“Suburban Metamorphosis”

An urban intervention into suburban fabric

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A Research Project submitted in partial fulfillment of the requirements for the degree of Master of Architecture Professional
Unitec Institute of Technology, 2012
Acknowledgment

I would like to express my gratitude to all those who gave me the possibility to complete this thesis.

Many thanks to my supervisor Dr. David Turner and the knowledgeable librarian Brendan Smith for their generous support.

Many thanks to all of my friends especially Stephanie Wade who encouraged me endlessly.

Many thanks to my mum, my sisters and my beautiful nieces Nadia and Nazanin for emotional support.

I couldn’t have done it without your help.
Abstract

The drive for this research was based on issues observed in the suburb of Henderson; the suburban problems with regard to growth, affordability, community and sustainability.

For the purposes of this project this research attempts to target an area along Lincoln Road and to explore ways to introduce an urban intervention into the suburban fabric. It examines whether pockets of urbanism can improve or affect the existing issues which I will be discussing in this thesis.

The scope of this project is a single site amongst several similar sites in the same context. The results of this project, it is hoped, will be applied to solve the problems within a broader scope of suburban issues.

The first step in this project was to study approaches to such issues that have been explored worldwide, seeking solutions to provide for future needs. The next stage was site analysis, focusing on the target area. Data was gathered based on similar local and overseas examples, such as theories of urban design and the New Urbanism approach. The next step was planning. Each element has been considered individually and with regard to the way each element impacts on the others.

The result is the introduction of an urban intervention which maximizes the use of the existing facilities. This urban intervention enhances the quality of the entire context, facilitates affordability, brings diversity, includes a sense of community, and creates sustainability. All are introduced into an environment which facilitates living, working and leisure in proximity.

The impact and significance of the architectural solution, if applied, are designed to enhance the entire Lincoln Road area because analysis reveals very similar characteristics along its length.
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1. **Introduction:**
Recent suburban issues go back to the period of industrialization. With increased mobility and affordable land ownership, suburbs started spreading out with no planning or consideration for the future. The result is a car dependent sprawl pattern, poor connections, low population density and no sense of community.¹

1.1 **Background**
This project focuses on the suburb of Henderson in Waitakere, especially the area around Lincoln Road. According to the Waitakere City Council, Lincoln Road is due for road enhancement followed by changes to Highway 16. This could be an appropriate time to focus on enhancing the quality of existing commercial, residential and leisure areas.

In terms of improving the existing area, it is significant to know what the characteristics are. Lincoln Road has a variety of commercial activities and businesses, health-related services, sport and recreational activities, entertainments, amenities and education.

The separation of activities and functions are a result of the suburban pattern which is known as sprawl. The sprawl patterns consist of large sections, and free standing residential houses whose lack of a variety of typologies makes densification hard to facilitate. Sprawl pattern is also the driver of low population density, unaffordable houses, car dependency and lack of community.

The large suburban sections are unaffordable to the average householder. Section division is one option and infill developments another. As a result of the suburban pattern car dependency and a lack of a sense of community exist in most suburbs in Auckland.

Suburbs are designed for separation between the occupants and the focus is on private lives rather than public and this exacerbates a car orientated culture. The young and old are most vulnerable. Car dependency is expensive and polluting, and affects people’s health in ways such as increased obesity. More importantly the suburban fabric has focused little attention on public places and community based activities and needs, resulting in a lack of a sense of community. Gehl stated that “a lack of public place is lack of social interactions”.² Also Reijndorp emphasized on Loerakker saying when mentioned that “people seemed to want to live in a free standing house in the country, but happened to be living next to each other in the urban sprawl; resulting in a lack of vivid public spaces”.³

1.2 **The brief**
It is significant to investigate solutions that can address the above mentioned issues associated with suburban sprawl as exemplified in this particular section of Lincoln Road. This research addresses the need for a place to live, work and play and, or participate in leisure activities. Residential housing is designed with respect to the need for densification, affordability, diversity and a sense of community. Commercial

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buildings are considered in respect to need and context as well as a need for public places. These places cater for gathering together, creating a sense of community. This urban intervention consists of two thirds of the site being dedicated to residential activities, based on the need for affordable medium density housing, while one third is reserved for commercial activities.

1.3 The research problem
This project proposes to address the issues related to residential, commercial and community living. Residential issues relate to a lack of diverse building types and a scale that discourages flexibility towards growth, affordability and sustainability. The scale of big commercial boxes has also created a visual imbalance with the suburban fabric. Finally, community-related issues, such as the lack of public places and sense of community, will be addressed.

1.4 The research questions
The following are research questions that will clarify solutions in designing an urban intervention design.
- How does the urban context contribute to densification? How can densification benefit affordability?
- Does densification repair sprawl patterns and build communities?

1.5 Aims and objectives
This project aims to create an urban intervention design to make better use of existing facilities and services. It is aimed at facilitating affordability, catering for diversity, forming public places to bring a sense of community, as well as achieving sustainability in the form of housing with low energy consumption, thus bringing a better life style.

1.5.1 Project Goals
- To apply an urban context by following some of the New Urbanism techniques to enhance the existing suburban framework.
- To introduce changes to accommodate the demands of future population growth.
- To create a master plan for the designated site.
- To establish networking that favours pedestrians.
- To target medium density populations.
- To design public spaces that will be actively used by residents and attract others.
- To plan the location of buildings with allocated floor areas and volumes.

1.6 Methodology
As a result of the nature of the problem, and in order to find the best suited methods of design, the overall approach is a ‘by design’ methodology. However, an analytic approach has been followed based on data from Statistics New Zealand.
It has been important to do specific research on community profiles, local plan policies, conservation and other related policies and initiatives in the area from local and official government websites.
Related research was done on national and international precedents. National precedents were focused in the Waitakere area, while international precedents have been found in books, articles and internet websites.
Amongst official governmental websites, Statistics New Zealand, Waitakere City Council and the current Auckland Council websites and news have been searched for fundamental plans and decisions on ecology and archaeology.
In this project, Waitakere City Council’s strategies and planning have been considered regarding the proposed future development of Lincoln Road. In 2009-2010, Waitakere City Council announced the North-Western motorway improvement. As Lincoln Road is a regional arterial route, providing a connection between State Highway 16 and Henderson town centre, it was planned that it should be the next to receive attention. The growth management strategy for Waitakere identifies Lincoln Road as a growth corridor and Henderson as a growth node. For Lincoln Road the growth is predominantly business, light industrial and residential, while Henderson town centre is likely to consist of largely retail and business areas. The benefits foreseen within the city council plans as well as from this current project are that they are expected to improve access and mobility, manage travel demand, increase transport network capacity, and assist economic development in the area.

2. Definition of the project
The project is specified as urban, with architectural and design solutions addressing the problems of the suburb. Accordingly the project is staged on the basis of recorded chronology. The stages are as following.

2.1 Chronology of design stages
2.1.1 Stage A: site context
This project looks at the issues that affect the whole of Lincoln Road. Therefore, it was important to identify the issues in the broader context. In this research, the whole context has been analysed and based on data accessed from Statistics New Zealand, as well as investigations based on observations so as to identify areas that can be tested. The result is four different areas with similar characteristics. Figure: 1

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5 Ibid.
2.1.2 Stage B: Site Selection

A site has been selected among the targeted areas designated for the purposes of this research. An investigation and analysis were conducted to help with the master planning. The chosen site is an entire block contained by Lincoln Road, Woodford Ave, Moselle Ave and Waipareira Ave, which includes approximately 10 hectares. The existing site is ‘brownfield’, consisting of big commercial and industrial boxes around a parking lot and a strip of housing. Figure:2

Figure 1: Possible sites along Lincoln Road, Retrieved from Google in 2011

Figure 2: Selected site
2.1.3 **Stage C: Master Planning**
Master planning in this project consists of several stages. The following stages of select, decide, form and create every element in this urban intervention.
- Block composition
- Block shape and size
- Block component, sections and courtyards
- Pedestrian access
- Green belt
- Topography
- Housing typology

2.1.4 **Stage D: Road Enactment**
Research suggests that outcomes would be best served by Lincoln Road becoming a ‘boulevard’. It is believed that this will have favourable and positive impacts on the entire road.

**Figure: 3**

2.1.5 **Stage E: The Programme**
In this stage the programme explains the detailed aspect of the build. This programme helps to estimate the likelihood of the outcome.

**Figure 3: The Boulevard**
2.2 Precedent survey:
This research has looked at urban infill developments to test their contribution to a suburban structure. Precedents guide this project to find a better solution based on the influence they may have on problems within existing suburbs. The following are national and international precedents that have been tested based on ‘Best Practice in Medium Density Housing Design’6 and ‘The Housing Design Handbook’7 for their positive, negative or inspirational aspects, and with regard to whether or not they solve issues of urban, architectural or design elements. The criteria adopted from the mentioned guides are density, car parking, security, private and public open space and the influence of the development on the neighbouring environment.

2.2.1 National precedents:
Research reveals that almost all medium density housing in Auckland is a form of infill. The exception is the “new town” project at Flat Bush, adjoining the development of the Botany Town Centre, in South Auckland. The following infill developments are selected from many infill developments in the Waitakere area and targeting medium density developments. This is a significant factor as it is determining the urban quality of each development.

The following precedents give information respectively with regard to the mentioned criteria and key features of infill developments.

- Henderson: Lincoln Road, Buscomb Ave, Triangle Road, Wadier Place, Corban Place and Edmonton Road
- Glen Eden: Oates Road
- Te Atatu Peninsula: Gunner Drive
- New Lynn: Ambrico Place, Tuscany Towers

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2.2.1.1 Lincoln Road
The recent gated development is located along Lincoln Road. It has 9 two storey, free standing houses with no specific design aspects, situated closely to each other, with a DPH of 14. 

