,933.04metres squared
(2%) 398.66m² (4%) 797.32m²

SITE ANALYSIS

Catchments + Sub-Catchments: 1:500 at A3

Total Catchment:

1,026,130.33m²

$$(1\%) = 10,261.3\text{m}^2$$
$$(2\%) = 20,522.6\text{m}^2$$
$$(3\%) = 30,783.9\text{m}^2$$
$$(4\%) = 41,045.21 \text{ m}^2$$

Total Area of Mount Eden Site:

105,300m²

WETLANDS

There are less than 10% of the historic wetland ecosystems existing across New Zealand as a whole.⁹⁷

So the question stands, what can we do to fix this?
= Protect, restore and connect.

Restoring wetlands encourages native plants and wildlife. Restoration will also maintain water quality and create interesting aesthetic landscape elements. With strong restoration efforts the ultimate aim would be to get an artificial wetland to the point where it can start to take care of itself.

Wetland plants have adapted to have wet roots, and many have adaptations such as 'buttress roots', with hollow stems and aerial roots which help them cope with anaerobic soil conditions. Certain species can cope with different water level tolerances.⁹⁸

From a Landscape Architect's perspective, Why Wetland's need to be taken seriously:

The key affordances of Wetlands are that they support exceptionally high levels of biodiversity. They can provide a habitat for many indigenous species, including various plants, fish, birds and niche species like eels and fern birds. Many of these species can only survive within a wetland ecosystem. Wetlands in a mechanical sense of biomimicry can be seen as the 'kidney's' of the ecosystem as they function as a giant sponge that cleans and filters water of excess nutrients and sediment, they also control flooding and pollutants. Wetlands can act as 'carbon sinks', generating the removal of carbon dioxide from the atmosphere around them. This makes them a strong and essential part of the environment with many functions that are imperative to help with modern issues climate change.⁹⁹

Aside from the environmental affordances, wetlands also have a strong cultural and spiritual importance within Maori culture in Aotearoa. They are seen and used as a food source, and also they provide materials for weaving.

What has happened to Aotearoa's wetlands?

Over the past 150+ years the nation's wetlands have been drained and filled in for urban development and agricultural purposes, this has led to a significant wetland loss and also deterioration is still happening.¹⁰⁰ By 2008 the countries wetlands had declined to only 10.1% (around 250,000 ha) of the estimated extent of 2,471,080 ha originally. There has been a particular decline in swamp/ marsh areas. The key decline has occurred over 2001-2016.

Data shows that wetlands now only cover an estimated 0.9% of Aotearoa's land cover, compared with an estimated 9.2% pre-human inhabitation. Swamps have been reduced by 6% (89,920 ha) of their original extent of approximately 1,501,000 ha.¹⁰¹

Wetland tracking from 2001-2016:

- 1,247 ha (0.5%) of the total wetland area was completely lost over this time period, this accounts for 214 individual wetlands.
- 5.4% (746 individual wetlands) of the total have experienced partial loss to their ecology.
- 54.2% (132,954 ha) of the total wetland area did not change over the period, representing 80.6% of wetlands (11,063 individual wetlands) that did experience change.
- 32.5% (79,646 ha) of the wetland area cannot be analysed due to needing improvement in spatial mapping. This represents about 12.4% of wetlands (1,699 individual wetlands) that are not accounted for in this data.
- The regions with the highest proportions of wetland loss were, Tūranga-nui-a-Kiwa (Gisborne) = 3.1%, Te Tau Ihu o te Waka-a-Māui (Marlborough) = 2.6%, West Coast= 2.6%, Ōtago (Canterbury) = 2.3%.
- The regions with the greatest areas of wetland loss are: Waikato= 13.4%, West Coast= 12.5%, Southland= 11.6%, Ōtago (Canterbury) = 4.2%

It is important to note that when assessing this data, Tāmaki-makaurau (along with other regions that have experienced wetland loss prior to 2001) are not included in these contemporary figures. As this data only covers the diminishing of wetlands in the past two decades. Tāmaki-makaurau was inhabited much earlier than many of the regions currently experiencing wetland loss, and its urban form was developed prior to many other cities and towns throughout Aotearoa. There were many historic wetlands and swamps in Tāmaki-makaurau that are not accounted for in this data due to it not being recorded in a modern context. For example, Eden Park itself was previously called 'Cabbage Tree Swamp' prior to being drained and the land cover being flattened to create a cricket and rugby field.¹⁰²

⁹⁷ Ministry for the Environment, New Zealand Data.
⁹⁸ Ministry for the Environment, New Zealand Data.
⁹⁹ Ministry for the Environment, New Zealand Data.
¹⁰⁰ Ministry for the Environment, New Zealand Data.
¹⁰¹ Ministry for the Environment, New Zealand Data.
¹⁰² Ministry for the Environment, New Zealand Data.

Wetland's Pre-human Inhabitance

Wetland's Mapped from 2001-2016

Historic Wetland's vs Current Wetland's

Location and Extent of NZ Aquifers

SITE ANALYSIS

Wetland Planting, Three Zones:

Wetland planning in Tāmaki-makaurau can be split into three zones, which take into consideration the distance from the edge of a wetland, areas of open water, and the depth of the water.

- (1) Moist soils, these plants go around the edge of the wetlands in riparian zones.
- (2) Swampy areas, which have temporary flooding, but not constant bodies of still water.
- (3) Standing water, where water lies above the soil surface for much of the year.¹⁰³

GEOLOGY

Mount Eden Soil Type

The dominant soil in Maungawhau is Granular-Orthic soil. It is considered to be an 'ordinary soil' when it comes to fertility. It is a dark soil with a strong clay structure, it is formed from strong weathering of volcanic rocks and ash. It can either be dry or moist and can easily be parted into small hard fragments. It is only present in the north island. Mostly in the lowlands of the Waikato and South Tāmaki-makaurau areas. Most of the soil is strong and weathered tephra, usually older than 50,000 years. It only covers 1% of Aotearoa's soil.¹⁰⁴

Geology, Historic and present summary

The geological make up of Tāmaki-makaurau is extremely varied. Mesozoic greywacke is the dominant underlying rock, and it is exposed in the Hunua Ranges in East Tāmaki-makaurau and some Hauraki Gulf Islands. The overlying rock is Miocene, which is an older sedimentary rock which is exposed in the central isthmus of Tāmaki-makaurau and the North Shore. Miocene is a dominant volcanic rock. There are a lot of young volcanoes and the deposits are dominant in Tāmaki-makaurau central, and in some low-lying areas of Tāmaki-makaurau. These deposits are covered in Quaternary basalt sediments.¹⁰⁵

Maungawhau is one of the most prominent volcanic cones that still remains in Tāmaki-makaurau. Its form took place due to numerous eruptions over a span of 15,000 years, when three of the overlapping scoria cones became a single scoria mountain with a central crater, Maungawhau. The historic lava flow would have extended out from the base of the mountain, and would have been up to 60metres thick at some points. Maungawhau was also a significant Māori Pā site used by various iwi, and abandoned in 1700AD when there was conflict between residents of Waiohau and the Hauraki iwi.¹⁰⁶ (In 2014 the Treaty of Waitangi settlement set out that Maungawhau was collectively owned by Tāmaki-makaurau made up of 13 iwi).¹⁰⁷ Historically the site of Maungawhau was large enough to provide refuge for up to several hundred people at one time.¹⁰⁸

In regard to the formation of Maungawhau, separate lava flows contributed to the formation of this one large scoria cone, which has three overlapping cones. The southernmost cone is the highest at 196metres above sea level, it has a wide conical crater which is 50metres deep. After heavy rainfall, the water does not sit on the rocky surface of the mountain and instead seeps through the cracked rocks into old streamline channels, and through the solidified lava underneath the surface level, it finally flows along these channels to reach the surface in the Te Wai Ōrea (Western Springs Lakeside).¹⁰⁹

¹⁰⁴ Auckland Council, Resource Consent Documents.

