



WELLINGTON

OUTER SUBURBS ASSESSMENT & EVALUATION

PREPARED BY

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FOR

WELLINGTON CITY COUNCIL



REVISION HISTORY

Revision	Prepared By	Description	Date
1	Craig Pocock	Draft for Review	03 . 12 . 2019
2	Craig Pocock	Draft for Review	21 . 02 . 2020
3	Craig Pocock	Final Document	03 . 03 . 2020

ACKNOWLEDGEMENTS

Beca Ltd. and Studio Pacific Architecture Ltd. want to acknowledge the collaborative process and WCC teams that supported the development of this study.

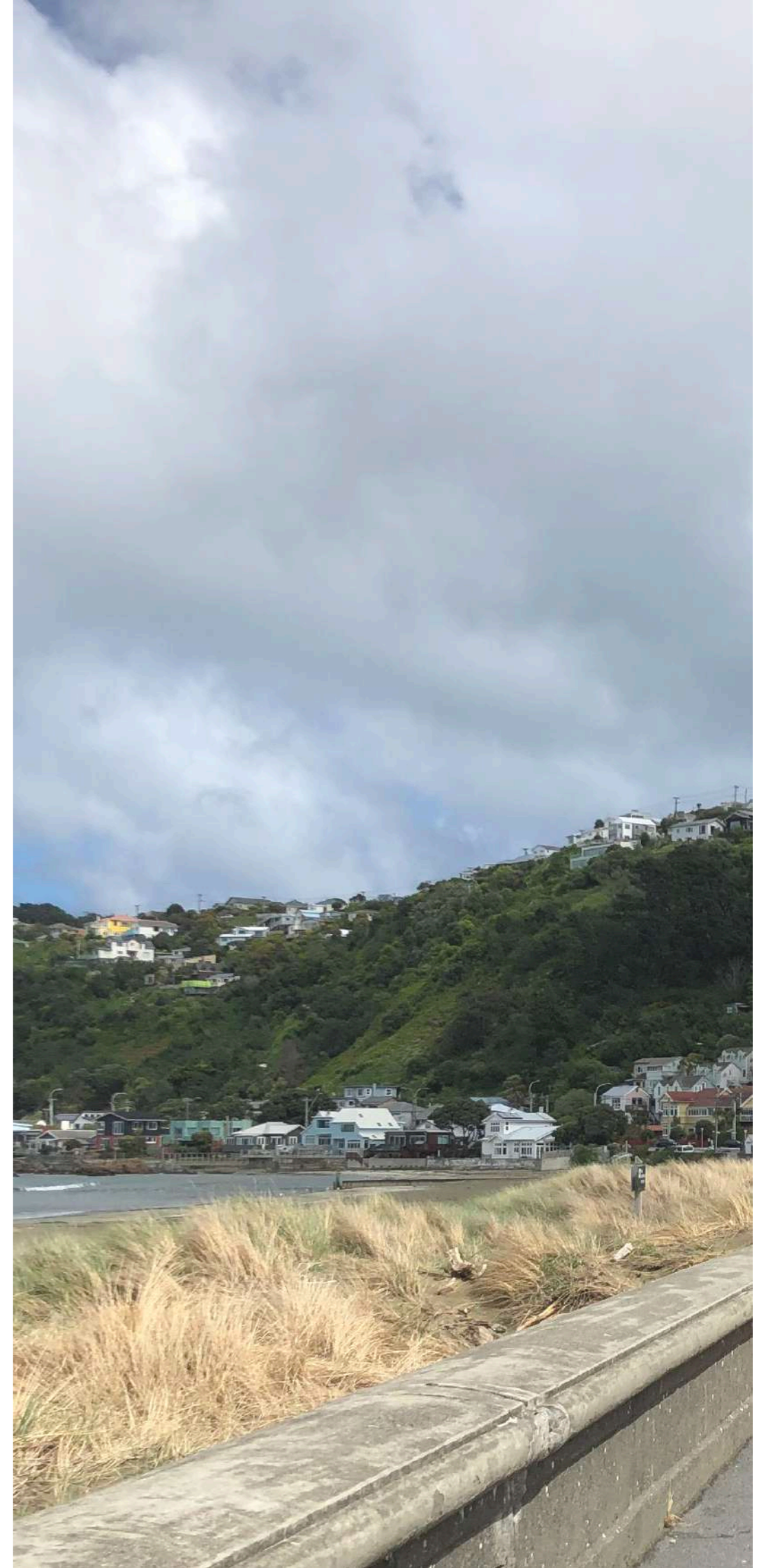
- Open Space & Recreation Planning
- Open Space & Spec Parks
- Resilience - Sustainability
- City Engineer Team
- Transport Planning
- Networks - Transport Engineering & Operations
- Heritage
- Place Planning
- Urban Design

Special thanks to the Council's Project Leadership team Kate Pascall, Marsha Badon, Gerald Blunt.

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CONTENTS

EXECUTIVE SUMMARY 4

INTRODUCTION

METHODOLOGY 14
DENSITY ENABLERS 18
ESTIMATING THEORETICAL YIELD 20
MEDIUM DENSITY CATEGORIES 21
ARCHITECTURAL CATEGORIES 21

ASSESSMENT OF SUBURBS

SITE MAP 29

SUBURB ASSESSMENT

TAWA 31
CHURTON PARK 37
JOHNSONVILLE 43
NEWLANDS 49
KHANDALLAH 55
NGAIO 65
CROFTON DOWNS 75
KARORI 81
KELBURN 87
BROOKLYN 97
HATAITAI 103
KILBIRNIE 109
LYALL BAY 115
ISLAND BAY 121
MIRAMAR 131

SUMMARY

DENSITY SUMMARY 139



EXECUTIVE SUMMARY

PURPOSE OF THE STUDY

In the next 30 years Wellington will be home to 50,000 to 80,000 more people. Wellington City Council's Planning for Growth Project is well underway in investigating potential growth scenarios and engaging with the community to consider where and how we live. This work will inform the development of a new Spatial Plan for Wellington City and the District Plan review process, planned to commence 2020.

Early public feedback has shown that people want to live in communities that are safe from earthquakes and rising sea-levels, in a city that is green, compact, inclusive, and vibrant. Council's early growth scenario work and public engagement has confirmed a clear preference for a growth pattern that focuses on intensifying the inner city and existing suburbs rather than new greenfield development.

The Outer Suburbs of Wellington provide an opportunity to grow the type of communities that people want to live in – compact; inclusive and connected; greener; resilient; vibrant and prosperous. Each of these suburbs is unique, with its own history and character and special opportunities and challenges for growth. This becomes obvious when you start to compare and contrast the suburbs of Tawa; Kelburn; Miramar and Lyall Bay for example.

The purpose of this study is to progress the early growth scenario work and further investigate 15 of the Outer Suburbs and their potential for growth. The study has three key parts:

- 1. Assess Local Context:** A refreshed look at the special character of each suburb, with a focus on landscape; urban design; architecture and heritage;
- 2. Evaluate Growth Potential:** An assessment of the potential for growth across the suburb. It focusses on the key amenity features that are known to help enable growth – for example the vibrancy of the suburban centre; location of supermarkets and community facilities; high frequency public transport and open space amenity; and location of schools. It also considers hazards as potential constraints for growth. A 'heat map' of the amenity and hazards for each suburb is produced to visually show constraints and opportunities for growth; and
- 3. Medium Density Opportunities:** A proposed density map is produced for each suburb showing where intensification might best be located and the building types that could be appropriate.

This assessment remains at a relatively high-level and is the next step at helping to ground-truth the earlier growth scenario work for the Outer Suburbs. This Report will be used to help inform the next stage of community engagement. For the Outer Suburbs, Council will seek feedback on the special character of each suburb – how should the character of each suburb be managed and what are the opportunities for change and future-thinking?

Similarly, for planning for growth – are the areas presented for growth in this Report appropriate? Are the types of buildings presented in this report appropriate? What are the ambitions of property owners and developers for housing diversity and the future of the Outer Suburbs



SUMMARY OF FINDINGS

To identify the suburbs best suited to take additional increase in population, conventional wisdom would be to identify flat land with a wide and accessible street network, close to a range of employment opportunities with existing infrastructure capacity to provide service to a growing population.

Wellington has those suburbs in locations like Miramar, Lyall Bay and Kilbirnie – and Council is currently looking at investment into these areas to provide connectivity for growth. However, the best land is also often constrained by significant hazards layers such as flooding and sea level rise.

Wellington does have suburbs that are significantly less constrained by hazards, such as Tawa and Johnsonville, however they tend to be located further away from the city centre.

The map on page 5 presents an overview summary of how the suburbs are suited for growth. There are some clear themes emerging for further consideration in terms of proximity to the city centre, planning for hazards and infrastructure planning.

Collectively, these outer suburbs can provide about 14,816 dwelling units over the next 30 years (or about 40% of the 80,000 people that have been identified as being needed). This study identifies proposed medium density housing locations, typologies and total numbers of units for each suburb based on the suburb's ability to supply the necessary community amenity, transport and infrastructure, while not undermining each suburb's existing special character values. The study does not include assessment of viability or detailed assessment of realisable development potential.

There is no guarantee that the private market is going to deliver this number of additional dwellings across these suburbs. Most additional housing units are likely to be provided by home owners developing infill developments across many properties. Most higher density units 4+ storeys and mix-use units are more likely to be delivered by professional developers who will be seeking the right financial return.