Figure: 4. The first floor contains the living and dining areas, kitchen, laundry and a double internal garage. The bedrooms and bathrooms are located on the upper floor, with a small private back and side space and the driveway being the only public space. The houses are separated by high fences with minor views overlooking the neighbouring properties on each side and minimal landscaping. Figure: 5. The refuse collection is via Lincoln Road because there is no space for a truck to manoeuvre. As a result, these houses are an example of infill with low density and do not contribute to density issues, nor add to a sense of community or urban identity. However, the result could be different if the dwelling types were appropriate for higher density living and the layout was changed.

<table>
<thead>
<tr>
<th>Open space public</th>
<th>Open space private</th>
<th>privacy</th>
<th>Parking</th>
<th>Identity</th>
<th>House type</th>
<th>Security</th>
<th>Number of Units</th>
<th>Population density</th>
<th>Total site area</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2 storey, free standing house</td>
<td>✓</td>
<td>9</td>
<td>14 DPH</td>
<td>6,563</td>
</tr>
</tbody>
</table>
Figure 5: Lincoln Road, Henderson
2.2.1.2 Buscomb Ave

5 Buscomb Ave is a small development with 8 units. The units are two storeys, 4 at the back and 4 on the road edge, with a car park in the middle. The small development has a DPH of 76. It provides a secure, small front and back garden area with continuous fences. Figure 7. The car park is the only open space between the dwellings. This low density development has no specific architectural identity and does not contribute to urban quality. However, the placement of the car park in the middle is a significant design decision and provides security by being in close proximity. This also acts as a public area where people can meet and, so, adds to the development. However, the development could contribute to urban density issues even more if apartments were chosen instead of units and the existing central car park provided landscaping and allowed for an open, public area for residents.

<table>
<thead>
<tr>
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<th>Privacy</th>
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<th>Identity</th>
<th>House type</th>
<th>Security</th>
<th>No. of Units</th>
<th>Population density</th>
<th>Total site area</th>
</tr>
</thead>
<tbody>
<tr>
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<td>✓</td>
<td>✓</td>
<td>2 storey units</td>
<td>8</td>
<td>76 DPH</td>
<td>1,051</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Figure 7: Buscomb Ave, Henderson
2.2.1.3 Triangle Road

Between 75-94 the intersection of Don Buck Road and Triangle Road has a horse shoe shape development with a variety of dwellings including a set of 26 flats, 2 sets of 2 storey terraced housing with 7 dwellings and 8 semi detached dwellings, in total 41 dwellings. The significance of this development is its layout, which helps the circulation and the orientation of each block. This development has a DPH of 65.

All dwellings are designed around Patience Way, which creates natural surveillance, and makes refuse collection easy Figure: 9. All of the terraced houses have double garages, and off street parking available for both flats and visitors. There are small private open spaces at the rear for drying clothes and the fences are wooden or metal. However, there is no public open space to enhance the sense of community.

The semi detached dwelling is a step towards sustainability as a way of saving on heating bills in winter and shading in summer. As a result, this medium density development provides for a variety of a socio economic status, addresses a shortage of housing need and is a step towards urbanising the suburb. However, attention to the quality or type of cladding materials could change the brutal appearance of the apartment blocks and enhance their appearance.

![Figure 8: Arial view of Patience Way, Triangle Road, Retrieved from Google in 2011](image)
Figure 9: Patience Way, Triangle Road, Henderson
2.2.1.4 Wadier Place

14 Wadier Place, off Sel Peacock Drive, is significant for its density and affordability. The development has 72 units and the DPH is 204. The whole development is a set of 3 apartment blocks of three storeys high that have been built for affordability. **Figure: 11.** The flats have between 1 to 4 bedrooms. The ground floor flats have their own entrance from the road side, and access to the upper floor flats is via a central stair case. There are some shops in the basement of the last block located on the corner of Great North Road and Wadier Place. Car parking is available at the rear of the blocks and more street parking on Wadier Place. The ground floor units are raised, but they have privacy issues by being exposed to the road. The only physical and visual separation between the ground floor flats and road is steel fence about 1 metre high. The flats are also close to the sidewalk with a distance of only a metre. As a result, the ground floor flats have minimum privacy and security. This could have been better dealt with by placing shops in this area, thus enhancing the road, and relocating the apartments to the rear of the building. Refuse collection is via Wadier Place and recycle bins are stored in the car park for upper floor flats and at the front for ground floor flats. There is no provision for public open space. The apartments form an urban edge on Wadier Place and they may help with the shortage of affordable housing, but do not help to create quality community living.

<table>
<thead>
<tr>
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<th>Privacy</th>
<th>Parking</th>
<th>Identity</th>
<th>Housing type</th>
<th>Security</th>
<th>Number of Units</th>
<th>Population density</th>
<th>Total site area</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td>3 storey apartment flats</td>
<td>72</td>
<td>204 DPH</td>
<td>3,539</td>
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</tbody>
</table>

**Figure 10:** Arial view of Wadier Place, Retrieved from Google in 2011
2.2.1.5 Corban Place

Corban Place has 83 dwellings, and a DPH of 40. There are two and three storey terraced and town house types that are significant for identity and layout composition. Figure: 13. The central part of the development has rear access to the garages. The rest of the development has a horse shoe circulation movement. Some of the houses are located perpendicular to the road and create a no exit layout where dwellings either face each other or are at the back of another set of dwellings. The no exit layout leads to the garages and provides for more car parks. Having a variety of colours and ornamental details or materials has helped create diversity and the layout seems to be working. However, the central dwellings with rear access garages are dominated by garage doors and are often unused and, therefore, could be unsafe because of their isolation. The refuse collection system is efficient. Overall, as a result of the layout and architectural identity, Corban Place is considered a lively place for its location. Its quality is adding to the living quality of the residents.

![Corban Place Aerial View](image)

Figure 12: Arial view of Corban Place, Retrieved from Google in 2011

<table>
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<tr>
<th>Open space public</th>
<th>Open space private</th>
<th>Privacy</th>
<th>Parking</th>
<th>Identity</th>
<th>House type</th>
<th>Security</th>
<th>No. of Units</th>
<th>Populati on density</th>
<th>Total site area</th>
</tr>
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<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>2,3 storey terraced townhouse type</td>
<td></td>
<td>83</td>
<td>40 DPH</td>
<td>20,686</td>
</tr>
</tbody>
</table>
Figure 13: Corban Place, Winery Way, Henderson
2.2.1.6 Edmonton Road

67 Edmonton Road is a compact development with 18 units and a DPH of 53. This development is significant for its contemporary design, its cul de sac layout, landscaping, orientation and affordability. Figure: 15. The buildings are two and three storeys with internal garages and extra car parking provided for visitors. The cul de sac layout allows easy circulation and movement, as well as natural surveillance. Each house is designed to be closed up from the front with a private open space at the back; this makes it secure and safe for residents. There is also provision for landscaping and storm water collection which adds to the quality of the site. This compact medium density development adds to the urban identity, provides for higher density and affordability, and certainly helps bring a sense of community. As a result it is a good development to look at and be inspired by. What could help the central public area is more light and activities if it were slightly bigger and more spacious. Also, the refuse collection could be effected from the internal court rather than the public road.

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<th>Parking</th>
<th>Identity</th>
<th>House type</th>
<th>Security</th>
<th>No. of Units</th>
<th>Population density</th>
<th>Total site area</th>
</tr>
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<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>2 storey units</td>
<td>✓</td>
<td>18</td>
<td>53 DPH</td>
<td>3,400</td>
</tr>
</tbody>
</table>

Figure 14: Aerial view of Edmonton Road, Retrieved from Google in 2011
Figure 15: Edmonton Road, Henderson
2.2.1.7 Glen Eden

Oates Road development with 25 units has a DPH of 51. It is significant for its density, layout and provision of a playground. This compact development includes two storey houses with side and rear access garages and off street parking available in front, with an added children’s playground. The rectangular block and layout of the dwellings around a horse shoe drive way provides easy circulation through the whole site. Figure: 17. The refuse collection is well organised as a result of the layout design. A small private space is located at the rear of the houses for clothes lines. There is provision of a small landscaped area in front of each house, and the children’s play area provides a step towards a sense of community and recreation. The terraced houses are secure with high fences, and the rear access is well used so security is not an issue, although access is not of high quality. Oates Road development has contributed to urban density, sustainability and provides an urban identity. This development could benefit from a wider rear access and less domination of garage doors. Also varied cladding material and more landscaped areas could help this development to enjoy a warmer spirited community.

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<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>2 storey units</td>
<td>✓</td>
<td>25</td>
<td>51 DPH</td>
<td>4,941</td>
<td></td>
</tr>
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</table>

Figure 16: Arial view of Oates Road, Retrieved from Google in 2011
Figure 17: Oates Road, Glen Eden
2.2.1.8 Te Atatu Peninsula

Gunner Drive development in Te Atatu Peninsula has 31 units, a DPH of 61 and is significant for its affordability. The rectangular site is located between two roads, Gunner Drive and Harbour View Road which allows for more dwellings Figure: 19. All houses have internal garage access from the front and some off street parking as well as a private garden at the rear. Due to having back to back units, dwellings are overlooked. The internal road connects Gunner Drive to Harbour View Road through the site. One side of the site is on the edge of the sports field, and for that reason refuse collection is via Gunner Drive or Harbour View Road. This development has not provided any public space or landscaping.

This could have been a higher quality development if the layout allowed for circulation and open public space and perhaps a different parcel arrangement could have helped too. However, this could affect the population density, but would raise the quality and solve the overlooking issue.