¹⁰⁵ GNS Science, Our Science- Land and Marine Geoscience.

¹⁰⁶ McSaveney & Nathan, Te Ara, Story: geology- Overview Mount Eden.

¹⁰⁷ McSaveney & Nathan, Te Ara, Story: geology- Overview Mount Eden.

¹⁰⁸ McSaveney & Nathan, Te Ara, Story: geology- Overview Mount Eden.

¹⁰⁹ Mount Eden Village, History about us.

Geology, Historic and present summary

Most of Tāmaki-makaurau's volcanoes are now used as reserves and parks, whereas some have been turned into quarries. Within a 20kilometre radius of Tāmaki-makaurau Central there are around 49 discrete volcanoes. This area is referred to as the 'Auckland Volcanic Field'.¹¹⁰ There is a low risk of these volcanoes erupting, but there is of course a possibility of this happening in the future. There are no written records of the most recent historic eruption in the Auckland Volcanic Field, but it is predicted to have been around 600 years ago. This history has been passed down orally through Māori legends.¹¹¹

There are some more detailed geological records of historic volcanic eruptions, displayed through repeated and varied volcanic eruptions in the region, which would indicate there will be eruptions in the future but it is hard to predict when exactly this will occur. If there is an eruption in Tāmaki-makaurau central, the destruction is predicted to be severe and change the day to day life of those who live in the area. This of course would vary due to the size of the eruption and also the type of activity, warning time and planning. Tāmaki-makaurau's volcanoes are small compared to most of the volcanoes we see around the world. Volcanoes are measured in volume units and cubic metres/ kilometres. Tāmaki-makaurau's 49 volcanoes are approximately 4.1km³, this essentially means that the total volume of volcanic deposits is only about the size of one average size eruption in an American Volcano.¹¹²

The volcanoes in Tāmaki-makaurau are considered to be small, with cones of less than 150metres in height. These heights would have grown through eruptions lasting up to a few years. In most cases one single eruption would have resulted in building several adjacent cones. The volcanic activity which has created the Auckland Volcanic Field is 'monogenetic', which means that each time there is an eruption it has happened at a new location, and each eruption is the result of a singular batch of magma which has risen from its source in the mantle, roughly 100kilometres beneath the city.¹¹³

¹¹⁰ Mount Eden Village, History about us.

¹¹¹ McSaveney & Nathan, Te Ara, Story: geology- Overview Mount Eden.

¹¹² Allen & Smith, 1993 volcanic hazards at the Auckland volcanic field.

¹¹³ Allen & Smith, 1993 volcanic hazards at the Auckland volcanic field.

TAMAKI-MAKAURAU

- (1) Pupuke
- (2) Rangitoto
- (3) Tank Farm, Te Kopua o Matakamokamo (The basin of Matakamokamo)
- (4) Onepopo
- (5) Mt. Cambria, Takararo
- (6) Mt. Victoria, Takarunga
- (7) North Head, Maungauika
- (8) Motukorea
- (9) Albert Park, Mt. Albert, Owairaka
- (10) St. Heliers, Whanga Nui
- (11) Domain
- (12) Orakei Basin
- (13) Little Rangitoto
- (14) Taylor Hill, Te Taurere
- (15) Mt. Eden, Maunhawhau
- (16) Mt. Hobson, Ohinerau
- (17) Pigeon Mtn, Ohuierangi
- (18) Mt. Albert, Owairaka or Te Puke-o-Ruarangi
- (19) Te Pou Hawaiki
- (20) Mt. St John
- (21) Mt. Wellington
- (22) Mt. Roskill
- (23) Three Kings, Te Tatua-o-Riukiuta (The girdle of Riukiuta)
- (24) One Tree Hill, Maungakiekie
- (26) Hopua
- (27) Mt. Smart, Te Ipu kura a Maki (the red bowl of Maki)
- (28) Mt. Richmond, Otahuhu
- (29) McLennan Hills
- (30) Mt. Mangere
- (31) Mangere Lagoon
- (32) Robertson Hill
- (33) Pukekiwiriki
- (34) Styaks Swamp
- (35) Green Hill
- (36) Otara Hill
- (37) Hampton park
- (38) Pukeotu
- (39) Waitomokia
- (40) Pukeiti
- (41) Otuaataua
- (42) Maungataketake
- (43) Pukaki
- (44) Crater Hill
- (45) Kohuora
- (46) Matakaurua
- (47) Manurewa
- (48) Ash Hill

VOLCANIC FORMATION

SITE ANALYSIS REFLECTION

History/Urban development:

This analysis assessed Maungawhau through the measures of time and scale. By looking at Maungawhau's development over the past 100+ years, this has displayed how the landscape has changed, particularly from the time of European colonisation onwards. It is important from a landscape perspective to look back before looking forward. The built environment development of Maungawhau was largely influenced by the availability of materials as the city grew. Maungawhau's housing structure also displays a grid like mapping scheme, which is a form of urban organisation that will be useful when developing the pedestrian network at Eden Park.

Catchments & Wetlands:

This analysis of Aotearoa's wetland history is extremely confronting. The statistics and diagrams display that there is a direct correlation between urban and agricultural development and the diminishing sizes of wetlands. As this thesis sets out to create a sustainable urban development, it is imperative that the site design does not contribute to a decline in environmental factors, and instead improves the biodiversity of the landscape by restoring a historic waterbody of cultural wāriu (value).

Densifying a space results in an increased population, greater waste, air/water pollution and habitat destruction. Therefore, water sensitive design methods such as artificial wetlands are more important now than ever before. Wetlands increase the biodiversity of an area while also serving practically as a means to filter water. In regards to a Landscape Architect's take on developing a high-density mixed use space, there are no negatives to designing a wetland structure that will filter the water from a large catchment in Maungawhau.

Geology:

In regard to geology there is a rich history of soil and rock foundations in Maungawhau, this is important to understand as it contributes to the direct design of the wetland and also provides information on the fertility of the site for vegetation. In Landscape Architecture it is important to first understand the foundations of the site you are designing on and how it actually came to be. This is a part of site analysis often overlooked by property developers at present. This study revealed that the site has both environmental and historical richness.

DEFINING DENSITY

PHASE ONE

This was a study of buildings and mixed-use space in Tāmaki-makaurau, I set out on this study to try and understand what high-density really means in Aotearoa. In trying to 'define density' I looked at tendencies that make up anything from low-high density dwellings and what comes with these different assemblages.

LOW-DENSITY HOUSING

Discoveries:

Low density developments tend to be built on single blocks of land and are associated generally with rural areas, a dwelling is generally 350-700m² excluding the plot of land it is built on.