To factor in this lack of guaranteed uptake of medium density development, the total unit numbers per suburb has applied an "uptake level" that recognises that not all sections within each of the identified category zones is going to deliver the maximum amount of density. The possible range of "uptake level" ranges from 29% to 8% depending on how difficult it is considered to deliver that type of density (for example infill is easier to deliver than a 6-storey apartment building.)

There is no guarantee that the suburbs that make the most sense to develop medium density will do it in the order that is preferred - making it harder to plan transport and water infrastructure investment. However, some suburbs can have the additional infrastructure applied incrementally and generally at a lower cost. They may become the logical places to invest earlier even if they are not the closest suburbs to the city centre such as Tawa and Johnsonville. It would make sense to work with developers and council staff to try and predict the possible staged delivery of medium density per neighbourhood to help inform the staging of infrastructure investment.

OVERVIEW OF SUBURBS

TAWA, KHANDALLAH & JOHNSONVILLE
 Has relatively flat, free draining land with good access to railway stations and important arterial road connections. There is good commercial activity, community centres and some local employment opportunity. These well-connected suburbs with open space networks could be key locations for medium density development - even though they are further out of Wellington's central city. Porirua to the north also provides another relatively close city centre.

NGAIO & CROFTON DOWNS
 Well connected to public transport and close to the employment and amenity of the central city - but have little employment or community amenity to a scale that would encourage medium density growth.

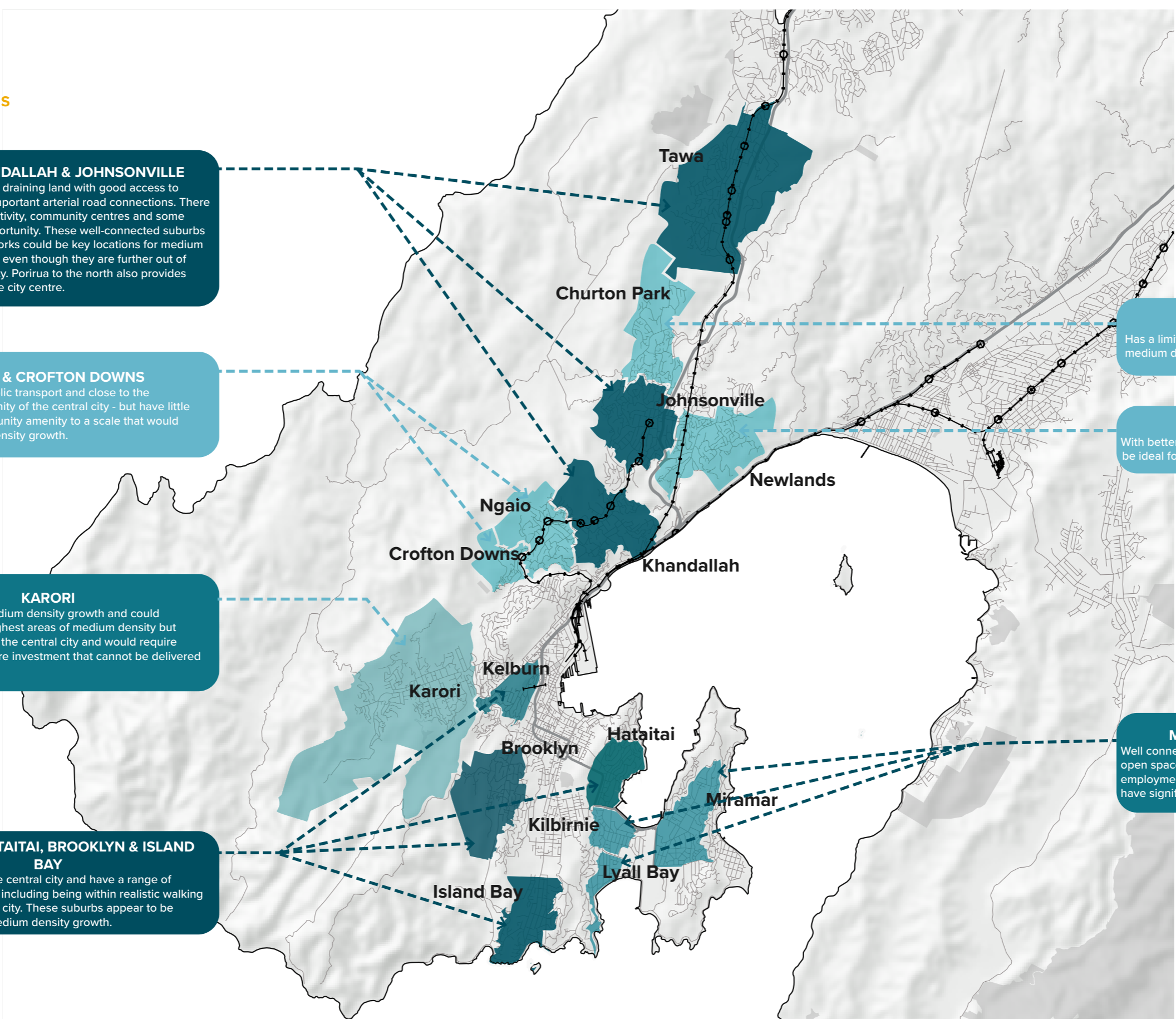
KARORI
 Would be ideal for medium density growth and could supply some of the highest areas of medium density but is poorly connected in the central city and would require significant infrastructure investment that cannot be delivered incrementally.

KELBURN, HATAITAI, BROOKLYN & ISLAND BAY
 These are closer to the central city and have a range of transportation options including being within realistic walking distance to the central city. These suburbs appear to be excellent areas for medium density growth.

CHURTON PARK
 Has a limited commercial centre and accessibility to support medium density.

NEWLANDS
 With better connections into the central city Newlands would be ideal for medium density growth.

MIRAMAR, KILBIRNIE & LYALL BAY
 Well connected with a high level of public transport service, open space and community and retail amenity with access to employment. These suburbs are ideal for medium density but have significant natural hazards.



Legend	
Level of Quality & Service	Scoring
Strong	Dark Teal
Good	Medium Teal
Weak	Light Teal

ANALYSIS OF DENSITY ENABLERS

Suburbs	Primary Enablers					Secondary Enablers			Tertiary Enablers		
	Centres	Rail Station	Supermarket	Arterial with High Frequency Transit	Proximity to City Centre	Community Hub and Facilities	Significant Open Space Asset	Employment Centres	High Schools	Primary and/or Intermediate Schools	Bus Network
	Score	Score	Score	Score	Score	Score	Score	Score	Score	Score	
Johnsonville	Strong	Strong	Strong	Strong	Average	Strong	Strong	Strong	Strong	Strong	Strong
Kilbirnie	Strong	Very Weak	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Tawa	Strong	Strong	Strong	Average	Average	Strong	Average	Strong	Strong	Strong	Strong
Khandallah	Strong	Strong	Strong	Average	Average	Average	Average	Average	Average	Strong	Strong
Island Bay	Strong	Average	Strong	Strong	Strong	Strong	Strong	Average	Strong	Strong	Strong
Kelburn	Strong	Average	Strong	Strong	Strong	Average	Strong	Strong	Average	Strong	Strong
Miramar	Strong	Average	Strong	Strong	Average	Strong	Average	Strong	Average	Strong	Strong
Lyall Bay	Strong	Average	Strong	Strong	Average	Average	Strong	Average	Strong	Strong	Strong
Hataitai	Strong	Average	Strong	Strong	Strong	Average	Strong	Average	Strong	Strong	Strong
Brooklyn	Strong	Average	Strong	Strong	Average	Strong	Strong	Average	Strong	Strong	Strong
Karori	Strong	Average	Strong	Strong	Average	Strong	Strong	Average	Strong	Strong	Strong
Ngaio	Strong	Strong	Average	Average	Average	Average	Average	Average	Strong	Strong	Strong
Crofton Downs	Strong	Strong	Strong	Average	Average	Average	Average	Average	Average	Strong	Average
Newlands	Strong	Average	Strong	Average	Average	Strong	Strong	Average	Strong	Strong	Strong
Churton Park	Strong	Average	Strong	Average	Average	Average	Average	Average	Average	Strong	Strong

MEDIUM DENSITY ENABLERS

The above matrix was developed to help the project team assess key features of a suburb that might enable and encourage density. The enablers of growth were selected based on best practice principles and sorted into whether they were primary, secondary or tertiary enablers. The more a neighbourhood scored in the primary enablers the better. However, it also recognised that the suburb that might not score too highly in the primary enablers, but had a strong score in the secondary enablers, may still provide the right amount of service to encourage medium density to develop