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<th>Public Private space</th>
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<th>Identity</th>
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<th>Population density</th>
<th>Total site area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>2 storey units</td>
<td></td>
<td></td>
<td>31 houses</td>
<td>61 DPH</td>
<td>5,076</td>
</tr>
</tbody>
</table>
Figure 19: Gunner Drive, Te Atatu Peninsula
### 2.2.1.9 New Lynn

Ambrico Place, Tuscany Towers in New Lynn is a complex development that has been built in several stages. It has different densities and identities. Amongst all Tuscany Towers is the largest parcel built of 97 units with the majority being 2 storeys, with front access terraces and internal garages for one car, and a density of 42 DPH. This development is significant for its layout which is based on the New Urbanism principle and for its architectural identity. Figure 21

The units provide small front and rear gardens with full services access for refuse collection. Tuscany Towers has a public open space and a tennis court in the centre which is at the rear of the houses. This can be accessed by walking for safety purposes, walkability and community. The Mediterranean style stands out amongst the other developments in the area. Some of the units provide accommodation at ground floor level for living and working situations as well. It provides good privacy and security between units with fences and walls. This development achieved identity, good amenity and standard public and private spaces. Consequently, it is an example of careful architectural design in a standard urban design.

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<th>Identity</th>
<th>House type</th>
<th>Security</th>
<th>No of Units</th>
<th>Population density</th>
<th>Total site area</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Variation of 2-3 storey Mediterranean style</td>
<td>✓</td>
<td>97</td>
<td>42 DPH</td>
<td>23,017</td>
</tr>
</tbody>
</table>
Figure 21: Ambrico Place, New Lynn, Retrieved from Google in 2011
2.2.2 International precedents

The international precedents are selected from among many and chosen from England, USA and Australia. The selected precedents are well known developments and significant for their density, security, layout and provision of sense of community, public/private open space, and car parking. The international precedents are as following:

- Odhams Walk, Covent Garden, London, England
- Holly Street, Renewal, London, England
- Seaside, Florida, USA
- Hunterford, NW Sydney, NSW

Odhams Walk, Covent Garden, London\(^8,9\)

- By Greater London Council Architects Department in 1982
- High density scheme in 0.66 Hectares
- Concealed design and example of complexity
- Dual aspect Victorian terrace housing: the garden city
- Consideration for walkability, privacy, security and community

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Odhams Walk, is a complex layered development with 150 flats and a density of 66 DPH. The flats above the shopping level resemble Mediterranean villages. This development is significant for its architectural identity, layout and attention to landscaping and circulation movement. The layered design allows the roof of the lower level to form a balcony which provides private open spaces for the upper floor and more sunlight. Since the open courtyard on ground level works as a public open space. Over looking is a compromise. The advantage of walkability is another compromise one can make for a sense of community obtained by car access elimination. The fact that this development is curled up within itself prevents it from contributing to the surrounding streets and is one of the complaints; also this reduces the liveliness of the street frontage by turning its back to the street.10

However, this development has achieved security and high density with its doughnut shape by controlled entrances, which have natural surveillance by the tenants, and has a great sense of community with human scale courtyards.

Holly Street, Renewal, London\textsuperscript{11,12}

- By Levitt Bernstein Associates, duration of 12 years work
- A range of housing typologies randomly mixed
- Medium density project in 1.2 Hectares
- Provided for tenancy and homeownership
- Consideration for diversity and affordability

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\textsuperscript{11} Levitt, \textit{The Housing Design Handbook}, 46-51.
Holly Street with 151 terraced houses and apartments has a density of 126 DPH. This development is significant for its density, layout and affordability. The whole block has been designed around two rectangles and the individual dwellings are along the perimeter of the block with back to back small rear gardens. Figure 29. The upper floors enjoy generous balconies, especially around the corners. The ground floor flats are overlooked from the road. The back gardens have the overlooking issue as well. The refuse collection is via Acer Road, Holly Street, Richmond Road, Forest Road and Queen’s Bridge Road. The ground floor flats have very small gardens with a short steel fence. The narrow road and the traditional neighbourhood on the edge of the road provide natural surveillance. Overall, the two storey terraced houses are designed to match the fabric of the neighbouring buildings. The circulation works since the dwellings are designed around the perimeter and a back alley for services has added to security.13

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Figure 30: Street view of Acer Road, Retrieved from Google in 2011

Figure 31: Diverse corner facade on Holly Street, Retrieved from Google in 2011
Figure 32: Overlooking issues at street level, Retrieved from Google in 2011

Figure 33: Diverse corner facade, Retrieved from Google in 2011
Seaside Florida, USA

- By DPZ (Andres Duany and Elizabeth Plater-Zyberk
- Input from Léon Krier
- Seaside, community based master-planned.
- Seaside is a successful New Urbanism development.\(^\text{14}\)

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Figure 34: Arial view of Seaside, Retrieved from Google in 2011

Figure 35: Suburban houses
Seaside is a large development designed and planned as a New Urbanist development. It is significant for being one of the successful New Urbanism experiences based on traditional neighbourhood structures, walkability, connectivity, mixed use development, transect planning and increased density.

Traditional suburban dwellings are designed along pleasant internal roads, heavily landscaped to encourage walking and cycling activities. Commercial and other activities, however, are along the main road to encourage gatherings and support a sense of community. Every dwelling is designed with a heavily planted garden around it. The only complaint about this development is that it is pricy, despite its initial ideology of affordability.
According to smart community networks, when completed, Seaside will contain 650 dwellings, including apartments and hotels. The town’s projected population of 2,000 compares in size to a typical American small town. Seaside’s principal buildings are a school, town hall, open air market, tennis club, tented amphitheatre and post office.

This development has been selected for investigation of its combinations of characteristics that can inspire this research. However, this project will integrate some of the characteristics and not the whole package. Likely elements to be used are connectivity, walkability, mixed use, increased density, and transect planning based on topography, and also designing to enhance a community base structure. The mixed use is going to be based on the needs of the neighbourhood including shops, offices and apartments.

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Hunterford, NW Sydney, NSW\textsuperscript{16}

- Hunterford was planned by Annand Alcock Design Firm
- Hunterford has adopted ‘New Castle Urbanism’
- The village centre is designed for life-work activity with medium rise apartments
- Hunterford is 7 hectares and located in an inner ring suburb and Kings Bay.

Hunterford is a large Australian New Urbanist schemed development over 7 hectares, and 150 dwellings with a density of 22 DPH. This development is significant for its variety and authenticity of the traditional suburb. It was originally a surplus high school site in an established middle range suburb, north of Parramatta out West. It has a full range of housing forms from traditional houses interfacing with the existing suburb, to duplexes, town houses, studios and apartments. These form intimate open spaces with retained trees managed under community title. The project won the UDIA National Medium Density Award and the RAIA Premier’s Award. It was designed with narrow roads to slow down the vehicles automatically, plenty of landscaped areas and integral car parking with extra off street car parking. It also fulfils security and safety issues by fences and natural surveillance. Some houses have rear garage access so, apart from those, refuse is collected via front doors. There is a tennis court and swimming pool in the centre of the development as a public space and recreation area, also plenty of front and back private places are available. In conclusion, the whole development is a quiet and desirable place to live; it is not just another suburban community with variety of dwellings because it has elements which may not contribute to urban density but to the sense of community.

17 Steuteville and Langdon, New Urbanism.
Figure 46: Apartments & Studios, Retrieved from Google in 2011

Figure 47: Services lane, Retrieved from Google in 2011
2.2.2.1 Summary and common trends

Large or small, interstitial developments seek intensification and affordability. They are inspiring, however, they have repetitive plans and façades and seek a sense of identity.

In general developments are either built on ‘greenfield’ or ‘brownfield’ areas. Flatbush in Auckland, Seaside in Florida and Hunterford Sydney are examples of ‘greenfield’ developments and Holly Street and Odhams Walk in London are ‘brownfield’ examples. The intention of most developments is population density and affordability. However, if the development is large, providing for amenities becomes more significant but less difficult. On the other hand for smaller developments to achieve higher density, compromises are inevitable. Overall, developments are being designed following common characteristics to reach affordability, density or a sense of community.

The common characteristics of most small scale developments, national or international, are smaller parcel or building footprints. Semi detached building types, repetition in plans and façade, and provision for car parking are other characteristics. Gunner Drive, Edmonton Street and Oates Road are examples of these characteristics. There are common compromises in smaller sites in orientation, layout, refuse collection, public or private open spaces and a sense of community. There are other compromises which result in minimum living standards, poor internal space configuration and overlooking on many occasions. Also these compromises do not stop at private space; public spaces will be affected too. For instance, the domination of garage doors, lack of landscaping, overlooking and no separation between pedestrian and vehicular space are results of poor public space configuration or master planning. Some of the compromises can be seen in the following precedents. Gunner Drive with poor internal configuration issues, Wadier Ave and Holly Street in London lack landscaping, private/ public open space, overlooking and refuse collection issues in Odhams Walk.

The common characteristic of most larger scale developments, national or international, are the creation of satellite towns or villages which rely on the main town’s services and amenities, such as Flatbush in Auckland and Seaside in Florida. The negative characteristics of large scale developments are their sprawl pattern which does not improve suburban low density; therefore, they do not contribute to the subject of ‘growth’. However, large scale developments, especially the master planning of Seaside, provides quality living with its walkable environment and the sense of community.