Below: 350m² plot

Potential Low-density features:

- Single to double garages or spaces for cars,
- Private driveway,
- Large house area, 1-3 stories
- Private outdoor space (front yard back yard)
- Possibility of extra features, farm land, pool, deck, etc.

DEFINING DENSITY

Discoveries:

-Medium density developments are the most common in Mount Eden, and are dominant in the inner-city and wider Tāmaki-makaurau suburbs

"Medium-density housing means comprehensive developments including four or more dwellings with an average density of less than 350m² per unit."¹¹⁴

Medium density has a tendency to associate with suburbs, or city fringes, with 20-80 dwellings per hectare at 200-350m².

Below: 200m² plot

Potential Medium-density features:

- Single garage, or single parking or shared parking space
- Private or shared driveway
- Medium house area, 1-4 stories
- Small-Medium private outdoor space (such as a lawn/ courtyard/ patio)
- Close proximity to neighbours (potential of some shared amenities)
- Possibility of extra private features, pool, deck etc.

100metre squared apartment.

What can high density look like?

How many medium density dwellings can you fit into a 10,000m²?

= Roughly 32 apartments

DEFINING DENSITY

Discoveries:

High density in few different ways. Commonly as how many dwellings per hectare, with a combination of the number of people and dwellings houses per hectare, another view is how much of the area is covered by dwellings, this can be seen in FAR diagrams.(reference or explain). High density is generally seen as 85+ dwellings per hectare and dwelling size can vary from 60-150m². High density also encompasses features such as shared car parks or no car parks, shared amenities within the building, shared driveways. In terms of vertical space high density is generally considered to be no smaller than 4-6 floors.¹¹⁵

Below: 80-100m² plots 4-6 floors

Potential High-density features:

- Shared carpark, potentially no car parks
- Shared amenities, elevators, stairs, hallways, lobby etc.
- Shared driveway, or no driveway
- High density dwelling, 4-8+ stories
- Very close to neighbours (sometimes shared exterior walls)
- Possibility of extra shared spaces, tennis courts, pool, gym etc.
- Maybe address how since you are not an architect this was a key study for you to assess the built environment before attempting to design a housing plan.

80metre squared apartment.

What can high density look like?

How many high density dwellings can you fit into a 10,000m²?
= Roughly 120 dwellings

DEFINING DENSITY

Density Precedents- Wellington:

Three successful contemporary density developments in Wellington.

(1) **Designers:** John Mills Archtiects

Project: Highview House

Location: Private Residential Location

-Large plot size, private/ fenced, isolated from neighbouring sites.

(2) **Designers:** Parsonson

Project: Zavo's Corner

Location: Mount Victoria, Wellington

-Average plot size, mixture of private and shared space, underground carpark.

(3) **Designers:** Athfield Architects

Project: Chews Lane Apartments

Location: Chews Lane, Wellington

-Smaller plot sizes, shared internal spaces/ amenities, private decks, no car parks.

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(1) John Mills Architecture, Highview House.
(2) John Mills Architecture, Highview House.
(3) John Mills Architecture, Highview House.
(4) Pasonson, Zavo's Corner.
(5) Pasonson, Zavo's Corner.
(6) Pasonson, Zavo's Corner.
(7) Athfield Architects, Chew's Lane Apartments.
(8) Athfield Architects, Chew's Lane Apartments.

DEFINING DENSITY

Phase Two: Looking at buildings from a Landscape Architect's view

I went looking at the relationships of existing buildings, hoping to discover how the developments interacted with the public realm and if they aided life on the ground, and how the building frontages created different tendencies. A key thing was to assess whether the buildings associated with the ground plane or not. I visited isolated high-density buildings, high-density and mixed-use development and commercial and hospitality spaces.

Wynyard Quarter, This development is not finished yet, but was one of the better developments I looked at as it has three different styles of residential living and also had commercial buildings and hospitality along with public space. There was a storm water network designed within the landscaped area.

Key Observation:

Social tendencies due to open space and interactive elements, utilising an existing hydrological system through a design feature

TIRAMARAMA WAY + WYNYARD QUARTER

Phase Two:

Wynyard residential

Wynyard Residential is a slightly older development, while there is a boulevard in front of this building for the public to use, the development itself is elevated away from the ground plane of the viaduct and has more of a private feel that WQ.

Key Observation:

The buildings being elevated from the pedestrian zone creates an isolated feeling.

WYNYARD RESIDENTIAL

DEFINING DENSITY

Sugar Tree Apartments and the Hopetoun Residences
These developments are built by the same developer and are across the road from each other. They do not interact with the street, but as it is a main road high-density buildings seemed like an appropriate development for this area. I observed that isolated buildings do not have strong urban qualities when it comes to street frontages.

Key Observation:

These buildings were isolated from life on the ground, and did not add to the value of the street in regard to social and landscape tendencies

SUGARTREE APARTMENTS & HOPETOUN RESIDENCES

Phase Two:

5- Lot 3 Ponsonby

This development is interesting as it complements the heritage brick building next to it through the materiality and colours. The building is a successful use of public and private commercial and residential space. The mixed-use building complements the surroundings due to materiality and also aids as a public amenity/zone (shelter/hospitality space).

Key Observation:

This development's materiality and aesthetic considers the history of the buildings around in, which I thought as a good feature. It is also mixed-use and has some public amenities such as shelter and an internal courtyard.

LOT 3 PONSONBY

REFLECTION

What I discovered in my density study was that I am looking to design buildings typologies that create relationships with both the buildings around them and the urban fabric in the area and how they cross over. I do not like isolated building assemblages and think that they do not contribute positively to life on the ground from a landscape architecture perspective.

SITE ANALYSIS 2.0

SITE ANALYSIS

MAUNGAWHAU

WALTERS ROAD

Eden Park Site: Eden Park + No.2 Cricket Field Dimensions Area (roughly), $105,300\text{metres}^2 = 10.53\text{ HA}$

Walters Road= 330metres long

Primarily a residential street, with a gradient which flows steadily uphill from west to east. This road leads to the Mt. Eden shops to the east. There is one main stormwater entry point towards the west end of the road.

1:100 at A3

SITE ANALYSIS

CRICKET AVENUE

Cricket Avenue= 287metres long

This street has a curved formation going downhill from the north and uphill at the southern end. This is a residential street, and there are three key stormwater entry ponds that site on this street.

REIMERS AVENUE

Reimers Road= 300metres long

This is the quietest residential street around the boundary of Eden Park. It has quite a flat gradient and a lot of tall bushy trees that border the footpaths. There is one key stormwater entry point on this street at the western end.

SITE ANALYSIS

MAUNGAWHAU

SANDRINGHAM ROAD

Sandringham Road= 300metres long

This is main road with four lanes that leads north to the Kingsland train station, the cricket field is along this side of the site. The storm water exit points are on this street and the water flows west through to the Western Springs Lakeside and the Tāmaki-makaurau viaduct.