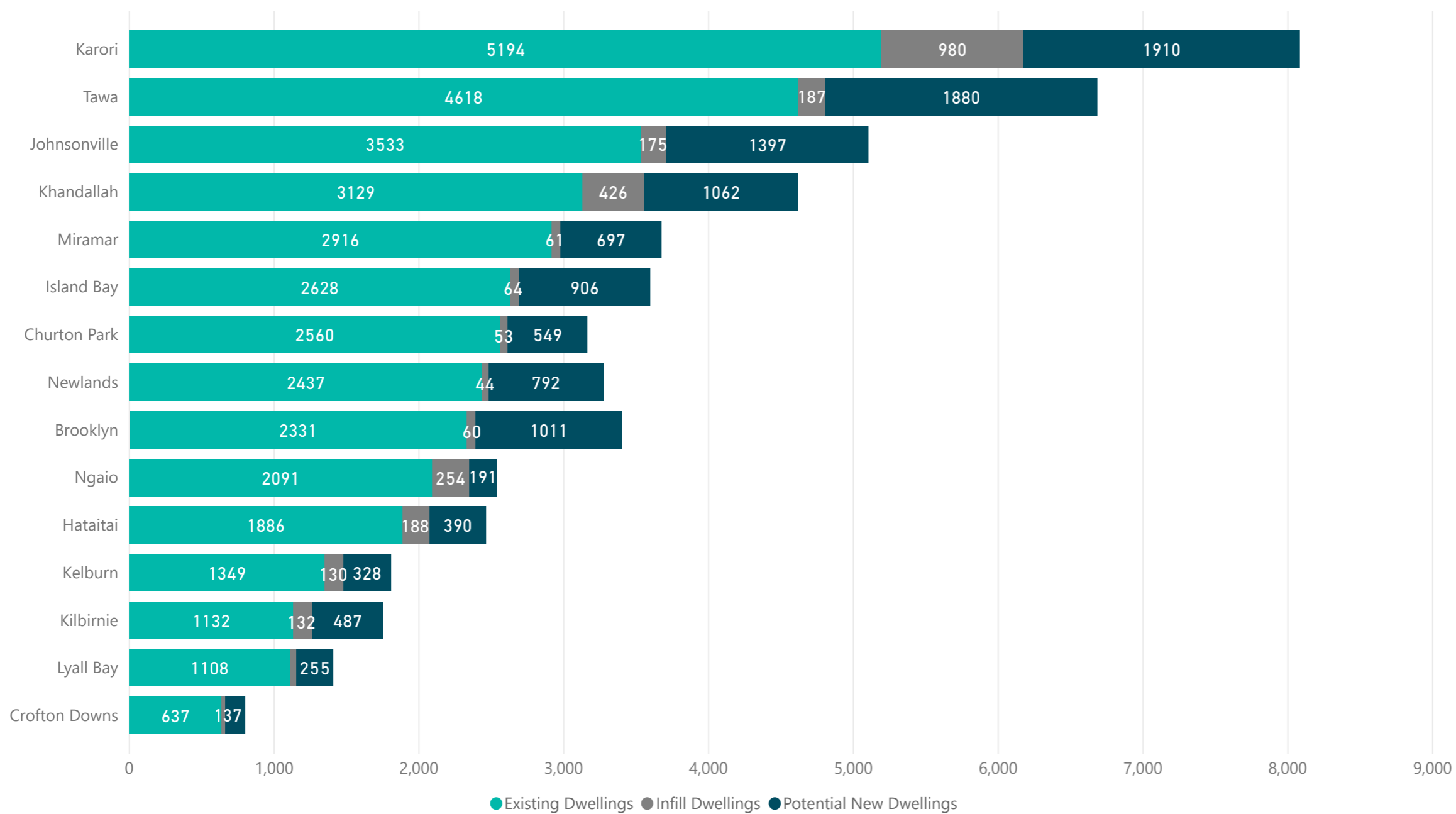
Each suburb line of the matrix was filled out as the project team reviewed their site visit notes and background reports. As the team filled out the matrix it highlighted the suburb's ability to support medium density growth. The team then mapped out the locations for each of the enablers which created a "heat map" which informed

the decision on where the different types of density should be located.

Each of the enablers were given a value based on whether it is a primary, secondary or tertiary enabler and how strong each enabler value was per suburb. These scores were added up across all 15 suburbs and ordered - from top being the highest value suburbs to the least likely to support medium density at the bottom. This matrix was simply used as a tool to help understand, contrast and compare the suburbs.

Further information on methodology and enabler values are explained in greater detail from page 8.

Legend	
Level of Quality & Service	Scoring
Strong	Strong
Good	Strong
Average	Average
Weak	Weak
Very Weak	Very Weak



DWELLING GROWTH BY SUBURB

The earlier growth scenario work suggested about 40,000 people could be accommodated within these 15 suburban centres. This study has assessed the merits of each suburb in more detail and calculated that these 15 suburbs can accommodate about 32,595 people.

MANAGING CHANGE

Integrating medium density in Wellington's existing suburbs supports further investment in the infrastructure in these existing communities. Whether it be transport or open space, it allows people to live closer to the city centre where they work and play and it gains value of the existing sense of community and place.

However, there are also potential negative impacts to integrating medium density into existing suburbs which may need mitigating through investment, new policies and possible planning and design standards. These impacts could, be but not limited, to loss of suburb character, loss of landscape character, loss of heritage buildings and pressure on street parking and open space. It is important to note that there is a level of protection built into existing council policies to protect landscape and built heritage and public space, however it is important to identify important suburb and community values to protect, enhance values or mitigate impacts.

The change from existing housing typology to medium density typology is likely to happen over decades. The uptake from existing housing to medium density housing is likely to only happen over a small percentage of total suburb area, maybe between 30-35% depending on factors like land values, topography and age of existing housing stock. We assume that medium density will not happen at the same speed across all suburbs.

However, even if you consider the likely slow speed of change and the fact that it is not likely to be a significant portion of the existing housing stock that will change, we still have to plan for the possible impacts of that change and invest and mitigate as appropriate. This investment might include water supplies, street network upgrades, public transport, schools and open space and is likely to be included integrated strategies across a range of government stakeholders.

The issues that require mitigation, such as the potential loss of community character, is complex, it requires identifying a range of values from landscape views and vegetation to both public and private built forms.

A suburb's character is always changing with or without medium density housing being applied. The Island Bay of 1920 is not the same as the Island Bay of 1960 or 2020. As you will see from the bare slopes of early Island Bay photographs this cultural landscape went from what was likely a coastal forest environment to almost completely denuded slopes as the community started to build houses early in the century. By mid-century there was a high portion of single-storey residential houses with significant English style landscapes with feature trees and amenity planting. Island Bay in 2020 is made up of a range of housing types and landscapes. The suburb character of Island Bay is dynamic but not dissimilar to many of the other suburbs studied. Tawa or Ngaio may have different reasons for the community to have developed in their locations but the significant change on the natural landscape and then the ongoing suburban character changes over the decades is consistent like Island Bay, these suburbs are always changing. If

suburban characters are always changing the question becomes more about what the sense of place is that the community values and then how those values can be protected and enhanced over time. For example, if the core character values in Island Bay are around protecting and enhancing the strong gateway character of The Parade and the relationship of the community to the coastal environment then that would influence Medium Density housing zones, policies and guidelines in those areas.

The Process for understanding character

The character for each of the fifteen suburbs is summarized at the front section of each of the suburb sections and then a general mitigation strategy to be considered is outlined in the "Possible Medium Density Mitigation Strategies" section.

Four suburbs (Khandallah, Ngaio, Kelburn and Island Bay) had additional consideration of suburb character after site visits identified issues of unique character that need further consideration. The team did additional character assessment on those four suburbs and have suggested possible mitigation options outlined in each suburb section.

These suggested mitigation strategies create a starting point for discussions with communities and it is imagined that they will be developed further as consultation occurs. The same could be said for the investment strategies for such matters as public open space, public transportation, street trees, cycleways, libraries and community facilities and schools.

The team did a range of site visits over the course of six months to write the character assessments and referenced existing community character documents such as the 2008 Wellington City Urban Character Assessment.



Figure 1



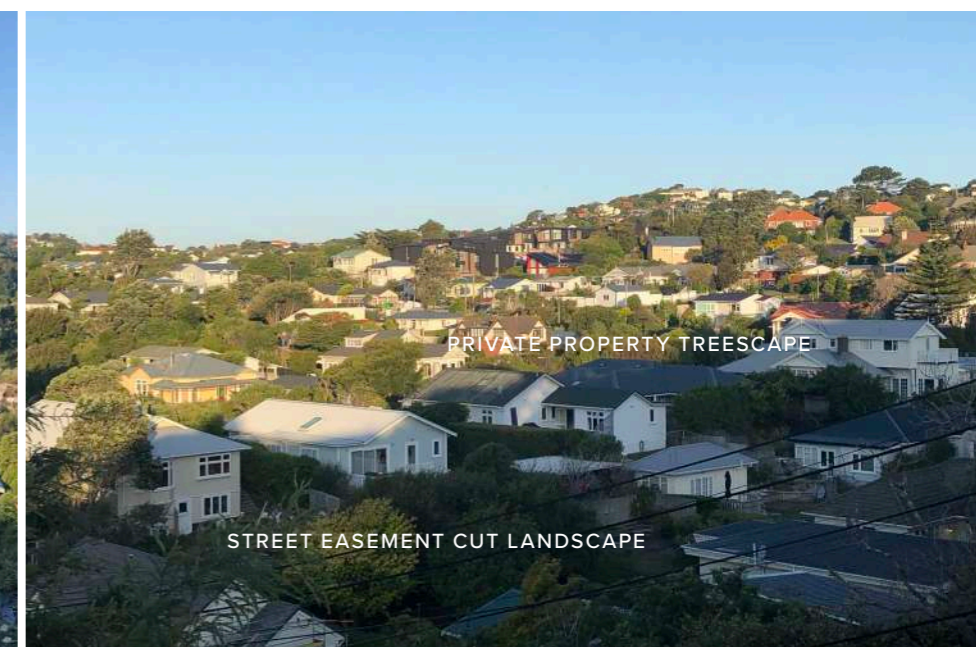
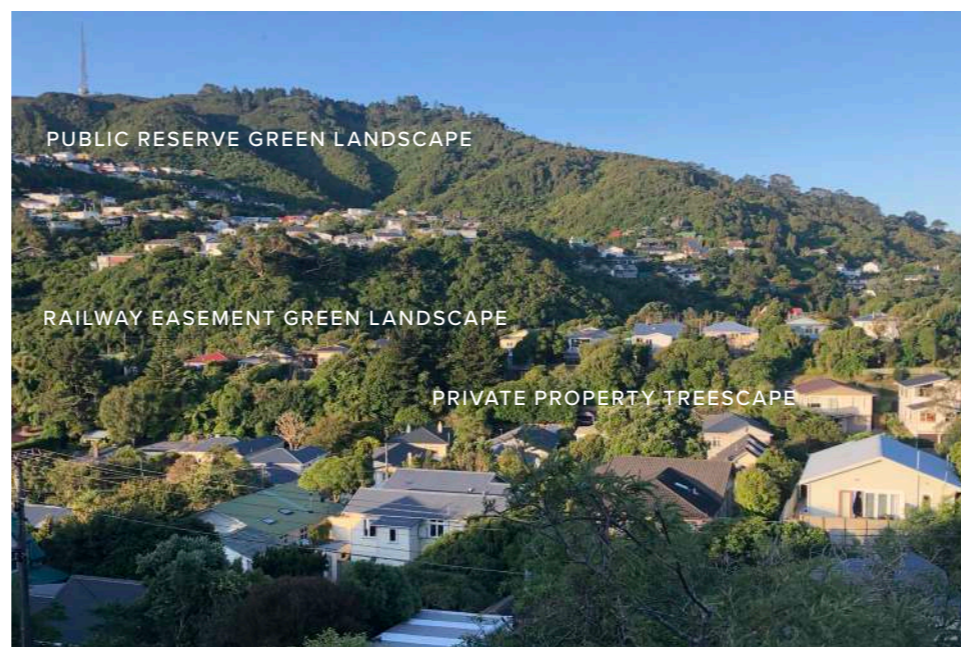
THE GREEN CHARACTER OF WELLINGTON'S OUTER NEIGHBOURHOODS