Consequently, investigation amongst all precedents brings the following to attention. There are a set of characteristics required to be considered when master planning. The most important quality is the ratio of scale to population density. Low density does not help the concept of ‘growth’ or affordability. High density creates chaos and slums that reduce urban quality and life style. The layout will allow movement and circulation of services and refuse collection within the site and prevent overlooking issues from the beginning. A good layout allows configuration of parcels for better orientation. After that, section size is significant. Each parcel should be designed individually and development should be designed from a smaller element, which is the house, as well as master planning. Therefore, the internal configuration is acceptable and up to standard when each house has uncompromised internal configuration, private space, car park, security and sunlight. Smaller houses do not necessarily mean lower quality or compromises in living standards.
Public open spaces are designed in the master plan, so are parcel sizes, location and orientation of each house. Public spaces bind communities to each other, bringing neighbours together for a safer and healthier community. Thus, a layout that provides members of a community to meet and greet on a daily basis is ideal. This helps to bring back a sense of community. The quality of the public space needs to be designed to enhance the community so people belong to the place so they protect and maintain it. This also could help to create a natural surveillance by individuals. In conclusion, the precedents helped and inspired this project to take shape all the way.
2.3 The current state of knowledge

2.3.1 Urban planning history

The root of planning as an organized profession goes back to the late nineteenth century, when the extremely rapid growth of cities following the industrial revolution led to a profusion of urban problems, such as inadequate sanitation, water supply, transportation, and housing. That era has been labelled “city of dreadful night” by Sir Peter Hall. Early planning visionaries such as Ebenezer Howard, Patrick Geddes, and Catalan engineer Ildefons Cerda applied a broad and holistic style of thought to urban problems, such as, Howard’s “Garden City” concept. The “quantitative measurement of urban data became preferred to designed visions or normative advocacy of Howard’s concept”. In the 1910’s and 1920’s zoning laws were added to planning. Infrastructure, such as roads and bridges, accommodated urban growth, especially the automobile.

20th century urban planners managed to meet some of their goals, but not always with sufficient reflection on the long term impacts such as human and ecological goals. In 1990 ‘New Urbanism’ re-evaluated the physical layout of communities, promoting neo-traditional community planning, based on traditional small towns. Founders included Peter Calthorpe, Andres Duany, Elizabeth Plater-Zyberk, Daniel Solomon, Stefanos Polyzorides, Elizabeth Moule, and Douglas Kelbaugh. In Britain, similar designs by architects Leon and Rob Krier resulted in a denser new community in a form of more traditional European communities. “New Urbanists’ react to the placeless, unwalkable landscape of suburban sprawl”. They call for improved design in neighbourhoods and cities at regional levels, to create more walkable, livable communities. They advocate narrowing streets, adding sidewalks, placing porches on the front of houses, tucking garages behind houses, creating street grids or other connecting street patterns instead of cul-de-sacs, and organizing neighbourhoods around mixed-use centres and attractive public spaces. They have been criticized because most of these elements were, of course, used in communities before the age of the automobile. Another criticism is for not incorporating green building design and landscaping, despite attempting to design neighbourhoods with sustainable advantages.

In the 1990’s other movements came along with different focuses such as ‘Smart Growth’, with the focus on ‘controlling metropolitan growth’. In the 1980’s ‘Environmental Justice’ called for attention for low income neighbourhoods. Public health issues became a driving force behind another movement to promote ‘healthy cities’ in 1985. In the 1980’s and 1990’s ‘Landscape Ecology’ emerged to emphasize ‘wildlife habitats’. ‘Community design’ and ‘community based planning’ have been established to emphasize the importance of creating designs for new buildings, public spaces and community facilities in collaboration with local residents, planners and urban designers. Finally, many planning movements have been converging communities and sustainability, often focusing on...
energy, resources, transportation, urban design and architecture.

2.3.2 Urban Planning

“Planning” refers to a wide range of systematic activities designed to ensure that desired goals are achieved in the future such as ‘environmental protection, urban development, particular forms of economic activities, social justice and many other ideas’.  

2.3.3 The benefits of urban planning and principles of urban design

2.3.3.1 A movable frame

Urban planning is a smart development enabling the achievement of sustainable urban structures in terms of moving into the future. It has shaped and reshaped cities, generated a coherent urban complex, and defined size, form and major networks. Urban planning provides for maximum choice for people in terms of movement, generates public realms and contributes to pedestrian life. Grid based urban structure hierarchically interconnects the neighbourhood structure, and can be designed to control the speed of local traffic. Alexander stated that planning for wholeness creates the structure.

2.3.3.2 Urban blocks: A components in urban design

The concept of urban blocks is identified as the most important typological element in the composition of urban spaces, and the key element of any urban pattern, and provides tools for repairing suburban sprawl. Block structure allows for construction of mixed use and higher urban intensity in walkable distances. Blocks offer the most flexible basis for accommodating more people with options for internal treatment. Their size and shape identifies configuration of streets, preferred orientation and topography. Smaller blocks permit better street networks, and also represent higher possible value. Density and economic reasons determine size and shape, however, this can lead to over populate cities as previously criticized by Le Corbusier and Gropius. A repetitive pattern of blocks may become socially disruptive because of their spatial structures, although they do have traffic calming characteristics.

Ibid., 11.
25 Ibid.
36 Sucher, “Getting Around” 394.
37 Krier, “Critiques” and “Urban Components”, 245.
38 Ibid., 245.
39 Ibid., 247.
40 Sucher, “Getting Around”, 394,395
2.3.3.3 Physical and Social Connections

2.3.3.1 Characteristics of Physical Connections
The importance of connecting is based on characteristics of the routes in an urban context. The key to successful planning in towns is to ensure their connectivity on a larger scale, the capacity of the routes, as well as more direct routes for convenience of all types of movement. Well designed spaces avoid conflict of movement and encourage other activities to take place. Pedestrian and cycle friendly streets can safely incorporate vehicle lanes, and a variety of available route types and urban contexts can be organized.

2.3.3.2 Social Connections
The essence of planning is a focus on reestablishing lost connections between people, communities and neighborhoods. Principles of planning for reconnecting communities and neighborhoods are established by making connections between individuals and families within a community. ‘A community’s relationship to its neighbours is important’. High quality heterogeneous communities generate social opportunities and growth, however, other research indicates better social connections based on similarities rather than diversity. It is the architecture that ties neighbourhoods together. It can connect and sustain social fabrics and create communities, job opportunities and social services.

2.3.3.4 Densification impact
Densification is, originally, an urban characteristic that is shaped by large blocks. One positive attribute of it is that it facilitates the need for growth. Even though densification is a sustainable move that benefits low consumption of resources, such as energy, land and water, densification of infill development on a small scale can still solve only very small parts of the growth problem.

Other aspects of densification are to provide a sense of place, better surveillance, security and higher residential satisfaction. This also increases social interaction.

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42 Ibid., 75.
44 Ibid., 9.
47 Duany, Plater-Zyberk, and Speck, Suburban Nation, 192.
50 Michael Krier, “Critiques” and “Urban Components”, 248.
51 Ibid., 248.
54 Jacobs, The Death and Life of Great American Cities , 32.
57 Hazel Easthope and Sarah Judd, Living Well in Greater Density (Sydney: Shelter NSW, 2010), 21.
However, creating a sense of community safety is a complex issue. Even though densification can create a sense of community, research shows that multi-families have a positive impact on communities. Nonetheless there are negative aspects to densification design issues such as privacy issues, noise, consideration for sunlight, ventilation, access, amenities and parking. According to a recent report on medium density developments, a densification design always involves some compromises, but with good design they can at least be minimised.

2.3.3.5 Mixing uses
The need for mixing is effective in designing an urban structure. These include mixing use, services, culture and building types. According to Duany, Talen and, as mentioned in Urban Design Compendium, mixing helps with economic and social aspects, vitality of place, and safety. Mixing uses is known to create diverse places. Diversity is the key to vitality of places and social equity. Jacobs indicated that mixing forms a complex pool of use. A positive point of diversity is that it offers affordability. ‘New Urbanists’ have claimed to achieve affordability through diversity of house types.

Putnam also indicates that the decline of ‘social diversity is partly related to building forms’. The social need for diversity is because of the human need for disharmony and conflict. Mixed neighbourhoods are culturally and economically diverse. They create social geography. Jacobs emphasizes the necessity of diversity in social terms, street safety, as well as economic effects. She also believes that sustaining the safety of the public is complex, it requires an enormous diversity of ingredients in order to succeed.

2.3.3.6 The importance of Landscape
Landscaping is one ‘urban village’ characteristic that receives the greatest degree of attention. Aldous advocates that an urban village should focus on a public place of sufficient size and quality to give people a sense of place. Any scheme of a significant scale should involve and incorporate landscaping. Landscaping, such as parks, can be delightful features of cities and economic assets to their surroundings. Public parks are public-yards for general bread-and-butter use, regardless of predominant function. Jacobs also argues that parks cannot automatically raise the quality of an urban environment and they do not have any other tangible

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61 Jacobs, The Death and Life of Great American Cities, 32.
62 Alexander Von Hoffman et al., America’s Working Communities and the Impact of Multifamily Housing: (Joint Center for Housing Studies of Harvard University and Neighbourhood Reinvestment Corporation, 2004), 22.
63 Syme, McGregor and Mead, Social Implications of Housing Intensification in the Auckland Region, 26-38.
64 Turner and others, A Report on Best Practice in Medium Density Housing.
67 Duany, Plater-Zyberk, and Speck, Suburban Nation, 189.
68 Hass, ed., New Urbanism and Beyond, 84.
69 Talen, Design for Diversity, 33.
70 Jacobs, The Death and Life of Great American Cities, 165.
71 Hass, ed., New Urbanism and Beyond, 80.
72 Talen, Design for Diversity, 25.
73 Wheeler, Planning for Sustainability, 10.
74 Talen, Design for Diversity, 34.
75 Ibid., 2.
77 Jacobs, The Death and Life of Great American Cities, 152.
78 Ibid., 144.
80 Ibid.
82 Jacobs, The Death and Life of Great American Cities, 89.
83 Ibid., 91.
effects, apart from their uses, so they may be used for good or for ill. Nonetheless, parks can and do add great appeal to neighborhoods when people find them attractive for a great variety of uses.84

2.3.3.7 Car parks and quality of public places
Designing for private or street car parking can enhance the quality of the roads and the environments. Placement of garages at the back is pleasant and economically valuable.85 Street car parking allows a buffer for quality of pedestrian access,86, 87 as long as the vehicles are not dominating the road and are not an inconvenience to pedestrians and cyclists.88 Parking lots should not be placed on the edge of the road because of their domination, but should be considered as potential public spaces. They should be planted to form a canopy and are ideal for pedestrian paths.89

3. Project development

The research solution indicates an intensified urban infill to deal with low density issues associated with suburban sprawl patterns, hard edges resulting from scale and the placement of structures with dissimilar functions and the lack of a sense of community.