PRELIMINARY DESIGN

DESIGN DEVELOPMENT

HYDROLOGY, WETLAND DEVELOPMENT

Wetland Channel: 1:500 at A3

Total Area of Present Wetland
= 17,933.53m²

Runs primarily across the formation of: (Right map)
1:100 at A3

- Stormwater pipeline
- Stormwater connection line
- Wastewater pipe local line
- Water pipes
- As well as catering for overland flood plains and local-lines

SHAPE DEVELOPMENT, 1:200 at A3

HOUSING FORMATION

Linear Formation, 1:100 at A3

These buildings were plotted with an orthogonal orientation, the pedestrian networks around them move in a curved formation due to the shape of the wetland channel. However, if we refer to Corner's argument for the landscape being prioritised over structural form in the essay 'Not Unlike Life Itself,' this plotting strategy does not seem to complement this idea as the built environment influences the urban zones.¹¹⁶

Geometric Formation, 1:200 at A3

I found although these buildings are large that I was able to play with each zone in a more unique fashion. I liked that the straight orthogonal structure of the buildings complemented clean lines in terms of decked areas around the wetlands.

This formation takes on the idea of New Urbanism and Walkability as seen in 'Landscape Urbanism and its Discontents' as the pedestrian flow influences how the buildings are placed and also influences the frontages of the space opening up to the wetland and shared zones.¹¹⁸

¹¹⁶ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 287.

¹¹⁷ Corner, 'The Landscape Imagination: Collected essays of James Corner', Not Unlike Life Itself- Landscape Strategy Now 287.

¹¹⁸ Duany and Talen, 'Landscape Urbanism and its Discontents' Page 4.

Curved Formation, 1:100 at A3

This plotting structure is a less orthogonal cluster structure, using diagonal building line to create curves. However I found that these buildings had quite a homogeneous look and the form does not allow a lot of organic movement in the mixed use space of the site around the wetland and housing. The concept “utopia of process rather than utopia of form” from Corner's essay on Landscape Urbanism came into play here, as the form dictates this formation, whereas process influencing structure is a priority from a Landscape Architect's view when planning housing.¹¹⁷

Geometric Formation, Digital Development, 1:100 at A3

REFLECTION

The formation of the wetland channel was responsive to the hydrological features at the site, as the shape needs to complement the existing connections and floodplains. This means that the wetland will naturally respond to the water system in Maungawhau, and improve in. The precedent Kokkedal Climate Adaption used water mitigation as an enhancer rather than a hazard. This principle was used in developing the channel structure, by utilising water mitigation to enhance the Parks ecology.¹¹⁹

With a developed wetland structure, I plotted a pedestrian grid; influenced by two factors. The more formal structure of the existing urban grid in Maungawhau, and secondly Harvey's argument backing process to dictate formal structure. A grid is a traditional design method, but in this case it is influenced by the process of movement on the ground plane.¹²⁰ The pedestrian grid allows people to flow freely through the site and also complements movement in the wider network surrounding Eden Park.

When using three methods to plot housing, all three strategies had different results. However, the geometric formation complements the pedestrian grid system the best. The geometric structure will be more successful if the floorplans of the apartments are smaller, this will result in the development of building clusters and larger areas of activated urban space. The precedent Wohnungsbau Hinterangerstrabe emphasises a balanced ratio of private:public space, this idea can be used in the geometric structure as it allows a designer to play with space and use levels to create different environmental conditions.¹²¹

¹²⁰ Schonherr, Kokkedal climate adaption by Schonherr.

¹²¹ Corner, 'The Landscape Imagination: Collected essays of James Corner', Landscape Urbanism, 293.

¹²² GHL, Wohnungsbau Hinterangerstrabe.

DESIGN DEVELOPMENT

MASTER PLAN DEVELOPMENT

1:100 at A0, 4 Tiles Tested

Cluster 16
54 ppl

70m²

26m²

6 stories
UCP

360m²

↑
UCP

Cluster 19
135m² 6x stories

MASTER PLAN DEVELOPMENT

1:100 at A0, 4 Tiles Tested

- 82 m²
- 2 stories
- 4 p

Underground CP
(540 m²)

- 128 m²
- 3 floors
- 4-5 ppl

4 block

Mixed-use
Bound walk

MASTER PLAN DEVELOPMENT

1:100 at A0, 4 Tiles Tested

entrance

- 120m²
- 3 floors
- 4-5 ppl

er 21
79 people
rute gardens
re informal gardens

Covered mixed-use space

Cluster #2

Shaded garden
4 the block

Informal garden/
mixed-use space

122m²
5 stories
4-5 ppl

- 75m²
- 3 floors

MASTER PLAN DEVELOPMENT

1:100 at A0, 4 Tiles Tested

04/11/12
4 stories
4 ppl

public space:
structured grass +
wood-material mounds
define 3x points
appointed space
single-private
-3x-semi-private
-ap-public-exposed

This whole area
will be tested
by the above
method through
shaping.

barred
ce with
canopy
trees

Private
garden
Cluster 20
and carpark entrances

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

CLUSTER #15

shared public space

Heritage building
- Cricket stand 220m²

- 82 ppl
- 2 gardens
- 3 large urban spaces

Cluster 16
54 ppl

4 stories
4 ppl

- 84 m², 5 stories

Courtyard

seating
plant
installation

shared urban space

CLUSTER #16

226m²

70m²

26m²

105m²

5 stories
4 ppl

flow through

88m²

* Cluster
* 126 ppl

Buildry
entrance

35m²
4-5 ppl

shared public courtyard space
steps/dropping down 2 levels

295m²

6 stories

UGCP
16 ppl, 4 ppl's

entrance

storm water
try point

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

CLUSTER #1

- 65 ppl
- 45 cars/pts roughly
- 3+ gardens

CLUSTER

- Roughly 57 people
- 4+ private gardens
- 48 cars/pts

Another terraced part of

#3

ple
dens

CLUSTER #2

recreation space?

- 779 people roughly
- 4 gardens + open urban space

CLUSTER #5

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

MASTER PLAN DEVELOPMENT 2.0

1:100 at A0 9 tiles, Tiles read North to south in sets of three, and left to right.

DESIGN DEVELOPMENT

AXONOMETRIC SITE DRAWINGS

(1) CLUSTER 16: CLUSTERS REFERENCED ON MASTER PLAN, KEY: (1)-(8)

(3) CLUSTER 19

(2) CLUSTER 3

(4) CLUSTER 24, VIEW FROM REIMERS AVE

Vertical levels (Creating varying environmental and atmospheric conditions for the apartments and the ground plain)

Walkthrough (sheltered public space/ courtyards)

DESIGN DEVELOPMENT

AXONOMETRIC SITE DRAWINGS

(5) CLUSTER 5

(6) CLUSTER 2

| **Grass plains** — — — — —
 — **Garden** (a mixture of public/ shared/private gardens)

Garden (a mixture of public/ shared/private gardens)
 atmospheric conditions for the apartments and the ground plain)

e for running/ biking)
Grass plains

DESIGN DEVELOPMENT

AXONOMETRIC SITE DRAWINGS

(7) CLUSTER 19, VIEW FROM INSIDE THE SITE

(8) CLUSTER 6

s from stairwells/ elevators)
 and atmospheric conditions for the apartments and the ground plain)

e consistently, space for running/ biking)

f public/ shared/private gardens)
 sheltered public space/ courtyards)

gardens)

temporary 'pop-up' space for markets etc.)