There are some character values that are typical of Wellington outer neighbourhoods. Wellington's rolling landscape of valleys, hills and coastal escarpments create a high degree of green landscape viewed from most houses and from the public realm, road and rail corridors. This green "outlook" that the public experience from their homes, parks and on transport routes each day helps to reinforced the green landscape character experience of Wellington.

This green character is created by a number of landscape values such as the significant number of mature trees, bush on slopes that were too steep to easily develop, trees and bush on road easements and rail easements and public open space. These green areas of public and private land as well as these bush clad infrastructure easements form the green structure that is consistent for most of Wellington's outer neighbourhoods.

Not many of the fifteen Wellington neighbourhoods have a significant number of mature street trees by percent compared to other flatter city around New Zealand. This might be due to the narrow road widths, steep road easement or the coastal environmental not being optimal growing conditions for most tree species. However it is interesting to note that there are neighbourhoods within the study area that have wide streets and space for street trees that don't have existing streets trees such as Island Bay, Kelburn, Khandallah, Lyall Bay, Miramar and Kilbirnie. This means existing mature street trees play an important role in keep Wellington's image green and that there is space in many neighbourhoods for more street trees which will play an important visual mitigation role as medium density housing is built over the next 30 years.

It is interesting to note especially in the less coastal neighbourhoods that there are a large number of mature trees on private property (especially in Ngaio and Khandallah) that significantly contribute visually to the green image of both the community and to Wellington in general. Due to the lack of street trees in these neighbourhoods these private large mature trees, especially at the front of properties, have a significant role in providing the positive green image on the public realm and streetscape.



POSSIBLE NEIGHBOURHOOD CHARACTER IMPACTS OF PROPOSED MEDIUM DENSITY HOMES

The team looked at both existing and currently under construction medium density housing within the fifteen neighbourhoods to gain a better understanding of possible character impacts this housing type may have. These medium density housing projects are being built under current council planning and design requirements and don't necessarily represent what medium density housing might look like in the future, but it is a starting point to consider impacts and possible new rules that might help mitigate character and landscape change in the future.

We looked at both the character of the existing neighbourhood and then the outcome of new medium density housing on predominately the streetscape, in most cases the following was observed:

Built form

The built forms of the medium density units generally felt well designed with enough articulation in the building facade, changes in rooflines and a range of setbacks in one-unit blocks that gave the impression of individual houses and not one large bulk built form. A range of colours and building material were often used to help reduce monolithic form and bulk of the building. These buildings certainly had an impact on the streetscape by general being a larger and bulkier, taller built form closer to the road than what had been there before. In most cases the building design did a lot to mitigate this impact. It was the space between the building and the front boundary line and the associated landscape that had the most negative visual impact on the public realm and views across the street from neighbouring properties. In almost all cases the landscape space was insignificant in depth/setback and the traditional trees and gardens had been replaced by buildings with insignificant new planting to offset that building bulk. This is not an unusual or inappropriate outcome in inner city/city centre communities but is not in keeping with the green outer Wellington neighbourhoods.



Loss of mature trees on private property

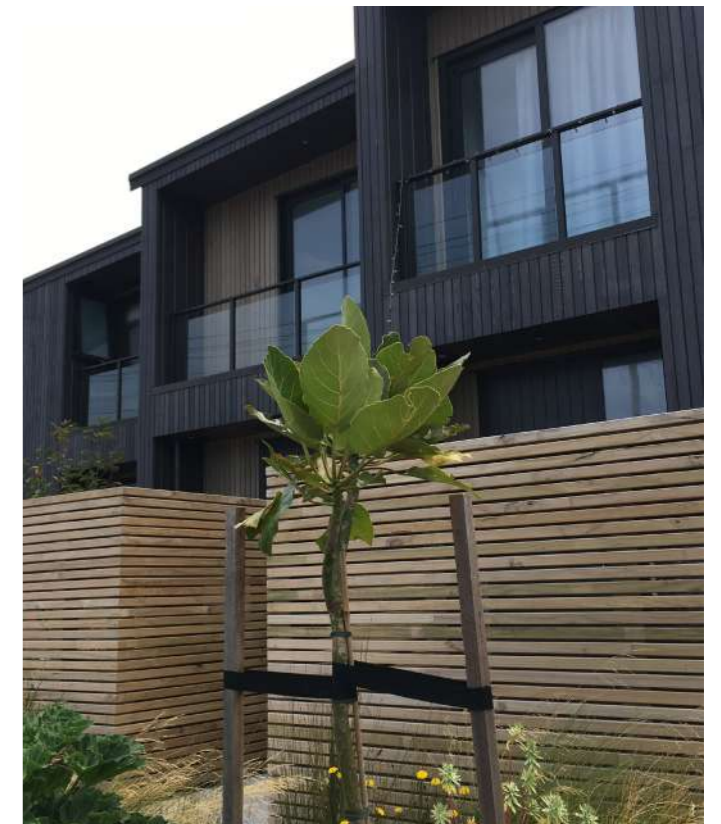
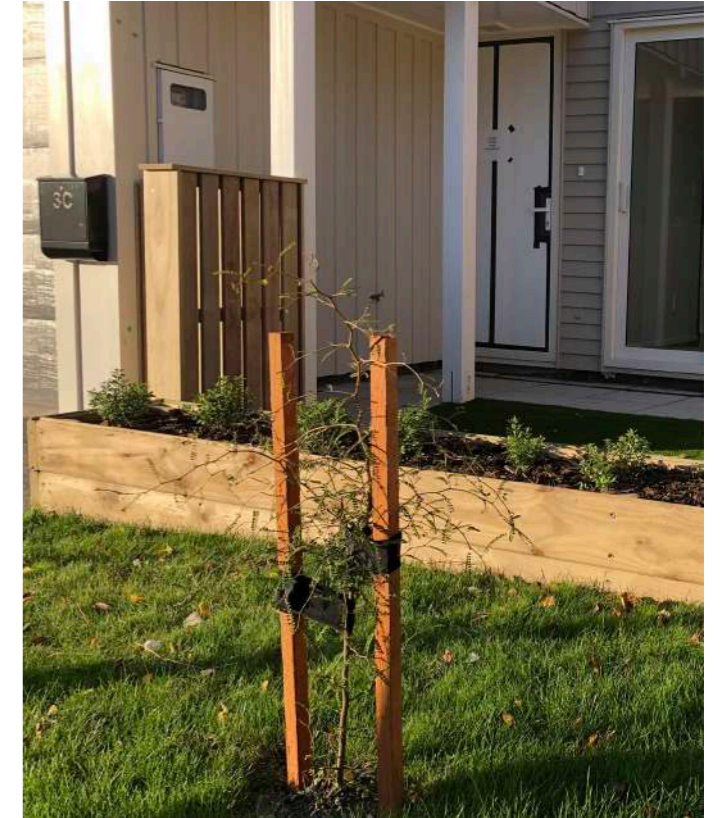
During the site visits we did not see any mature trees that had remained on site after the medium density development was built. It was unclear if there were mature trees on the sites before the developments were built but the outcomes were that there are no large, mature trees on these sites that helped to reduce the scale and bulk of the new buildings. In the cases where new trees were planted to possibly replace loss of mature trees, the new trees were not going to have a significant positive visual impact for decades especially in coastal areas where tree growth can be slower. This makes the retention and protection of existing mature tree on future medium density sites valuable.