The proposal includes commercial and residential blocks. Each residential block consists of a courtyard for vehicle access and social interaction purposes. The site also incorporates retail and mixed uses for the blocks on the main road side. It is believed that, “the success of mixed use derives from the notion of creating a market of mutually complementary and supportive services and activities”90. The importance of mixed use buildings is proximity of local amenities, vibrant environments, less energy usage due to less car dependency and increasing security through increased human presence on the site.91 The hypothetical clients are mixed use infill developers who wish to engage with the Council. A reasonable profit is expected and favourable treatment from the Council will be gained in exchange for a project beneficial to the community. The following elaborate on the design stages of the urban intervention as indicated earlier.

3.1 Project chronological design development

3.1.1 Stage A: Site Context
At this stage a site analysis based on data obtained from Statistics New Zealand and observations were conducted and the following are the findings:

3.1.1.1 Site Context Analysis:
Henderson is an established Waitakere suburb. Within Henderson, Lincoln Road is one of the subcentric arteries. It is

84 Ibid., 111
86 Ibid.
87 English Partnership, The Housing Corporation, Urban Design Compendium, ’76.
88 Duany, Speck, and Lydon, The Smart Growth Manual, 11.5.
89 Ibid., 11.6
an area which has existing problems and community issues that have helped to form an interesting and challenging project.

Lincoln Road is located in the middle of an area naturally bound by creeks on the North, East and West sides. There are many factors that make the area interesting. The environment consists of economic, ecological and societal factors. The combination of activities present in the area are commercial, natural and residential.

3.1.1.1.2 Commercial
All commercial activities are on a linear base because of Lincoln Road’s linearity. Figure: 48. Lincoln Road is important because of the number of activities operating in the area. There are over 170 small to large sized businesses and activities that create revenue operating along Lincoln Road.

Figure: 49. The activities consist of commercial, industrial, business and retail, healthcare, education, hospitality, sport and recreation. However, the primary activity of the area is residential housing. The following figures indicate activities and their locations along Lincoln road.
Figure 50: Activities and facilities diagrams
Natural Observation shows the ecological highlight of the area is Henderson creek on the North, West and East sides of Lincoln Road. The creek is naturally rich with indigenous vegetation. It is enhanced with bridges and tracks and is maintained by Auckland City Council. These wetlands are home to many plants, animals and insect species. Based on the topography of the area, the creek represents not only an attraction, but also a sustainable system. It collects and retains storm water, and filters wastewater. **Figure: 52 & 53**

### 3.1.1.2.1 Residential Buildings:

The residential buildings are mainly single storey detached houses on large sections. Garages or carports are on the front of the road and sometimes service the subdivision at the rear of the section.

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3.1.1.2.2 Roads:

The primary characteristic of Lincoln Road, like any other suburb, is sprawl pattern. Sprawl pattern of suburbs does not allow sustainable population growth without destroying our natural resources.

Cul de sacs and poor connections encourage car dependency because there are no shortcuts to walk from one place to another. Also observation indicates Lincoln Road is a busy road because it is the main artery connecting many roads to Highway 16. It is visually unattractive and physically disarranged. This main artery is used also as a collector road for all the cul de sacs around Lincoln Road. This makes the road very busy in rush hours. The width of the road seems wider because of the setbacks and parking lots along the road and lack of higher building along the road gives a sense of openness, so the sense of place is lost. Figure: 54. More importantly the road suffers from a lack of proper vegetation and landscaping. Figure: 55

Based on observation, disarrangement of functions indicates unsustainable matters. The functions are scattered and confusing. There is no functional concentration to create an activity node for people to gather because of the linearity of Lincoln Road. This has impacts economically, physically and visually.

Diagram 56 indicates the linearity of Lincoln Road, how vehicular access has dominated and the necessity to pause or stop along Lincoln Road. Diagram 57 indicates that Lincoln Road can be rearranged based on equally distributed intervention along the road; this could give a reason for the vehicles to pause on a regular basis and act just like the intersection lights that regulate traffic when necessary.
Diagram 58 suggests a rearrangement of activities based on the hard edges of the existing activities where commercial and residential meet. This gives traffic a reason to stop based on current activities along the road.

Diagram 59 suggests a concentration of commercial activities along Lincoln Road on two recessed areas only for fewer stops. This has less impact on traffic flow. Each of these areas hosts a traditional commercial activity around a public place that can be walked to. This scheme will not provide for car parking. This may not reduce traffic flow but will help with the sense of community.

The overall observation indicates that the facilities and services available along Lincoln Road are useful and beneficial for the people in the area; at the same time there are problems that hinder it from becoming a place to live, work and enjoy. The following is a site analysis based on Statistics New Zealand data.
3.1.1.2 Site Context Analysis based on NZ Statistics data

Based on Statistics New Zealand boundary Mesh, Lincoln Road is divided up into three areas: Kingdale, Fairdene and Henderson North. Figure 1 shows the population and area for Lincoln Road. Figure: 60. Total population living in the three areas around Lincoln Road is 13,356.

Statistics New Zealand includes information about population, ethnic groups, income ranges, home ownership, family type, car ownership and density per hectare which can help this research to target groups of users and their needs. Statistics show 34% of the population is over 65 or under 15. This indicates the percentage of car-independent people who rely on public transport or family members for transportation.

Figure: 61 shows the percentage of the cultures and ethnicities in the area. Europeans are 48%, followed by 24% Asian, and 28% Maori, Pacific, Middle Eastern, Latin American, African and other ethnicities. This means that the majority of the population are European and Asian over other ethnicities.

![Cultural ethnicity](image)

Figure 61: Ethnicity

Statistics New Zealand shows that unemployment is 19.9% of the total population of the area, as a result 50% of people have low income. Figure: 62

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Figure 62: Income ranges

Figure 63: Home ownership

Figure 64: Family types

Figure 65: Car ownership

55%. This indicates over 45% of people require more affordable houses to rent or own.

According to Figure 64 on family type status, 45% of people are families of over 3 people and 32% are couples without children, while 23% are single parents with children. This indicates the higher need for 3 plus bedroom houses for larger families.
Figure: 65 indicates that 91% of people are car dependent and, based on their family type, they may own more than one car. Car ownership figures indicate that over 9% of people don’t own a car, over 41% have one car, over 15% have more than 3 cars, and 34% of households own 2 cars. The mentioned figures indicate a poor public transport system, as well as pollution.

### Density per Hectare

- **Kingdale**: 13 Dph - Number of dwellings 1,050
- **Fairdene**: 24 Dph - Number of dwellings 1,398
- **Henderson North**: 34 Dph - Number of dwellings 2,403

Based on this research calculation density per hectare in the three areas are as follows. Figure: 66 indicates the number of dwelling per hectare.

3.1.1.3 Site Analysis based on observation

The site selected for investigation for this project is located along Lincoln Road in the Fairdene area in Waitakere. As site analysis indicates the population density is increasing from North to South. Fairdene fabric is close to all amenities and facilities of Lincoln Road. The site is in the middle of Lincoln Road. The current total area of the site is 101,434 m² which consists of 20,941 m² residential, 40,174 m² commercial, 22,378 m² industrial, and 17,941 m² for car parking. Figure: 67
The existing site is ‘brownfield’ based on its current activities. The population density is 24 per hectare. The site is bound by four roads. Each side of the site has different characteristics, and this makes it complex, yet very interesting and diverse. The site is bound by Moselle Ave from North, with current commercial and industrial activities, Waipareira Ave, the creek from East, Woodford Ave with current residential and health related activities on the South side. Lincoln Road, the main artery, is located on the West Side of the site. Figure: 68 and Figure: 69

This observation and analysis helps determine an appropriate building type and function based on the need and in harmony with the existing functions. This indicates a connection between zones, rather than separating them, and the importance of transitional spaces within the site, and how the topography should be treated with regard to the context.

Observation and City Council documents show the topography is a gradual slope toward Moselle Ave and the creek. However, about two thirds of it is primarily flat from Lincoln Road. On the Eastern side, on Waipareira Ave, there is a sudden change in topography towards the creek. Figure: 70. The uneven topography indicates that the site cannot be treated as a whole. Therefore, this part of the project requires different treatment.
Nature can add to the value of the development if it can be carefully integrated with the development. Being in proximity to Henderson Creek on Waipareira Ave is an added bonus however it indicates that the walking and cycling track needs to be introduced to the residents of the area.