Full Site Sections

Sandringham Road, 1:100 at A3

Cricket Avenue, 1:100 at A3

vays)

Full Site Sections

Reimers Avenue, 1:200 at A3

East

Walters Road, 1:200 at A3

West

DESIGN DEVELOPMENT

DEVELOPMENT SECTIONS

Sandringham Road, 1:100 at A3

Cricket Avenue, 1:100 at A3

Reimers Avenue, 1:100 at A3

Cricket Avenue, 1:100 at A3
Reimers Avenue, 1:100 at A3
Walters Road, 1:100 at A3

FINAL DESIGN

CALCULATIONS

Buildings: 174

People: Roughly 2173 at maximum capacity

Carparks: Roughly 495

Gardens: 91+

Clusters:

- Cluster 1: 18 buildings, 65 people, 45 carparks, 3+ gardens
- Cluster 2: 19 buildings, 177 people, 50+ carparks, 6+ gardens
- Cluster 3: 7 buildings, 57 people, 48 carparks, 5+ gardens
- Cluster 4: 5 buildings, 85 people, 35 carparks, 6 gardens
- Cluster 5: 9 buildings, 179 people, 4+ gardens
- Cluster 6: 12 buildings, 127 people, 48 carparks, 6 gardens
- Cluster 7: 20 buildings, 132 people, 11+ gardens
- Cluster 8: 2 buildings, 39 people, 19 carparks, urban space
- Cluster 9: 4 buildings, 69 people, 27 carparks, urban space
- Cluster 10: 4 buildings, 68 people, 3 gardens, 1 large urban space
- Cluster 11: 6 buildings, 80 people, 3+ gardens
- Cluster 12: 4 buildings, 48 people, 4+ gardens
- Cluster 13: 7 buildings, 88 people, 5+ gardens
- Cluster 14: 5 buildings, 85 people, 35 carparks, 6 gardens
- Cluster 15: 5 buildings, 82 people, 2+ gardens, 3 urban spaces, 1 heritage building
- Cluster 16: 5 buildings, 80 people, 4 gardens
- Cluster 17: 4 buildings, 48 people, 3 gardens
- Cluster 18: 6, buildings, 80 people. 4 gardens
- Cluster 19: 5 buildings, 72 people, 2+ gardens
- Cluster 20: 2 buildings, 38 people, 1 garden, 14 carparks
- Cluster 21: 7 buildings, 126 people, 64 carparks, 2 gardens
- Cluster 22: 5 buildings, 92 people, 26 carparks, 2+ gardens
- Cluster 23: 7 buildings, 128 people, 58 carparks, 3 gardens
- Cluster 24: 6 buildings, 128 people, 40 carparks, 5 gardens

Maungawhau catchment:

$$1,026,130.33\text{m}^2, (2\%) = 20,522.6\text{m}^2$$

Final Wetland Size:

$$21,294.87\text{m}^2, \text{Volume} = 340,103,297\text{m}^3$$

DESIGN M

METHOD

What the MP offers:

- 1-4 bed apartments
- UG carpark
- Urban space
- Community hub
- Wetland catchment
- Gardens
- Added Cost/ value
- People and culture
- Recreation

MAUNGAWHAU KŌKŌWAI

(6)

MASTER PLAN

CLUSTER ZOOMS,

CLUSTER 11, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 14/21, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland
- (7) Site boundary

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 19, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland
- (7) Multipurpose boardwalk
- (8) Site boundary

- (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- (7)
- (8)

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 4/5, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 6/7, 1:100 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland
- (7) Multipurpose boardwalk
- (8) Site boundary

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 19/24/20, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland
- (7) Multipurpose boardwalk
- (8) Site boundary
- (9) Trees

- (1)
- (2)
- (3)
- (4)
- (5)
- (6)
- (7)
- (8)
- (9)

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 18/23, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Apartments
- (3) Vegetation
- (4) Pathway
- (5) Wetland
- (6) Site boundary

- (1)
- (2)
- (3)
- (4)
- (5)
- (6)

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 15/16, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use space
- (3) Apartments
- (4) Vegetation/trees
- (5) Pathway
- (6) Wetland
- (7) Mixed use urban features
- (8) Heritage Cricket Stand

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 2/4/5 1:100 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use urban space
- (3) Apartments
- (4) Vegetation
- (5) Pathway/boardwalk
- (6) Wetland

MASTER PLAN

CLUSTER ZOOMS

CLUSTER 12/17, 1:50 at A4

Key:

- (1) Gardens (Public/private)
- (2) Mixed use space
- (3) Apartments
- (4) Vegetation
- (5) Pathway
- (6) Wetland

MASTER PLAN

SECTIONS 1:100 at A3

- Key:
- (1) Apartments
 - (2) Gardens (Public/private)
 - (3) Mixed use urban space
 - (4) Trees
 - (5) Mixed use structure
 - (6) Wetland (3metres deep from ground plain)
 - (7) Carpark
 - (8) Tennis court
 - (8) Water connection path (displays direction of movement)

Walters Road cutting through to Reimers Avenue, 1:00 at A4

Cricket Avenue cutting through to Sandringham Road, 1:100 at A4

MASTER PLAN

FULL SITE SECTION CUTS 1:200 at A3

Key:

- (1) Apartments
- (2) Gardens (Public/private)
- (3) Mixed use urban space
- (4) Trees

Walters Road cutting through to Reimers Avenue, 1:200 at A3

Cricket Avenue cutting through to Sandringham Road, 1:200 at A3

- (5) Mixed use structure
- (6) Wetland (3metres deep from ground plain)
- (7) Carpark
- (8) Tennis court
- (9) Water connection path (displays direction of movement)

MASTER PLAN

GARDEN ZOOM

1:100 of A4

PROJECT VALUE

MAUNGAWHAU

Site size	10.53 HA (105,300m2)
No. of Buildings	174 (Mixture of fixed a
No. of Dwellings	700 (Up to 6 storeys)
Average floor plan	100m2 (range, 75-120m
Max amount of people housed	2173
No. of Carparks	495 (underground)
Additional features	1-4 beds 91 shared/ private garo Wetland network Mixed-use and recreati Historical cricket field/ Right next to Kingslan Neighbouring suburb t Decks and roof-top ter
RV on average	\$800,000 (\$750-1.8m)
Total RV of the dwellings on average	\$560,000,000
Approx. cost of residential construction (Based off average cost of 100m2 apartment 2-3 bed costing \$232,736.25 per dwelling in AKL	\$162,915,375million
Project value/ Profit	\$397,084,625million

U KUKUWAI

WYNYARD CENTRAL

	18,000m2
nd unfixed)	3 main buildings
	133 (Up to 11 storeys)
m2)	90m2
	260 roughly
	157 (additional \$100-125k)
dens	2-3 beds
ional space	Waterfront location
stand	In the CBD
d train station	Variety of housing, (Pavilion/ townhouses/ apart-
to the CBD	ments).
aces.	Close to Britomart
	Hospitality/ business ground level
	\$2,225,000 (\$550,000-5million)
	\$294,925,000
	\$30,915,921million
	PV \$60million (L.T. McGuinness)

TECHNICAL MASTER PLAN

RENDERED MASTER PLAN

FINAL DESIGN

FINAL DESIGN

FINAL DESIGN

MASTER PLAN REFLECTION

The design is a Master plan of 105,3000m². The main artificial wetland is 17,933.53m², with three additional smaller channels with a combined area of 3,631.34m². Therefore the total area of the artificial wetland channels is 21,294.87m². This treats the catchment of 1,026,130.22m² at 2% which was one of the main goals in this thesis. The total volume of the wetland based on the depth of 3metres in most points is roughly 340,103,297m³. This artificial wetland is large and will immensely add to the ecology and biodiversity of both the site and the wider suburb as a whole.