Narrow setbacks and impact on future trees

In many cases there was not enough front landscape setback from the road easement to plant a large tree species. This means that if existing mature trees are cut down it is not possible to plant a new tree to offset the mature tree that was lost due to lack of space. In these narrow front yard setbacks if a large tree was planted these space are too narrow to allow that large tree species to grow to maturity and as such is likely to be heavily trimmed back or removed all together at a later date. This is noticeable in the complete lack of mature trees on older medium density housing developments around Wellington that we visited. There seems to be a strong correlation between setback and medium to large tree species existing on the sites.

Small replacement trees species

In new medium density developments if trees were planted in the front setback, they were predominately small trees species. These small tree species even at mature do not replace significant mature trees that were lost or offset and mitigate the visual impact, scale and bulk of the new medium density building on the streetscape and public realm.



Loss of human scale in the public realm

New medium density houses that we observed during site visits were typically 2-3 storeys and, in most cases, located closer to the street edge than the existing residential dwellings. These medium density units typically had small front courtyards, 2-5m in depth which were predominately paved with no significant garden or trees. These courtyards either had a low fence or no fence and very little significant amenity planting that contributed to the green nature of the street.

These medium density units and associated lack of landscape space or amenity replaced single dwellings that typically were 1-2 storey with a 10m setback from the street edge. Within this 10m setback was often a significant amount of amenity planting and often mature trees. The impact of this change reduces the residential landscape visual amenity from the street view changes the human scale of the street by having taller bulkier buildings closer to the street edge compresses the visual environment.

This is the compression of the existing streetscape and private landscape that can change a neighbourhoods character. This changes the way people perceive the street and the human scale of the street environment. There is more shade from buildings, less green garden edge, less trees and buildings are more visually dominating on the street scene. To offset this feeling of loss of human scale, existing mature trees and proposed trees with medium to big canopies become important because they help to mitigate the visual scale of the building, supply significant green mass to the streetscape view and the understory of the tree canopy becomes the dominant view for the human eye view instead of the 2-3 storey building façade. Our observation is that the small trees species currently being planted in the front of medium density housing are unlikely to have the same impact nor mitigate the change in human scale with taller building being closer to the street edge.



Loss of landscape and increase in hard stand

Typical residential street frontages had approximately 10m of private landscape on each side before you see the residential dwelling in the middle of the section. When this is replaced by medium density the private landscape amenity is typically reduced from 10m to 5m or less and this loss of amenity landscape has a compounding visual effect along a street as more higher density gets added into that street environment.

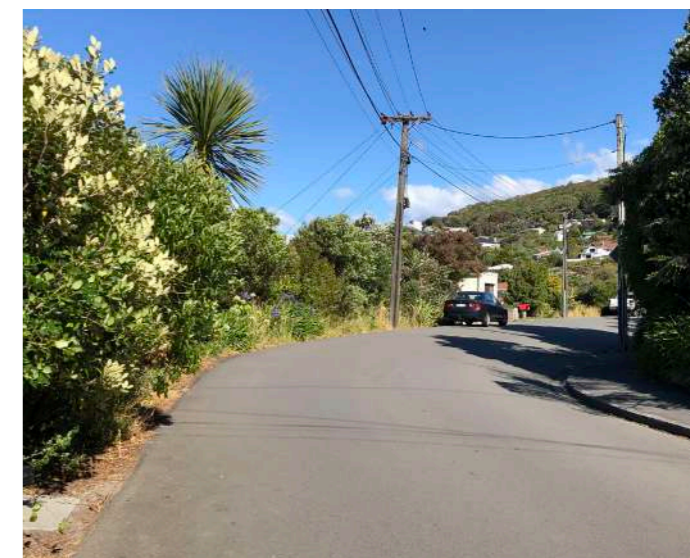
This loss of green amenity was a notable visual impact on the public realm and neighbourhood character. This was especially visually significant when there was a 3m or less setback and much of that setback was predominately hardstand such as concrete, pavers and driveway. This was a common visual outcome when each medium density unit had a garage and driveway facing the road.

It was noted that even without garages and driveways facing the street if the setback was too narrow in depth to support either a garden, tree and or usable landscape space, owners tend to pave the space we assume to create a low maintenance outcome. This creates a hard street edge with little to no ability to mitigate this visual impact of the building or contribute to the wider streetscape.

Narrow and zero lot setbacks are common in many medium and high-density housing area around Wellington, New Zealand and internationally and this is often an appropriate outcome in dense urban and city centre settings. However, in narrow and zero lot setbacks this is not typical or in keeping with most of Wellington's outer neighbourhoods setting and is likely to be one of the most significant facts that will change a neighbourhoods character.

Protection of bush, trees and landscapes on road and infrastructure easements

In many neighbourhoods the road cuts are important green edges in the public realm that everyone experiences daily. This can be seen on many streets in Ngaio and Khandallah but also in streets like Severn Street in Island Bay. These green edges may not have significant mature trees to protect, it is the mass of the planting that has the positive visual impact at both a street level and a "cross the valley" view perspective. The protection of these green easements whether they be a road, infrastructure or rail is important to the overall green structure of the community. Creating access and driveways ways for Medium Density Housing could remove significant portions of green from these infrastructure easements.



POSSIBLE MEDIUM DENSITY MITIGATION STRATEGIES

To protect the suburban and landscape character of the outer suburbs, a range of policies, guidelines, incentives and investment strategies could be considered. These approaches could be applied to both the public realm (streetscapes, open space, infrastructure easements) and the private realm (mature tree protection, heritage protection and planning and built form guidelines).

The following mitigation suggestions are based on site visit observations that have been outlined in the section above however future mitigation strategies will need further detailed consideration.

A detailed review of existing rules and policies compared against current outcomes of medium density that are being delivered in these suburb needs to be done to understand where the current policies are effective and ineffective.

The possible strategies being outlined below will require future consultation with the community and stakeholders to ensure the best methods for addressing medium density impacts, whether that be policies, guidelines, investment or incentives are applied. Any strategy, policies and guidelines developed should be through a once every 3-5 year review process so that policies, architectural guideline, setbacks, tree protection requirements and so on can be revised if they are not being effective in delivering good medium density outcomes.

POSSIBLE MITIGATION STRATEGIES WITHIN THE PUBLIC REALM

Protection of street trees

The purpose: To protect existing mature street trees that have a positive visual impact on mitigating the height and bulk of medium density buildings. These street trees also help to create the human scale on the street and form a significant mass of green that is viewed from both the local and wider landscapes. The protection of existing significant street trees within the public realm such as the iconic Pohutuwaka of The Parade in Island Bay or Mature Ngaio trees in Conway Street, Ngaio help to retain the suburbs easily recognisable characteristics.

Possible strategies: These might include; the formal protection of significant street trees or the creation of rules to protect the street trees root structure. This protection could include but is not limited to cut and fill restrictions close to trees and driveway and hard stand distances from tree canopies.

Protection of bush, trees and landscapes on road and infrastructure easements, slopes and road cuts

The purpose: Limiting the removal of planting from road cuts easements is important to preserving the existing green framework of the communities. These green edges may not have significant individual mature trees to protect but it is the mass of the planting on these cuts and slopes that has the positive visual impact at both a street level and a "cross the valley" view perspective. These green landscapes help to offset the likely loss of existing private landscape planting from medium density housing developments and will as similar mitigation values outlined in the "protection of street trees"

Possible strategies: The protection of these green edges might include integrated policies and strategies with other infrastructure stakeholders so that these areas of green are managed and protected as important visual mitigation to increase density in a suburb and not seen as solely as landscape maintenance. Protection might also include limiting the number to driveway cuts a medium density housing unit might have across a green cuts and slopes limiting the amount of existing planting removed.

The planting of street trees

The purpose: The planting of new street trees in anticipation of the loss of mature trees on private property due to future medium density development. New street trees over time will have two roles, mitigating the visual impact of medium density housing at a street view level and providing a critical mass of green to enhance the across valley views. These new street trees will help to offset the likely loss of existing private landscape planting from medium density housing developments and will have similar mitigation values outlined in the "protection of street trees"



Possible strategies: A street tree planting strategy needs to be developed that ensures that street tree implementation happens in the areas of a suburb that is going to have the most visual impact first. Some of the examples that have been given in this report are the valley areas and main streets areas of Island Bay, Khandallah, Ngaio however all fifteen neighbourhood reviewed would benefit from street trees being planted in visually strategic areas in the early stages.

Completing a strategic review of which neighbourhoods to invest street trees in early might be considered based on which suburbs are going to be under greater medium density growth pressure early (for example Island Bay might get street tree investment sooner than Churton Park).

After strategic areas within a suburb are planted then a general street tree planting strategy could be applied to the rest of the suburb. Due to the speed of tree growth and its ability to only have a visual impact after the tree reaches a significant height, it would be an advantage to start this planting as soon as possible.

POSSIBLE MITIGATION STRATEGIES WITHIN THE PRIVATE REALM

Setbacks

The purpose: Setback depth policy rules have a significant impact on mitigating the future medium density buildings. A deep enough setback allows for medium to large tree species to be planted, increases the likelihood that existing mature trees in front landscape are retained and reduces the amount of visual compression on the streetscape from the bulk of the new medium density buildings.

Possible strategies: A review of the existing medium density policy rules on setbacks including setback depth and what is appropriate to happen within that setback. This review should be of both the policies and rules referenced against the current medium density built forms and streetscape outcomes communities are getting.