The track facilitates and encourages walking and cycling activities Figure 71, 72. There is an opportunity for an extension to the creek track so that this walking path can connect areas around the site to each other, encourage walking and become an attraction.
3.1.2 **Stage B: Site selection**

The reason for selecting this site is because it is located in the Fairdene area which has medium density. It has the potential to become denser as well as blending in subtly with the surroundings. The site is a 15 minute walk from all amenities and facilities along Lincoln Road. Based on its bordering context it is believed that this becomes a place that facilitates life, work and leisure, as well as attracting people and improving the economy of the area. The success of the site is likely to impact on the success of the entire Lincoln Road.

Also the site has been chosen for its characteristics, size, edge and location. The size of the site is one aspect that ensures intensification. The diverse edge quality of the site encourages multi-functioning, which adds to the quality, while still remaining financially viable. The location allows bonding with nature and is in an area that has the potential to improve and become an attraction.

3.1.3 **Stage C: Master Planning**

Master planning consists of several stages. The following are stages proposed for master planning:

- Block composition
- Block shape and sizes
- Block component: section and courtyards
- Pedestrian access
- Green belt
- Topography
- Housing typology

3.1.3.1 **Block composition:**

At this stage of the project, planning starts with a grid and block system. Alexander suggests the ‘piecemeal growth’ approach, as it creates an organic wholeness. This is how urban structures naturally develop over time. The smallest pieces are the houses that shape the places. Here blocks were used to form the plan. Blocks allow for arrangement of places and better connectivity. Blocks help planners foresee problems before getting into the detail of each building.

Planning for such a large site relates to function, appropriate scale and location. At this stage many compositions are tested based on different movements for the right sizes. Block size allows for densification and block locations allow for movement. Every composition created a different environment. Each attempt was aimed at achieving a solution for the existing issues and to foster affordability, diversity and a sense of community. The following are a few set of compositions that show the thinking process.

3.1.3.1.1 **Composition 1**

The first composition has an activity node in the middle. The central garden is based on New Urbanism ideology. However, the site iterations are grid based, inspired by Paris and the New York grid system because New Urbanism does not follow a grid. The following are a few examples of this composition.

Composition 1-1 was inspired by Odham Walk gardens and encourages walkability by

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eliminating car access from the central courtyard. This composition provides shops on the ground floor on Lincoln Road and Moselle Ave, and brings livelihood to the surrounding area.

Composition 1-2 was inspired by Paris with its diagonal grid and added a central garden. This scheme allows for a vibrant, European style streetscape with apartment blocks including shops and car parks on the ground floor, and landscaped corners.

Composition 1-3 was inspired by a New York grid layout with a central garden. This composition allows a central garden with narrow roads, dominated by front doors and garages. The rear gardens can only be accessed from the inside of each town house.

Composition 1-4 focuses on provision of public areas and a node of activity, along with landscaping and places to enjoy for both the site and neighbouring areas. The edge blocks provide shops around the central public area, and apartment blocks are accessed via the other three roads for car parking, services and entrances.

3.1.3.1.2 Composition 2
‘This composition is inspired by the New York grid system for easy circulation. In this composition the block configuration has been integrated with zones. The compositions examine block shapes and sizes, and different junctions of the internal roads with functions along the four roads. In all five configurations the internal roads are left perpendicular to Lincoln Road to allow a smooth movement into and out of the site. In the following blue represents residential and red commercial activities.

Composition 2-1 simply showed no interruption and similar sized blocks. Moselle Ave is a commercial road and Woodford Ave has the hospital and health services. Apart from the North and South sides of the site, Moselle Ave and Woodford Ave side the rest will allow an intensified residential function.

Composition 2-2 was an iteration of composition 2-1 with the T junction being an experiment of different rectangular blocks sizes.
It examines the number of parcels, access, circulation, safety and slow car movement on the site.

Composition 2-3 is an examination of different sized block shapes and roads with T junctions. There is a set of commercial blocks added at Waipareira Ave and Moselle Ave. Waipareira Ave is an industrial road and, so, this matches the current function of the two roads. This is about appropriateness of function along the road edge and places a series of blocks with similar functions in proximity to the residential blocks. Composition 2-4 is a reiteration with an attempt to separate residential from commercial blocks completely with an internal road and a different residential configuration.

Composition 2-5 is an iteration of the previous blocks with similar sized blocks and zoning. This will allow for bigger residential blocks with back to back housing and non-interrupted roads. The sizes and similarity create repetition all around the site and add a services alley to each block.

3.1.3.1.3 Composition 3
The zoning attention in Composition 3 has shifted from the road on the North and South to the West and East roads of the site. Here Lincoln Road and Waipareira Ave are tested for different zoning. The block sizes follow what is likely to be appropriate size and shapes.

Composition 3-1 is based on commercial blocks on Lincoln Road and Waipareira Ave to give a hard edge to the two sides of the site based on their function.

Composition 3-2 is an iteration of the previous composition, but examines a combination of mixed use blocks on Lincoln Road and commercial blocks on Waipareira Ave. The internal roads around the residential blocks are based on T junctions and help with separation of the two zones. The roads allow for interruption and slower traffic and a safer community.
3.1.3.1.4 Composition 4

The last composition tests the block configuration on a different basis. The first idea is a separation of zones and concentration of commercial activities on the North, ‘Moselle Ave’, and also a set of mix use blocks on the West side, ‘Lincoln Road’. It was important to create a soft edge between the commercial and residential zones which is a provision of a green belt ‘park’ between the two. Different block sizes and shapes are examined for road junctions in these compositions.

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Composition 4-1 tests irregular block sizes for densification and junctions for circulation and controlled movement. The focus is the blocks on Lincoln Road. Here edge blocks on Lincoln Road are mixed use with T junctions to slow traffic from Lincoln Road.

Composition 4-2 tests the larger blocks in the middle of the site for smoother traffic flow. The circulation around blocks on Waipareira Ave benefit from smaller blocks due to a sudden land slope on the East side.

Composition 4-3 is a reiteration of the preceding composition with reduction of blocks on Lincoln Road resulting in direct movement. This results in a less controlled circulation movement. Reduction of blocks will allow for larger blocks and less wastage due to more corners and enforce a different building typology to suit edge of Lincoln Road.

In composition 4-4 the focus was on reducing the blocks throughout the site for bigger blocks, resulting in busy roads as a result of back to back housing types.

Composition 4-5 is iterating the previous composition with respect to the topography due to the sudden slope on Waipareira Ave.
### 3.1.3.2 Block size and shape

At this stage decision is made based on small rectangular blocks. Rectangles are easy to work with and allow for densification and asymmetry. Block sizes were determined by a walkable distance that helps to reduce vehicles’ speed. The largest block is approximately 100 x 80 m. The next stage was the provision of routes, their widths and street car parking for maximum connectivity. **Figure: 91.** The inner site roads are designed to be narrower than the collector roads. They enforce slower movement and cater for shared areas. The width is a minimum 10 metres with provision for pedestrian access, landscaping and car access.

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### 3.1.3.3 Block components: sections & courtyards

This stage shows allocation of the sections, courtyards and identifying typologies, pedestrian paths, and green belt ‘activity node’ illustrations.

In this stage blocks were divided into sections. Sections form a cluster of houses around a courtyard that can form a small community. **Figure: 92.**

This idea is driven from combining perimeter block and back lane blocks to cater for community activities and multi functional, shared area. The only difference is that the courtyards can be shared by the public as well as the occupants. The semi-public areas allow for car and pedestrian access and refuse truck manoeuvrability.

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Each block is divided into a combination of section sizes. The section are between 160 m² to 300 m² with some larger sections of up to 960m². Courtyards are connected to each other to ensure route choices are promoted. Therefore, every block is connected to each other to support movement by all means.

Courtyards, designed to cater for a shared area for car access and pedestrians, provide a place for gathering and play at the rear of the properties. This shared area is designed to be partially landscaped for sitting and gathering purposes. The vehicle path is designed to be paved. Play area is carpeted with green, outdoor tennis court material to separate the playing area for safety reasons and to complement the landscaped area.

This layout hierarchically organizes spaces. It helps transition public areas to semi-public and then semi-private areas. The structure strengthens natural surveillance, it helps with the sense of belonging and improves the possibility for interaction.\footnote{Jan Gehl, Life between Buildings Using Public Space (New York Van Nostrand Reinhold, c1987), page 61.}

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure93.png}
\caption{Hierarchically organized space diagram}
\end{figure}

3.1.3.4 Pedestrian access

The grid system of this project connects each element of the site, and becomes a nodal connection for the adjacent context. "Pedestrian streets are potentially the vital spots of the community".\footnote{Alexander Christopher, Sara Ishikawa and Murray Silverstein, A Pattern Language Towns, Buildings, Construction (New York Oxford University Press, 1977), 164.} Suburban structures do not allow for walkability, and providing for pedestrian access requires consideration of road type and landscaping. Narrow roads with side parking facilities help to reduce automobile speed. Planting on the side of the roads create natural canopies that, not only shelter from the elements, but are pleasant and sustainable. More importantly, pedestrian access is designed with continuity and width to facilitate and encourage walking. It is very important to provide a pedestrian friendly access in this scheme for health, walkability and connectivity. This project has dedicated various widths of pedestrian access from 1 to 5 metres, plants for natural canopies to create pleasant environments and to reduce car speed, also to have minimal interruptions since vehicular access to most houses is from the courtyards.
3.1.3.5 Green Belt
The idea of connection between commercial and residential zones was to soften their edge. This idea led to a ‘Green Belt’. Figure: 94. This green belt acts as a buffer between commercial and residential blocks for a smoother and more desirable transition and, more importantly, is sustainable.