The shape of the wetland as seen in the preliminary design phase is based off the existing hydrology systems in Maungawhau. This allows that wetland to filter stormwater and greywater from the area. This water will be filtered through the wetland and then it will flow back into the water connections to the west of the site once it is filtered and clean. The water ends up at the Western Springs Lake and also in the harbour.

The wetland and the pedestrian grid dictated where to plot the mixed use space, this influences how one moves and uses the site as a whole. The pedestrian network is a central component to the Master Plan, as it creates a state of openness, in which both residents and people in the community feel free to move about, and stop and enjoy the park.

The housing structure is a stacked geometric method, and it does not exceed six stories above ground level. This method was influenced by Corner's theory of the horizontal. The horizontal concept takes away the hierarchy that is presently placed on architecture (vertical elements) and shifts it to the landscape (horizontal elements).¹²² The horizontal spread creates movement and flow in an interconnected urban sprawl throughout the site, and the vertical elements of the stacked housing are influenced by this open network. This means that the apartment formation does not detract from the surrounding housing in Maungawhau which is dominantly 1-2 stories, additionally the apartments do not diminish the positive environmental conditions for the ground plain such as sunlight exposure in the urban spaces. The stacked housing offers unique design opportunities at various vertical levels. The higher levels have rooftop gardens and decks, whereas the lower levels and ground plain have urban space including private and shared gardens, sheltered courtyards, and places to play, eat, sit, or simply walk through.

The garden study was an interesting way to break up the urban space and create a balance between public/private areas.

Three main garden designs:

- Private gardens for individual apartment users.
- Shared private gardens for multiple apartment users .
- Public gardens, for anyone to use.

The residential gardens have a designed element of privacy, boxed hedges of 1.5-1.7metres. This boundary means that when you are sitting down in your garden you cannot be seen (the element of privacy), but when you are standing you can interact and connect with people and the site outside of the garden. It was very important to not design spaces that detracted from the community feel and inclusive nature of the park.

The shared public gardens are not as formal/structurally designed as the private gardens. This was an intentional design strategy, so that there are opportunities for community planting and many other uses, as the site develops and changes over time. This idea was partially influenced by Wohnungsbau Hinterangerstrabe, which studies private/private space, and open communal systems.¹²³

This precedent also influenced the carpark plan for the site, there are roughly 495 permanent residential underground carparks at the site, built under the clusters of the bordering streets. It was important to make sure that the carparks did not crossover with the gardens and the wetland, which is why they were only plotted underneath the building cultures at the boundary of the park. The Wohnungsbau Hinterangerstrabe design only allows for temporary parking on the ground plain and residential underground parking, this strategy was implemented at the site. The car parking structure means that if you want a carpark in addition to a dwelling you buy separately. This was done intentionally to encourage people to use public transport with a main railway station at walking distance from the site, and using the site itself to walk or cycle through.

CONCLUSION

This thesis created a Landscape Architecture driven Master Planning strategy for Maungawhau Kukuwai. The thesis statement was inspired by the housing crisis, and the need for sustainable design in Aotearoa's most rapidly growing city, Tāmaki-makaurau. Urban development in Tāmaki-makaurau has contributed to climate change and the diminishing of natural wetlands over the past century. This thesis set out to try and densify but not detract from the biodiversity of the landscape while developing. The design takes a cross-disciplinary approach, and went through studies of Landscape Architecture, hydrology and water sensitive design precedents, urbanist theory and analysis of social and environmental development. All of which factored into the final design for Maungawhau Kukuwai.

The park itself was designed from the ground-up, using the existing hydrological systems in Maungawhau to plan the artificial wetland structure. This large water body influenced the urban space and housing design at the park into a unique mixed-use development.

The artificial wetland is large enough to treat the Maungawhau water catchment of, 1,026,130.33m² at 2% with the wetland size being 21,294.87m², with a volume of, 340,103,297m³. This was a major success in the design, and the site topography and analysis allowed for this objective to be achieved. The multi-layered stacked housing system creates an interesting assemblage, and this adds diversity in regard to urban structure in the suburb, while responding to the demand for denser and more affordable housing. The Master Plan has 174 apartment blocks housing around 2173 people, it offers 495 underground car parks, and has 91 private and shared gardens, while offering an abundance of mixed-use and recreational space for the community of Maungawhau.

Key research steps:

These are what I see as the key research steps, which influenced how the thesis and the design developed.

The environmental history of the site and the present hydrological network of the site: When I discovered that Eden Park was historically a wetland/ swamp sitting at the basin of Maungawhau, pre-colonisation and development I knew that I had picked the right site and that water sensitive design was an imperative sustainable mode of infrastructure that had to feature in the Master Plan. The wetland structure was crafted by analysis water sensitive precedents. Assessing the historic wetlands in the country and also using the present stormwater water and flood plains in Maungawhau, resulted in the design of a large wetland channel that will filter water from the catchment of the suburb.

The second key research step was the Density study: This phase of the site analysis influenced how the design developed overall immensely. Going to sites and analysing them teaches you a lot more about ground plane relationships than I think theory or pictures ever will. The density study did not necessarily highlight features that I liked in regard to development, and instead it made me realise what not to do when approaching a housing plan of this scale. Also this part of the method was essential to me as a Landscape Architect, as elements of architecture are out of my scope so it was important to educate as well as I could moving into the preliminary design phase.

LIMITATIONS

These two limitations were the main factors that challenged the aims and objectives of the research method.

The main limitation that made this thesis challenging was the scale. Whilst scale was also a positive factor for this project, as the site was perfect for cross-disciplinary Master Planning; a lot of time was spent planning and designing at a larger scale. As a result this meant that the medium, and particularly the closer scale of the site was neglected at certain points in the final design. There are so many factors to consider and cover with a site of this size, which is why the thesis developed into a Master Planning design strategy covering a wider scope of ideas, rather than a specific detailed design, which is what I initially thought I would end up with.

The second limitation is that I am a Landscape Architect, taking on a thesis which covers a wider variety of design expertise, many of which are outside of my scope. Although I knew this would be a challenge even before beginning the project, I did not realise to what extent and how much time would be needed for me to learn all that was necessary to develop a housing method in this Master Plan. This was my first project designing an ambitious high-density housing method, at this level of detail in the scope of research and design. While I studied many useful methods to develop the apartment plan, this was one of the biggest limitations on the overall scope of the project and for me as a designer.

REFLECTION

These are the two key factors that I would have improved or developed further:

The main thing I would want to improve or develop about this project would be getting a stronger diversity of scales displayed in the final design. It would have been beneficial to design down at the ground plane in lot more detail, and to hash out the individual clusters and develop them into unique and specific spaces. Paying more attention to wetland vegetation and planting is an area I would have liked to explore more. I did a robust analysis of the soil and geological features, which influences vegetation and I would have liked to have put this research to direct use in the final design. However, the scale of the site limited me from using this knowledge when coming to the garden design phase.