A review might include but not limited to the setback depths, design guidelines on coverage of hardstand area, driveway and garage locations and size of trees planted at establishment and fence heights.

Design guidelines

The purpose: Review of existing medium density design guidelines to enhance the built forms impact on the public realm and neighbours.

Possible strategies: This review should be of both the policies and rules referenced against the current medium density-built forms and streetscape outcomes communities are getting.

This should include but not limited to height limitations, setbacks, planes of recessions, articulation in the building façade and rooflines, diversity in colours and building material used and in some suburbs special guidelines that create sympathetic built forms that are in keeping with the existing built environment (for example The Glen in Kelburn).

Protection of existing trees, especially in front yards

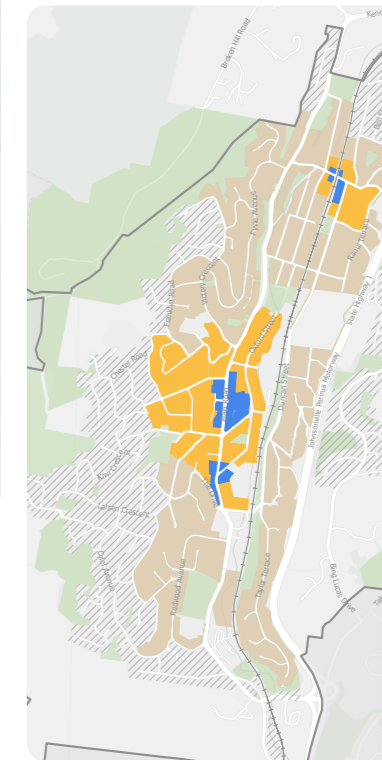
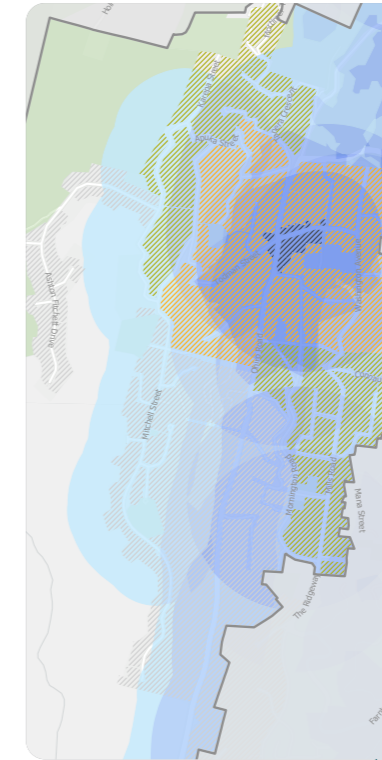
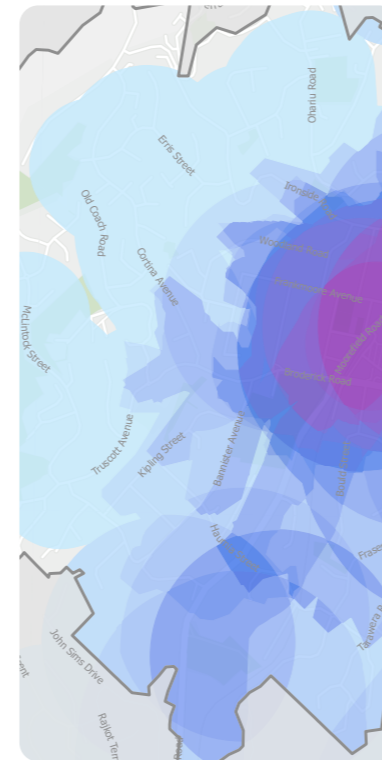
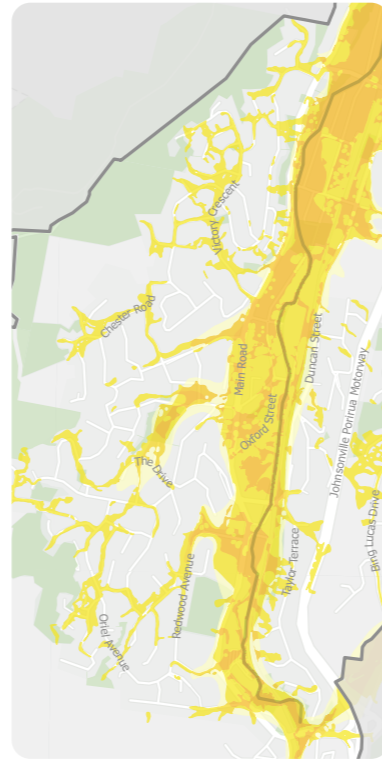
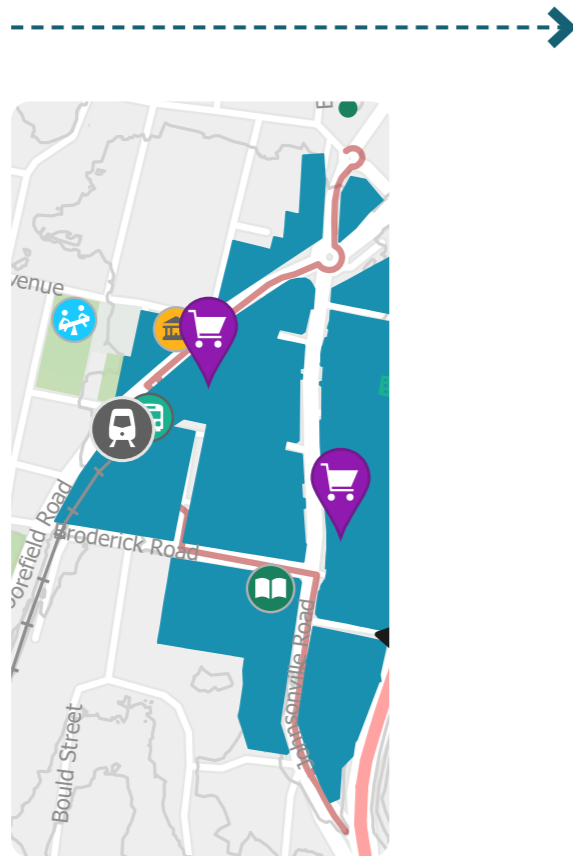
The purpose: The role of existing mature trees on private property, especially in front landscapes, is significant in the suburban character. The retention of these trees is important especially in suburbs that have limited space for future street trees to mitigate the visual impact of medium density buildings. These mature trees on private property have similar mitigation values outlined in the "protection of street trees".

Possible strategies: A series of policies and incentives should be considered to ensure that many of these trees are retained, especially in likely future medium density sites. These mature trees need to be identified before design and construction starts. This might include the mapping of significant trees in suburb areas by the council and then identifying them in property reports. The focus of this mapping could be staged with a focus on areas that medium density is likely to be implemented early and in areas that this report identifies as being likely to change such as flat valley sites close to town centres and railway stations. Once trees are mapped and identified on property reports they can be considered as part of the consent process for future medium density housing.

An additional option is for council to offer consent fee and processing time incentives to encourage designers and developers to identify and work around significant existing trees on private land rather than remove them.



METHODOLOGY



PART 1 ASSESS LOCAL CONTEXT

KEY FEATURES MAP
ASSESSMENT DENSITY ENABLERS

PART 2 EVALUATE GROWTH POTENTIAL

HAZARD HEAT MAP
AMENITY HEAT MAP
WORKSHOP

PART 3 MEDIUM DENSITY OPPORTUNITIES

PROPOSED DENSITY MAP
ARCHITECTURAL TYPOLOGIES
OPPORTUNITIES + NEXT STEPS

PART 1: ASSESS LOCAL CONTEXT

This first part of the process was a 3 day intensive site visit by the project team to each suburb to ground truth and identify commonalities and unique attributes at the individual suburb scale from each of the 4 disciplines (urban design, architecture, landscape and heritage).

An integral part of this was the identification of what is understood as the key components that make up a suburb.

Recognising characteristics such as;

- The immediate urban and built context including pedestrian, cycle and vehicular networks; parks and areas of public open space; and adjacent buildings / surrounding land uses.
- Any site-specific elements that contribute to local sense of place and identity, eg. native vegetation stands, significant trees, cultural sites, notable views.
- Underlying natural character elements such as drainage patterns, hazards, topography and vegetation.

For clarity and simplicity these characteristics were allotted to the disciplines as following;

Architecture

- Landmark buildings
- Built form character in the centre and in the surrounding suburbs
- Examples of existing medium/high density
- Size and function of community amenities and facilities

Urban Design

- Size, function and vibrancy of the centre
- Urban form and proportions
- Street patterns
- Public and private interfaces
- The movement network – level of walkability and access to and around the centre
- Legibility and way-finding to and from public transport

Landscape

- Underlying topography
- Size and function of the public open spaces
- Access to public open spaces
- Streetscape and public realm character of the centres
- Connectivity in to the greater landscape
- Hazards

Heritage

- Listed built form and landscape-based heritage
- Significant areas of heritage that is not listed
- Landmark buildings with heritage value

The site walks and analysis provide a professional assessment of each suburb. The observations were compiled to inform part 2 of the process. It should be noted that these observations do not suppose to understand every aspect of each suburb but to provide an experts opinion on the day the suburb was visited.



PART 2: EVALUATE GROWTH POTENTIAL

Workshop

The core of this part of the process was the three-day workshop in which took the findings from the first part of the process translated our understanding of those opportunities, constraints and characteristics at a block by block and street by street level.