The green belt is a multi functional space. It is simply a park that has been inspired by One Tree Hill Park to cater as roads, open space, recreation and sustainable elements such as storm water and waste water collection, with disposal, after filtration, into the creek. Figure: 95 & 96.

Figure 94: Green belt allocation

Figure 95: One Tree Hill Park tracks for car and pedestrian access
For the recreation facilities a set of custom made gym equipment will be designed and will create an activity node in the park to encourage people to become involved. The outdoor gym was supported by the City Council in East Asian and Middle Eastern countries.98 The green belt concentrates public life and Alexander indicates "the weakness of the existing communities is because public life is spread thin, and has no impact on the communities".99 Also this park is another collector road with lower speeds to provide for more side parking areas. More importantly this park acts as a bridge to directly connect Lincoln Road to the creek. This idea could connect larger areas in the future.

Figure 96: Green belt connects the creek to Lincoln Road

Figure 97: Outdoor gym integrated with a park in Middle East

Figure 98: Gym equipments being used in Middle East


99 Alexander, Ishikawa and Silverstein, A Pattern Language, 164.
### 3.1.3.6 Topography

Working with the topography was important in order to design for different housing typologies. The site slopes towards the creek, but most of the site is flat as a result of development. The natural form of the site helps with natural drainage. The hindrance is mainly entrances and car parking. This project working with topography was favoured over any major excavation or land infill. It is believed that integrating the buildings into the topography will help buildings to blend in with the landscape smoothly. In this research a terraced housing typology is most suitable for the sloped part of the site because it complements the slope to maximize sunlight and gives better views.
3.1.3.7 Housing Typology

At this stage the most important element is to create a diverse community. Diversity has social, economical and physical aspects. Here diversity is about physical diversity and the different typologies, styles and house sizes, as well as a socially diverse community, which is more fertile and resilient.\(^{100}\)

Based on the diverse activities in Lincoln Road, there is a high potential to create a more socially and physically diverse community that will benefit the economy as well. Jacobs states that ‘diversity, the size, the density and congestion are our most precious economic assets’.\(^{101}\) Florida argues that ‘high densities of diverse human capital are what promote innovation and economic growth’.\(^{102}\)

Therefore, this project offers a variety of house types for renting or ownership to different socio-economic families, which facilitates a socially diverse community. It is believed that diverse communities are likely to happen if there are a variety of historical, economical, social, physical and locational factors.\(^ {103} \)

The building types are based on their contribution to the physical, social and population densities of the site. They consist of semi-detached, terraced, apartments and detached. This project supports only 3-5% of detached typologies, instead offering smaller, high quality, semi-detached or terraced houses for sustainability, affordability population density and energy efficiency purposes. The variety of section size facilitates diversity and intensity though scale and style. The chosen styles for this site are based on the need and appropriateness of style and context. Therefore, apartments, L-shaped courtyard houses, townhouses, terraced houses and a few family houses were chosen.

The apartments are designed for the edge of the road. They are mainly mixed use apartments and offer office spaces above retail outlets and residential above offices. Apartments allow for densification and mixed use and create a sense of space on Lincoln Road. In addition, mixed use apartments contribute to the edge effect. The combination of retail outlets on the road side with other activities in this intervention improves the zoning and encourages people to stay.\(^ {104} \)

The rest of the houses that are not on the main road are primarily semi detached 2 or 3 storey buildings. They are on smaller sections with a setback for landscaping and car access from the back. They contribute to the suburban community and represent their residential function.

3.1.4 Stage D: Road enhancement

City Council plans show that there is a proposal to widen Highway 16 and improve Lincoln Road. Figure: 101. Because of the relationship between the urban intervention and the road, this research included a proposal for road enhancement. The significance of a proposal for road enhancement is its positive impacts on the commercial and residential activities. It increases the value, as well as quality, of the commercial and residential along Lincoln Road. Therefore, this project proposes a boulevard, but is limited along the site because of the scale of Lincoln Road. The change to the road along the site includes provision of fast and slow lanes, for a safer and less congested

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100 Jacobs, The Death and Life of Great American Cities, 14.
101 Ibid, 219
103 Talen, Design for Diversity, 24.
104 Gehl, Life between Buildings, 151.
road, street parking as a tool to slow cars, plants and vegetation to buffer noise and sound as well as carbon dioxide reduction. It is hoped the changes will attract people for shopping and encourage them to walk and use the facilities on the site. Discovering and enjoying this urban intervention helps the intervention to become more popular than ordinary residential environments.

3.1.5 Stage E: The programme:
The following programme is hoped to achieve what is solely based on mathematical calculation of the latest block configuration and the number of section in each block.

3.1.5.1 Blocks
3.1.5.1.1 Number of blocks: 11 blocks
3.1.5.1.2 Size of blocks: 3 blocks of 70x90m² dedicated to commercial zoning and 8 blocks dedicated to residential zoning. The smallest residential blocks are 60x75m² and the largest is 100x120m. The rest of the blocks are 100x70-100x85m².
3.1.5.1.3 Function of blocks: Blocks are divided into 3 groups: commercial, residential and mixed use blocks.

3.1.5.2 Sections: There are about 15-24 sections in each block
3.1.5.2.1 Number of sections: The total number of section lots for the entire residential blocks are 156.
3.1.5.2.2 Section sizes: The section sizes vary. The smallest section is 160m² to 300m². However, the mixed use blocks contain sections as large as 960m² while 56 sections are 200m² or smaller.

3.1.5.3 Residential blocks
3.1.5.3.1 Building types: Building types are semi-detached, terraced and detached. Semi-detached types consist of apartments and twin houses. Terraced types consist of L-shapes, courtyard houses, duplexes and triplex houses with functional separations.
3.1.5.3.2 Number of rooms based on dwelling type:

<table>
<thead>
<tr>
<th></th>
<th>2 bedrooms</th>
<th>3 bedrooms</th>
<th>4 bedrooms</th>
<th>5+ bedrooms</th>
<th>Total dwellings</th>
</tr>
</thead>
<tbody>
<tr>
<td>semi-detached 2 to 3 storey</td>
<td>35</td>
<td>45</td>
<td>50</td>
<td>26</td>
<td>156</td>
</tr>
<tr>
<td>The mixed use apartments 4 storey above retail outlets</td>
<td>44</td>
<td>40</td>
<td>90</td>
<td></td>
<td>174</td>
</tr>
<tr>
<td>4 storey residential apartments above parking</td>
<td>24</td>
<td>16</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The total number of rooms and population on the whole site

<table>
<thead>
<tr>
<th>One bedroom</th>
<th>Two bedrooms</th>
<th>Three bedrooms</th>
<th>Four bedrooms</th>
<th>Five bedrooms</th>
<th>Total number of people</th>
</tr>
</thead>
<tbody>
<tr>
<td>44x1.5=66</td>
<td>99x2.5=247.5</td>
<td>151x4=604</td>
<td>50x5=250</td>
<td>26x6=156</td>
<td>1324</td>
</tr>
</tbody>
</table>

3.1.5.3 Number of Dwellings in total: 370

3.1.5.4 Building area footprint per square meters: Except for the mixed use sections, the building footprint is 60% of the section’s size. In this regard the building footprints are 96m², 120m² and 180m².

3.1.5.5 Density per hectare: 81 DPH
The gross residential area is 68,686m² including the area roads at 9,102 m² and courtyards 14,238 m². The net residential area is 45,346m² which is equal to 4.53 hectares.
Number of people per dwelling: 1323.5/ 370= 3.57
Number of people per hectare: 1323.5/ 4.53= 292.16

3.1.5.6 Unit area per square meters: This area dedicates 40m² per person. Based on area per person the following are the ranges of areas dedicated to each type.
One bedroom range is between 50-65m²
Two bedroom range is between 85-100m²
Three bedroom range is between 110-130m²
Four bedroom ranges is between 140-180m²
3.1.5.4 *Businesses*

3.1.5.4.1 *Retail outlets:* There are 50 retail outlets along Lincoln Road in total. The ranges of unit areas are between 40m$^2$ to 100m$^2$.

3.1.5.4.2 *Offices:* There are 32 unit offices provided in the mixed use apartments. The offices are about 100-150m$^2$ with possibility for divisions.

3.1.5.5 *Road design*

3.1.5.5.1 *Types of Roads:* The roads have been designed to be shared by cars, cyclists, pedestrians and, more importantly, children.

3.1.5.5.2 *Width of the roads:* Width of the roads varies in the site. However, the widest caters for 2 lanes and side car parks, and landscaping and pedestrian access which is 15m. The narrowest road is 10m wide allowing a one side car park only.

3.1.5.5.3 *Surface materials:* The multi-function roads are proposed to be paved with City Council permeable pavers. This project encourages roads to be shared amongst different activities, so leveling the road is to suit the purpose of natural drainage and is highly supported.

3.1.5.5.4 *Car parking provision:* This project encourages walkability, so minimum car parking is supported. In this scheme 0.5% of car parks are considered per person. This calculation does not apply to apartments. Also more cars can be parked at the rear within each section.

3.1.5.5.5 *Street car parking:* Street parking is encouraged. Therefore, a minimum of 60 car parks is designed along the roads in the site. This will also help to reduce speed. Additionally more car parks are available in the courtyard for guests or visitors, but have not been added in this calculation.

3.1.5.5.6 *Number of street car parks:* The minimum number of street car parking is approximately 60, except for the courtyard car parks.

3.1.5.5.7 *Number of private car parks:* For the entire site there are a total of 740 private car parks, 380 of them belong to the houses, 160 for mixed use apartments and 200 for residential apartments.
4 Design outcome:
The design outcomes consist of buildings, courtyards, roads and landscaping, forming a new, higher density neighbourhood on Lincoln Road between the Henderson town centre and the North-Western motorway. Buildings are divided into three groups: mixed use, residential or commercial only buildings. At this stage, because of the scale of the project, the design outcome for only one of the mixed use blocks will be elaborated upon.