The second factor that would be good to develop further would be a wider network strategy for Maungawhau as a suburb. This would be done by using a lot of the same design principles and methods used to design Maungawhau Kukuwai. In doing this, hydrological features such as swales and rain gardens could be added to the suburb, along with a lot of the empty industrial plots surrounding the site being turned into sustainable housing networks.

SUMMARY

What does Maungawhau Kukuwai add to the discipline of Landscape Architecture?

Maungawhau Kukuwai is a unique Master Plan strategy that adds to the value of Landscape Architecture in Aotearoa in particular. As far as I am aware through my own research of Tāmaki-makaurau, a high-density, mixed-use water sensitive design of this size does not presently exist. Therefore, this style of planning is adding directly to the modern methods of the discipline in this country. In regard to international scope, the design applies numerous urban methods which have been used in other successful projects around the world. However, this plan has the unique element of being based in Maungawhau, with a unique surrounding topography and environmental conditions, which are specific to Tāmaki-makaurau, Aotearoa.

This thesis has shown that developing a housing plan from the perspective of a Landscape Architect is a unique and important approach to Mastering Planning. I think it is a way that we should design more in future. More cross-disciplinary and landscape driven developments, along with the expertise of architects, engineers and relevant environmental scientists, would result in stronger, more cohesive and environmentally sensitive developments. This is what Maungawhau Kukuwai adds to the discipline, standing as a precedent for this style of design to be developed further. Landscape Architect's prioritise the environment, people and natural processes. Designing with a process-led initiative, rather than a capital-led agenda creates better designs for both people, city development, economies, and the environment. I think that this design intention is presently lacking in Tāmaki-makaurau's current city framework, and this park shows how you can design to meet important demands in multiple areas.

The housing formation offers a direct response to the demand for more affordable housing, as many first and second home buyers can no longer afford (or do not have the desire) to live in larger dwellings in such an expensive economy. The Master Plan responds to this demand in Tāmaki-makaurau, and offers a sustainable high-density design, where you can live on the fringe of the city, close to public transport hubs, whilst having access to recreation and mixed-use space without having to pay the extra price.

Maungawhau Kukuwai stands as an example of how we need to design in Aotearoa moving forward. The park responds to a growing population and displays how we can design high-density spaces which add to the community and the biodiversity of the environment, while simultaneously responding to the demands of society and climate change.

BIBLIOGRAPHY

I.E.Allen & S.R.Smith, GNS Science '1993 volcanic hazards at the Auckland volcanic field. Wellington Ministry of Civil Defence', 2009.
<https://www.gns.cri.nz/Home/Learning/Science-Topics/Volcanoes/New-Zealand-Volcanoes/Volcano-Geology-and-Hazards/Auckland-Volcanic-Field-Geology>

Architects' Journal, 'Michigan Debates on Urbanism Volumes, | | | and | | |,' 2005.
<https://www.architectsjournal.co.uk/home/michigan-debates-on-urbanism-volumes-i-ii-and-iii/132994.article>

Auckland Council, 'Resource Consent Documents,' 2017.
<https://www.aucklandcouncil.govt.nz/ResourceConsentDocuments/BUN60309701-15-geotechrep.pdf>

Branz, 'Defining Medium Density Housing,' 2017.
https://www.branz.co.nz/cms_show_download.php?id=8f539a4cd06da4fe57e215051ec5374eeb25628b

DELVA Landscapae Architects, Landezine, 'Supar Park, a new green neighbourhood for the city of veurne', 2017.
<http://landezine.com/index.php/2017/03/a-new-green-neighbourhood-for-the-city-of-veurne/>

A.Duany and E.Talen, 'Landscape Urbanism and its Discontents- Dissimulating the Sustainable Cities,' New Society Publishers, Canada, 2013.

Eileen McSaveney + Simon Nathan, Te Ara, 'Story: Geology- Overview, Mount Eden', 2016.
<https://teara.govt.nz/en/photograph/8401/mt-eden>

GHL, Landezine 'Wohungsbau Hinterangerstrase', 2017.
<http://landezine.com/index.php/2019/05/wohungsbaubau-hinterangerstrase-by-ghl/>

GNS Science, 'Our Science- Land and marine Geoscience,' 2009.
<https://www.gns.cri.nz/Home/Our-Science/Land-and-Marine-Geoscience/Regional-Geology/Urban-Geological-Mapping2/Auckland>

Hill Thalix Architecture + Urban Projects Jane Irwin Landscape Architecture, Landezine 'Hassett Park', 2018.
<http://landezine.com/index.php/2017/05/hassett-park-by-jane-irwin-landscape-architecture/>

Kāinga Ora, 'History of State housing', 2019.
<https://www.hnzc.co.nz/about-us/history-of-state-housing/>

Karres + Brands, Landezine 'Naerheden, Suburb of the future', 2016.
<http://landezine.com/index.php/2016/12/naerheden-suburb-of-the-future/>

LABLAND, Landezine 'Laasby Sea Park', 2018.
<http://landezine.com/index.php/2018/06/laasby-sea-park-by-labland/>

Ministry for the Environment, 'New Zealand Data,' 2020.
<https://data.mfe.govt.nz/>

Mount Eden Village, 'History about us', 2014-2019.
<https://www.mounteden.co.nz/about-us/history/10-about-us/39-history>

New Zealand Post, 'Construction of Nation,' 2019.
<https://stamps.nzpost.co.nz/new-zealand/2014/construction-nation>

Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stockholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

Schönherr, Landezine, 'Kokkedal climate adaption by Schönherr', 2017.
<http://landezine.com/index.php/2018/12/kokkedal-climate-adaption-by-schönherr/>

Stats New Zealand, 'Wetland Extent,' 2017.
http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Fresh%20water/wetland-extent.aspx

R.Strickland (Editor), Peter Eisenman vs. Barbara Littenberg and Steven Peterson, 'Post Urbanism and re-Urbanism, Michigan debates on Urbanism, Volume 3,' Publisher, University of Michigan, 2005.

IMAGE BIBLIOGRAPHY

Precedent images:

1-DELVA Landscapae Architects, Landezine, 'Supar Park, a new green neighbourhood for the city of veurne', 2017.
<http://landezine.com/index.php/2017/03/a-new-green-neighbourhood-for-the-city-of-veurne/>

2-DELVA Landscapae Architects, Landezine, 'Supar Park, a new green neighbourhood for the city of veurne', 2017.
<http://landezine.com/index.php/2017/03/a-new-green-neighbourhood-for-the-city-of-veurne/>

3-DELVA Landscapae Architects, Landezine, 'Supar Park, a new green neighbourhood for the city of veurne', 2017.
<http://landezine.com/index.php/2017/03/a-new-green-neighbourhood-for-the-city-of-veurne/>

4-DELVA Landscapae Architects, Landezine, 'Supar Park, a new green neighbourhood for the city of veurne', 2017.
<http://landezine.com/index.php/2017/03/a-new-green-neighbourhood-for-the-city-of-veurne/>

5-GHL, Landezine 'Wohnungsbau Hinterangerstrase', 2017.
<http://landezine.com/index.php/2019/05/wohnungsbau-hinterangerstrase-by-ghl/>

6-Karres + Brands, Landezine 'Naerheden, Suburb of the future', 2016.
<http://landezine.com/index.php/2016/12/naerheden-suburb-of-the-future/>

7-Karres + Brands, Landezine 'Naerheden, Suburb of the future', 2016.
<http://landezine.com/index.php/2016/12/naerheden-suburb-of-the-future/>