In total sixty large scale plans were produced at the conclusion of the workshop; four plans per suburb. Each carefully considered plan reflected a step by step approach and thinking which identified areas where density should be applied and the category of typologies that would be appropriate. The four plans were;

Catchment Plan

Using the best practice enablers for density established and agreed with council, the primary and secondary enablers in each suburb were spatially located and a notional 400m walking circle was applied.

Analysis Plan

The catchment plan was developed further by identifying, adding and weighting each of the overlapping catchment areas based on the number of enablers that residents could access.

The outcome was a series of simplified zones in each suburb coded to illustrate areas of the greatest access to amenity (within 10 minute walking distance). Each enabler was allocated one mark with zones ranging from 1 up to 10 marks.

Zone Plan

The next step in the process was to allocate a category of density to each area. As part of best practice approach, the range of marks for each category were defined. Effectively the more marks the zone had achieved (meaning the more amenity that was within 10 minute walking distance), the higher the density that could be sensibly supported in that zone.

The outcome of this plan is a series of zones labeled with a category of density.

GIS Heatmapping

To verify the density boundaries established through the workshop process, a GIS heatmapping exercise was undertaken. This process produced an amenity and a hazard heatmap to understand areas of high amenity or natural hazard in each of the 15 suburbs.

AMENITY HEATMAP

- Key amenities were divided into primary, secondary and tertiary enablers
- Weighted values were assigned to each enabler based on how likely they are to drive additional density (these are outlined in the table below)
- Walkability catchments were generated for each enabler using specific walkability analysis where available or a circular buffer based on best practice walkability distances.
- The weightings were added together where the enablers overlapped. The higher the total score, the higher the overall amenity value in that location.

Primary Enablers	Distance	Weighting
Centres	800m Sub Regional Centres	4
	800m Town Centre	3
	400m District Centre	2
	400m Neighborhood Centre	1
Rail Station	400m	3
Supermarket	400m	3
Arterial with High Frequency Transit	400m from high frequency routes	3
Proximity to City Centre	Kelburn, Hataitai	2
	Brooklyn, Kilbirnie, Island Bay	1
Secondary Enablers		
Community Hub and Facilities	400m	2
Significant Open Space Asset	400m	2
Employment Centres	400m	2
Tertiary Enablers		
High Schools	400m	2
Primary &/or Intermediate Schools	400m	1
Bus Network	200m from all standard bus routes	1

Walking Catchments

Based on international best practices, three categories of walking distance catchments are typically desirable based on the category and size of the density enabler. This has been outlined in the table below. These distances are for people without mobility impairment and it is suggested that these may be used for the planning and evaluation purpose of this exercise.

Category of Density Enabler	Proposed Walking Distance Catchment
Primary Enablers (Town Centre, Rail Station, Supermarket, Bus Interchange, Arterial with High Frequency Transit)	10 minute walking or 800m
Secondary Enablers (Community Facilities, Open Space, Employment Centres)	5 minute walking or 400m
Tertiary Enablers (Bus Network)	2-3 minute walking or 200m

HAZARD HEATMAP

- A weighting was established for each hazard constraint based on how simple it would be to mitigate the natural hazard (these are outlined in the table below).
- Through the constraints workshop there were two types of hazards which were identified as areas where further development would have major implications. These were a sea level rise of 1.4m and flood ponding without a secondary overland flow-path in low-lying parts of Kilbirnie and Miramar. These zones were given a -100 value to signify that no further development should be encouraged.
- The weightings were then added together where the hazards overlapped. The higher the total score, the higher the overall natural hazard in that location.

Constraint	Category	Weighting	
Flood Hazard	Miramar Ponding Area	-100	
	Kilbirnie Ponding Area	-100	
	Other flood hazard	-3	
	Sea Level Rise	1.4m	-100
	Ground Shaking	Zone 1 - Low	0
Zone 2		-2	
Zone 3		-3	
Zone 4		-4	
Zone 5 - High		-5	
Liquefaction	Low	-1	
	Moderate	-2	
	High	-3	
Tsunami	Very High	-4	
	Yellow Zone	-1	
	Orange Zone	-2	
	Red Zone	-3	



PART 3: MEDIUM DENSITY OPPORTUNITIES

During this stage the team looked at a range of options for each of the density types and asked questions such as what does each of the density categories look like, how many dwellings and people would be achieved? What is the typical land section look like for each suburb and how does that influence density options? What was the likelihood of each medium density typology getting built based on issues ranging from challenging landform to economic feasibility that might limit the final density outcomes. This likely uptake level was applied to the final new dwelling and populations numbers.

Existing Wellington based examples for each type of medium density category were reviewed, following by the design and testing of a range of density ideas. All the above was tested during multiple meetings with the diverse design and council teams.

By the end of this stage of the work we had a range of five medium density typologies that could be applied to a range of suburb context. In general the highest medium density typologies were applied to the areas closest to the areas of highest amenity. The five medium density architectural typologies are as follows;

Typologies and enablers as per below:

Typology A

1 - 2 Storey Detached, Semi-Detached and Infill Housing

Typology B

Up to 3-Storey Attached Dwellings

Typology C

Up to 4-Storey Apartments Only / Apartments with Commercial

Typology D

Up to 6-Storey Apartments with Commercial / Apartments Only

Typology E

Up to 8-Storey Mixed-Use with Apartments and Commercial

Proposed Density Plan

The Proposed Density Plan is the final plan and is the culmination of the investigation undertaken previously. The broad stroke boundaries are rationalized and tested against key considerations such as steep topography, cul de sac street patterns, barriers such as rail and highways and areas of heritage value. Each block and each street for each suburb has been carefully considered and demarcated for various types of density.

Infrastructure Workshop

Due to Wellington's location and typology, there are significant natural hazards to be considered across all of the 15 suburbs. To better understand which of these constraints are hard constraints (unable to be easily alleviated) and which could potentially be mitigated, a constraints workshop was held. This was attended by representatives from the council on heritage, planning, resilience, infrastructure and open space. The workshop established that the majority of the constraints could be mitigated against, although some at a greater cost than others. There were two particular hazard areas which would be extremely difficult to mitigate against or the cost would be highly prohibitive. These were:

- 1.4m Sea Level Rise
- Flood ponding without a secondary overland flow-path in Kilbirnie and Miramar

These boundaries were defined and removed from any additional density for the study. The remaining hazards were noted and will need further consideration should densities be increased in these areas.

INFRASTRUCTURE

Due consideration has been given to the role of Three Waters Infrastructure. Excluding Hataitai and Churton Park information on Three Waters Infrastructure has been obtained from Wellington Water's Three Waters Assessment (November 2019).

It should be noted that the level of investigation used for any upgrade options within the Wellington Water Study were assessed based on existing information and the projected populations were not analysed with Wellington Water's hydraulic models. Therefore the options are considered 'pre-feasibility'.

DENSITY ENABLERS

PRIMARY ENABLERS

At the scale of a suburb, the primary density enablers have been defined as the highest category that can potentially support a relatively higher residential or mixed use density development in its vicinity.



Centres

Hierarchy of Centres (WCC District Plan Section 6.2.1.) provide accessible shopping and local services that meet people's day-to-day needs - the larger the Centre the greater the range of activities and functions.



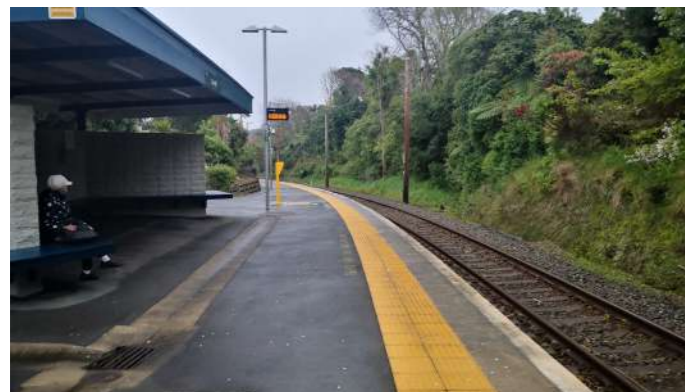
Supermarket

This is a self-service shop offering a wide variety of food, beverages and household products. Typically larger than a grocery store but smaller than a big box market. e.g. Countdown, New World



Proximity to City Centre

This includes the proximity of the suburb to the city centre and focuses on the ease of traveling to the CBD whether by active modes or public transportation.



Rail Station

Medium/High capacity rapid transit, heavy rail or light rail station.



Arterial Roads with Transit Priority

These are arterial roads with priority lanes for high frequency buses that encourage use of public transport over private cars.

SECONDARY ENABLERS

Secondary enablers have been defined as the next level below the primary enablers. They can potentially attract residential density, however, lesser than what the primary enablers can potentially attract. These may also not be necessarily exclusive from the enablers serving a larger city or regional level catchment.



Community Hub and Facilities

These include community centres, education facilities, play areas, healthcare facilities, sports facilities, libraries, etc.



Significant Open Space Assets

These include different hierarchies of parks or natural open areas that can be used for recreation purposes.



Employment Centres

These are clusters of businesses that generate a sufficient critical employment mass to support and attract residential development around it.

TERTIARY ENABLERS

These are the lowest level category of enablers identified for this exercise. These will potentially attract the least residential density due the size and scale, and can potentially serve a small area of catchment and are designed to serve the daily needs of the residents in their immediate vicinity.



High Schools

These are included as an enabler as not all suburbs have high schools, but they all have primary schools. High schools are an important driver for public transport, hence if you could increase medium density in suburbs that had high schools, this would encourage infrastructure development.