4.1 The buildings
Design elements considered in the buildings are building type, orientation and solution for security and privacy, also material, structure and façade design.

4.1.1 Building types
The mixed use apartments are office apartment. They are East-West facing and located on the edge of the main road. On the ground floor retail outlets cater for commercial activities from the main road, while the back of the building provides access to the car parks, minimizing interruption for pedestrians. Two floors are dedicated to offices directly above retail outlets, while the top two floors function as residential apartments. The top two floors have access to elevators. This will separate the occupants from the other users of the building. On the top floors a few penthouse apartments have access to the roof garden and a view of the park, creek and Waitakere Ranges.

At the rear of the retail above the car park there are 3 storey apartments designed for residential use only which are a comfortable distance from the offices. The occupants of the first floor have the advantages of the roof garden as a result of the level difference between the front of the building and the back. The level difference provides privacy and minimum viewing. However, the design solution is that day and night activities face each other to provide privacy. The ‘intensive planting’ on the roof of the car park on the first floor will enhance privacy and is a sustainable trend.

The rest of the buildings in the same block are 2 and 3 storey residential buildings. Some are North–East facing and the others East-West. Half of these buildings are L-shaped courtyard types. L-shaped buildings cater for larger families and contribute to privacy and security. They can capture the most light because of their shape and are very energy efficient if terraced. This project does not encourage traditional architecture; therefore, a modern but sustainable house that has high quality and can contribute to diversity is promoted. These houses are 2 and 3 bedroom houses with separation between day and night functions.

The other buildings in the same block are 2 storey terraced houses. They have smaller sections with rear car access. Their orientation is North-South. All the mentioned buildings with the exception of the apartments are raised for privacy and security reasons.

4.1.2 Materials
In this project local material is encouraged. However, success is dependent upon being open to more sustainable materials that are introduced to the world. The majority of the 2 to 3 storey houses are proposed to be built using NZ timber as the main material for façades and interiors; however, the frames will be
steel. Steel framing is lighter, more durable and precise. It also resists seismic activities better than timber. The structure of mixed use apartments on the Lincoln Road edge are considered to be concrete and steel. This is an ideal material for such scale because of its durability, strengths and low maintenance. In addition, the advantages are minimised noise and heat transfer.

4.1.3 Façade design
The façade design along Lincoln Road is important because this urban intervention is visible from a distance because of its scale and its proximity to the road. Here staircases are designed as separate entities for diversity and performance. The chosen façade is curtain wall for aesthetics and functional reason to express stairwells and presence of entry points to each building.

The façade design of this urban intervention is significant on Lincoln Road. This building is designed to represent itself as an urban pocket, to clearly communicate its function. Therefore, choice of material is concrete and glass for commercial and timber for residential.

4.2 The courtyards
Courtyards are very important elements of this project. They physically and psychologically enhance social relationships, as is evidenced by the daily habits of people who live within a comfortable proximity of each other. The significant aspect is the size of this courtyard. Small courtyards create conflicts and large courtyards have no sense of place. The right size with the right ingredients is the key. The mentioned courtyard creates a semi-public area. It is the transitional space between the public and private. This cocooning position adds to privacy and security of the community. It caters for car and pedestrian access, gatherings, a children’s playground and extra car parking for guests. The courtyards will give the occupants a centre to congregate within, and a sense of belonging, which contribute to community activities. This facilitates and brings people together, creating a safe place to stay and enjoy. The facilities in the courtyards encourage people to get involved, so they get to know each other.

The buildings are designed with low fences, so visual contacts are enhanced. This provides voluntary surveillance. For aesthetic reasons the flooring materials are carefully selected to define the functions. The landscaped areas are located to interrupt direct movement and enhance involvement. The selection of green carpet (tennis court flooring material), plants and vegetation are visual enhancements which are practical. Instead of grass that requires constant maintenance; green carpets have almost no maintenance requirements. It is soft and durable. Their colour also indicates no vehicular path without need for signage.

4.3 The road and landscape
This project encourages the internal roads to be shared for different uses so they are safe to park the car on, to walk along and let children play on. In this respect landscaped areas, children’s playing areas and allocation of car park is to help control the speed of the vehicles.
The paved roads with no curb or barrier indicate the existence of common or shared areas. Planting in places that create interruptions will reduce the speed limit. Landscaping instead of speed bumps is pleasing and sustainable. Street car parks have the same effect in speed reduction and it is encouraged in this project. Things like a basketball hoop along the roads will indicate playing takes place in shared areas, so drivers are obliged to slow and pass with care.

Landscaping is the most significant aspect of this project. It is mainly used as a tool to buffer disturbance, to soften the transition, to indicate functional changes, to enhance visual aesthetics and for sustainability. Landscaping is more effective when it is large and concentrated such as parks and natural tracks. Apart from the landscaped areas in the courtyards, the green belt will make a huge difference in the use of this urban intervention because of its multi-functionality and its concentration.

4.4 Analyzing the feasibility of solutions

It is important to check if this project has answered the research questions. This design provides for variety and intensification of housing types and scale to address affordability, density and diversity. Attaching the houses around a central courtyard is not only catering for intensification, but it also aims at more efficient housing and making places for gathering. Additionally the sprawl pattern is reduced while connectivity is increased.

The house type effectively promotes affordability and density. On the edge of Lincoln Road these issues are addressed by 5 storey apartments. The edge requires a building type that can respond to the contextual issues such as noise pollution, function, and a step up in building scale. This scale is not compromising the context as it is only responding to issues related to the edge. The existing suburban buildings are compromised by the road but are not adding any value to the main functions of Lincoln Road.

This project has created a transitional space to soften the edge between commercial and residential activities by the introduction of landscaping and to do this nature has the best patterns.

The most significant issue in suburbia is the lack of a sense of community. To achieve this goal this project has dedicated places for social life and the gatherings of smaller communities. The physical environment can impact positively upon the social realm, in a reverse process to the negative way that the sprawl pattern has discouraged a sense of community.
Design questions and solutions

Two principal questions that have emerged from this analysis are:

- How does the urban context contribute to densification? How can densification benefit affordability?
  An urban context is a very effective way of densification because it provides a smaller footprint, whilst allowing for vertical growth. However, planning for affordability within intensification developments must not compromise the quality of the development.

- Does the principle of urban intervention have a universal application?
  An urban intervention on this scale is an effective way of developing solutions for renewal programmes that propose intensification. The existing context can be gradually rehabilitated. An urban intervention is a good solution in that its principles can be easily applied to similar contexts.

Principles

The following principles were found to be helpful and hopefully they can support similar projects elsewhere.

- To change the suburban pattern designing for intensification and densification, diversity, affordability and, more importantly, communities should be prioritized.
- To carefully design for sustainability: low-energy consumption, adaptable houses and sustainability can be achieved through conservation and re-use for future generations.
- To create communities is to physically design for social integration from which a sense of community will happen gradually.
- These principles respond to the suburban issue in conjunction with each other and are inevitably interwoven.
- Learning from existing patterns of development can help in achieving a better result with intensified suburban renewal when the scale of community is reduced to provide for social integration.
- Ultimately, learning from existing development can help achieve a better result.
5 Conclusion

5.1 The summary and appraisal of finished work
The result of this research and this project is an architectural design which is experimental in the way that it responds to all issues. Every stage was challenging, every aspect of each element required testing for results that would offer an architectural solution. Each solution was not sufficient by itself: to be successful it was necessary to combine elements for the purposes identified in the project’s analysis. The challenge was to constantly test for possibilities of integration and to find the best outcome. A complete solution is an urban intervention that can provide an urban context in a suburban fabric, and can also create communities. While the intention of an urban environment is to encourage density, affordability, diversity and sustainability, this project shows that above all it can create a sense of community. The occupants and future generations will be able to embrace and support this architecture and a revived urban ecology on their own terms.

In conclusion it is important to revisit the original context of this project, the potential highlights of Lincoln Road as a result of this project, and, finally, discuss the impact on the future intensification of Lincoln Road.

The site is located on Lincoln Road, in the suburb of Henderson along Woodford Ave, Moselle Ave and Waipareira Ave. This site was chosen for its low population density, a combination of commercial and residential functions in proximity of each other and its proximity to current developments. The solution examined was to reconsider low population density, unaffordable housing, and community issues as an urban intervention. This urban intervention will increase the potential of Lincoln Road because it has a combination of facilities which are a range of residential housing situated around a courtyard with offices and shops in proximity.

Prominent features of this environment are the variety of different sizes and types of houses and apartments that would provide affordability in proximity to offices and shops, and that would facilitate a work-live environment. Multi-storey apartments on the edge of Lincoln Road will give Lincoln Road a sense of place. The courtyards are designed to initiate the sense of community as well as providing a common area.

The resulting development will enhance the quality of further intensification of Lincoln Road. This project will have a pioneering impact on how the rest of an intensified Lincoln Road will be developed in future. This project can increase the population density up to three times the current density and with further concentration of commercial and residential activities possible in future extensions of intensification. These characteristics can add different ethnicities with varied socio-economic statuses to create a diverse place. The rearrangement of commercial activity is vital for the varied businesses to thrive. In addition it would help make Lincoln Road an attractive and dynamic place for its work-live and socially lively environment.
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Hard edges that separate the dissimilar functions are shown as below
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Exploded Axonometric
View of the court yard
From the balcony looking at the court yard
Over view of the apartments and the court yard
Roof garden above the car park