8-Karres + Brands, Landezine 'Naerheden, Suburb of the future', 2016.
<http://landezine.com/index.php/2016/12/naerheden-suburb-of-the-future/>

9-Karres + Brands, Landezine 'Naerheden, Suburb of the future', 2016.
<http://landezine.com/index.php/2016/12/naerheden-suburb-of-the-future/>

10-Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stokholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

11-Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stokholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

12-Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stokholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

13-Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stokholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

14-Urbio, Landezine, 'Stora Sjöfallet Royal Seaport Stokholm', 2017.
<http://landezine.com/index.php/2019/09/stora-sjofallet-royal-seaport-stockholm-by-urbio/>

15-Schönherr, Landezine, 'Kokkedal climate adaption by Schönherr', 2017.
<http://landezine.com/index.php/2018/12/kokkedal-climate-adaption-by-schonherr/>

16-LABLAND, Landezine 'Laasby Sea Park', 2018.
<http://landezine.com/index.php/2018/06/laasby-sea-park-by-labland/>

17-LABLAND, Landezine 'Laasby Sea Park', 2018.
<http://landezine.com/index.php/2018/06/laasby-sea-park-by-labland/>

18-LABLAND, Landezine 'Laasby Sea Park', 2018.
<http://landezine.com/index.php/2018/06/laasby-sea-park-by-labland/>

19-LABLAND, Landezine 'Laasby Sea Park', 2018.
<http://landezine.com/index.php/2018/06/laasby-sea-park-by-labland/>

IMAGE BIBLIOGRAPHY

Eden Park timeline images:

1 and 3-Scoop Culture, (original source unknown), 'End of an era for Eden Park, 1900's.' Photograph, Auckland.
<https://www.scoop.co.nz/stories/CU0807/S00300/end-of-an-era-for-eden-park.htm>

2-Auckland City Libraries, Sir George Grey Special Collections, 'Kingsland Cricket ground, 1907,' Photograph, Auckland.
<https://teara.govt.nz/en/photograph/41313/kingsland-cricket-ground-1907>

4-Auckland City Libraries, Sir George Grey Special Collections, 'Cabbage Tree Swamp,' Photograph, 1907, Auckland.
<http://heritageet.al.blogspot.com/2015/01/eden-park.html>

5-Mount Eden Borough Council, E.C. Franklin, 'Mount Eden's First Hundred Years, 1956,' Photograph, Auckland.
http://www.epna.org.nz/c_history.html

6-Grantham House Publishing, Graham Steward, 'Around Auckland by Tram I the 1950's', Photograph, Auckland.
<http://www.epna.org.nz/historypics/14.jpg>

7-Kingsland Business Society, 'Kingsland, Eden Park, Nixon Park' Photograph, 2020, Auckland.
<http://www.kingslandnz.com/welcome/visiting-kingsland/eden-park-nixon-park>

8-Mount Eden Borough Council, 'The Changing face of Mount Eden,' Photograph, Auckland.
<http://www.epna.org.nz/historypics/12.jpg>

9-Auckland Cities Libraries, Sir George Grey Special Collections, 'Eden Park 1924,' Photograph, Auckland.
<https://teara.govt.nz/en/photograph/25551/eden-park-1924>

10-Mount Eden Borough Council, Brent McAlister, 'From Farms to Flats, 1983', Photograph, Auckland.
http://www.epna.org.nz/c_history.html

11- Robin Morrison, 'Facing off 1981, Mount Eden,' Photograph, Auckland.

11.1- Robin Morrison, 'Behind the wire 1981, Kowhai Intermediate Mount Eden,' Photograph, Auckland.
<https://www.aucklandmuseum.com/visit/exhibitions/2013/a-decade-of-days-robin-morrison/springbok-tour-protest-at-eden-park>

11.2- Te Papa, purchased from Peter Black, 'Rugby Park 1981,' Photograph, Auckland.
<http://sites.tepapa.govt.nz/sliceofheaven/web/html/springboktourobject6aa6.html?irn=2608>

11.3- Ministry of Culture and Heritage, 'All Black prop Gary Knight is felled by a flour bomb,' 1981, Photograph, Auckland.
<https://nzhistory.govt.nz/flour-bomb-test-ends-springbok-tour>

12- Dave Lintott, 'Eden Park, All Blacks vs. France final,' Photograph, 2011, Auckland.
<https://davelintott.photoshelter.com/image/I000042WNUD.AKPw>

12.1- Brett Phibbs, 'Richie McCaw holds the Webb Ellis Cup,' Photograph, 2011, Auckland
https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10831912

13- Todd Niall, article writer) (unknown original source), 'An artists impression of the Bledisloe Wharf stadium,' Headline, 2018, Auckland.
<https://www.stuff.co.nz/auckland/107941275/plans-for-18-billion-auckland-waterfront-stadium-unveiled>

13.1- Todd Niall, article writer) (unknown original source), 'An artists impression of the Bledisloe Wharf stadium,' Render, 2018, Auckland.
<https://www.stuff.co.nz/auckland/107941275/plans-for-18-billion-auckland-waterfront-stadium-unveiled>

14- New Zealand Herald, EY report, 'Eden Park trust's numbers,' 2018.
https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12187857

14.1- Tim Murphy, 'Auckland's \$100m Eden Park Dilemma,' Headline, 2019.
<https://www.newsroom.co.nz/2019/02/15/444904/aucklands-dilemma-100m-more-for-eden-park>

IMAGE BIBLIOGRAPHY

Site Analysis, Maungawhau Village and Housing History:

1-New Zealand Post, 'Construction of Nation,' 2019.
<https://stamps.nzpost.co.nz/new-zealand/2014/construction-nation>

2-New Zealand Post, 'Construction of Nation,' 2019.
<https://stamps.nzpost.co.nz/new-zealand/2014/construction-nation>

3-New Zealand Post, 'Construction of Nation,' 2019.
<https://stamps.nzpost.co.nz/new-zealand/2014/construction-nation>

4-New Zealand Post, 'Construction of Nation,' 2019.
<https://stamps.nzpost.co.nz/new-zealand/2014/construction-nation>

Defining Density: Precedents:

1-John Mills Architecture, 'Highview House' 2020. Website.
<http://johnmillsarchitects.co.nz/portfolio/new-home/highview-house/>

2-John Mills Architecture, 'Highview House' 2020. Website.
<http://johnmillsarchitects.co.nz/portfolio/new-home/highview-house/>

3-John Mills Architecture, 'Highview House' 2020. Website.
<http://johnmillsarchitects.co.nz/portfolio/new-home/highview-house/>

4-Parsonson Architects Ltd, 'Zavo's Corner,' 2020. Website.
<http://p-a.nz/zavos-corner>

5-Parsonson Architects Ltd, 'Zavo's Corner,' 2020. Website.
<http://p-a.nz/zavos-corner>

6-Parsonson Architects Ltd, 'Zavo's Corner,' 2020. Website.
<http://p-a.nz/zavos-corner>

7-Athfield Architects, 'Chew's Lane Apartments,' 2020. Website.
<https://athfieldarchitects.co.nz/>

8-Athfield Architects, 'Chew's Lane Apartments,' 2020. Website.
<https://athfieldarchitects.co.nz/>