Bus Network

These include local feeder bus networks that provide last kilometre connectivity from major transit nodes.



Primary and/or Intermediate Schools

Primary schools play an important community and open space amenity role for communities during “out of school hours”. They are an informal community asset that include amenities such as school halls and playgrounds and may have an important role with increased community density.

ESTIMATING THEORETICAL YIELDS

It is necessary to estimate theoretical yields based on the zoning and typologies developed to better understand the overall impact of additional people into a suburb. The diagram below illustrates the methodology used to determine a potential yield in each suburb. Note that the theoretical yields identified are indicative only and should only be used for high level planning purposes. It is recommended that further investigation is undertaken at a suburb by suburb level to more accurately estimate potential yields.

ESTIMATE EXISTING DWELLINGS

Existing dwellings were calculated for each suburb by determining the total number of parcels currently zoned for residential use.

ESTIMATE INFILL DWELLINGS

Baseline infill and redevelopment was applied using the residential capacity model developed by Wellington City Council in response to the NPS-UDC. This is a multi-step development feasibility model that assess the city parcel by parcel. Each parcel was compared for an infill development, if possible, but also a comprehensive redevelopment. This work estimated infill based on the existing district plan zoning. In this project, for areas where rezoning is proposed the infill in this area is included in the 'density per hectare' figure. To reduce double counting the infill numbers were reduced by the proportion of land being rezoned.

ESTIMATE FUTURE DWELLINGS

Based on the typologies developed in part 3, each new category was assigned a theoretical density per hectare. GIS was used to calculate the area of land each category will occupy. An 'uptake factor' was also applied to each category to reflect the reality that not every property will be developed to maximum capacity. The densities and uptake applied are shown in the table below:

	Density per ha	Uptake
Category 2	55	29%
Category 3	100	14%
Category 4	130	14%
Category 5	300	8%

UPTAKE METHODOLOGY

"To undertake this analysis, the following data is required:

- Development capacity model outputs: These estimate the amount of additional dwellings that could be delivered either as infill (ie without removing existing buildings) or redevelopment (ie removing existing buildings and redeveloping the entire site). Multiple options for infill and redevelopment are modelled separately and hence there is no single estimate of capacity.

- Building consents data: This data allows us to estimate the amount of dwellings that were actually consented (and presumably then built) over a given timeframe.
- A concordance matrix to allow us to match consents to sites in the development capacity model: The match is done in three steps. First, we match building consent service request numbers to WUFI identifiers in the development capacity data. Second, we use service request numbers to match building consents with development capacity model outputs. Third, for consents that we were unable to match using this method, we attempt to match on address.

WCC's development capacity model is based on 2017 data on parcels, while building consents data is available for the 2000-2019 period. As a result, it is not possible to match all

building consents with parcels in the development capacity model, as some parcels may have been subdivided before or after 2017. Moreover, the development capacity model does not include large greenfield sites (which account for a share of consents) and sites that are not identified as having plan-enabled development capacity (but which may still receive consents for non-plan-enabled developments). As a result, for large consents (>20 dwellings) that are not matched, we attempt to match manually based on street address.

As a result, we also conduct some supplementary analysis of the size distribution of consents versus the size distribution of capacity."

- Technical Note: Take-up of development capacity in Wellington City. Wellington City Council.

ESTIMATE EXISTING DWELLINGS

Sum the number of parcels in each suburb

ESTIMATE INFILL DWELLINGS

Sum area of land being rezoned

Reduce NPS UDC numbers by the proportion of land being rezoned

ESTIMATE FUTURE DWELLINGS

Determine density per hectare for each category

Calculate hectares being rezoned for each category

Apply 'uptake' factor

Subtract existing dwellings to obtain net change

Add infill to new growth number to get total new dwellings

ESTIMATE FUTURE DWELLINGS

MEDIUM DENSITY CATEGORIES

Medium density is characterised by an increased density of housing and people living in closer proximity to one another. The need for medium density housing (MDH) arises from an increase in population and a decrease in land available to house this population. In New Zealand, residential development has historically spread out from our cities and towns into the greenfield land beyond. As populations continue to rise, this sprawl becomes less viable as communities try to remain connected (with people living close to where they work, go to school, do their shopping etc.) and Councils seek to preserve our natural and productive landscapes. The benefits of medium density are therefore better-connected people and communities and a more efficient use of land.

Although medium density is a term that is used internationally, what constitutes medium density differs from country to country largely based on population and existing built form. In countries with higher populations and with a history of people living closer together in multi-storey / multi-unit developments, medium density takes the form of apartments and may not incorporate smaller stand-alone duplexes or terraces. However, in New Zealand there is a history of residential development which has prioritised and romanticised the “quarter acre dream” with people living in stand-alone houses surrounded by their own private back yard. This has meant that the goal posts for increasing residential density in New Zealand are different to those overseas, and medium density in New Zealand must be introduced at a scale / form that is digestible and appropriate for the context.

ARCHITECTURAL TYPOLOGY STUDIES

Housing in New Zealand has predominantly been based on a single residential dwelling located on a lot large enough for the house to be surrounded by its own private land. As population grows and the density of our cities increases, new types of houses (or architectural typologies) are required that encourage a more efficient use of land and provide a greater range of housing opportunities that support healthy, vibrant and diverse contemporary ways of living.

This study has identified a number of architectural typologies which fit within five broad categories of housing types sharing common design attributes (labelled Typology A through E in the following pages).

- **Category 1**
General residential zone, infill housing up to 2 storeys
- **Category 2**
Attached housing, up to 3 storeys
- **Category 3**
Apartments mixed-use centres, up to 4 storeys
- **Category 4**
Apartments mixed-use centres, up to 6 storeys
- **Category 5**
Apartments Mixed-use centres, up to 8 storeys

For each category, ‘high-level’ designs were developed as illustrative examples of typology ‘building-blocks’ to test the potential within the five category areas discussed elsewhere.

Each typology has perhaps an infinite number of options that could be developed – each responding to the particularities of the project requirements, its site, and its context. The typologies here have been purposefully represented in the simplest terms to highlight just the broad principals and considerations. In developing these basic building blocks further, a focus on design quality is required to create a desirable built environment and healthy vibrant communities.

TYPOLGY STUDY METHODOLOGY

To define housing density figures for each category, the development potential of a ‘Sample Lot’ was tested using the architectural typologies for each category.

Sample Lot:

A sample lot size was developed to be the nominal site on which to test the residential typologies. To develop the area of this Sample Lot, two different methods were used and compared. The smaller lot option was selected:

- Firstly, lot areas were simply averaged across all 15 of the outer Wellington suburbs being studied,
- Secondly, a sample block from each suburb was selected that was located close to but not in the local centre. Generally, as suburbs have grown outwards over time the lot sizes appear to have grown in size. By selecting a sample block closer to the suburban centre where either category 2 or 3 housing was likely to be located, a slightly smaller average lot size was established (when compared to the overall averaged outer-suburban lot size). For this reason, this second method established the generic Sample Lot that was utilised here for testing the typologies on.

Notes on the Sample Lot:

- Topography and aspect are two common influences on a design development on Wellington sites. Due to the vast range of variables, these influences were not looked at in this particular exercise.
- Its acknowledged that sites come in all shapes and sizes and that the one utilised for this process is very much simplified for the purposes of this high-level testing.

Architectural Typologies:

- A range of architectural typology options were studied and tested. From these studies one example has been selected and shown here to represent each typology (Typologies A through E – see following).

	Typology A	Typology B	Typology C	Typology D	Typology E
Category 1					
Category 2					
Category 3					
Category 4					
Category 5					

Above: Table illustrating how Typologies might be distributed within Categories

- For each architectural typology, the potential development density was tested on both a single Sample Lot and a doubled Sample Lot (where two neighbouring Lots have been combined for development). Only the single site options have been shown here as they are the most restrictive for development and also don’t rely on the combining of lots.
- Larger block developments (utilising more than a pair of Sample Lots) were not tested due to the extensive range of development options. Instead it was assumed that single lot and perhaps doubled lot developments would be the most likely option and every additional neighbouring lot would be more difficult to accumulate to enable a more consolidated development.

Typology based Density Figures:

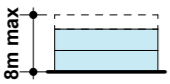
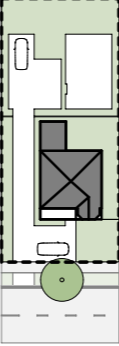
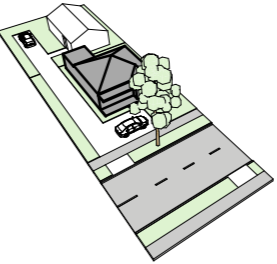
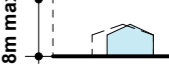
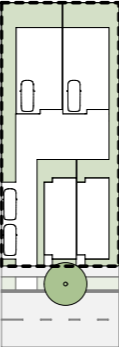
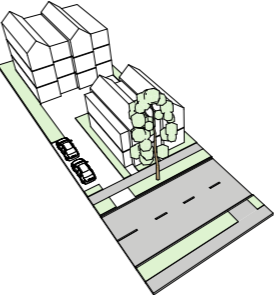
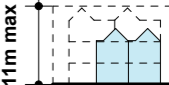
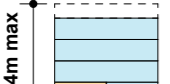
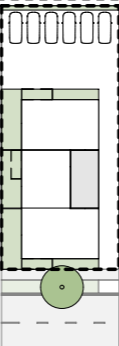
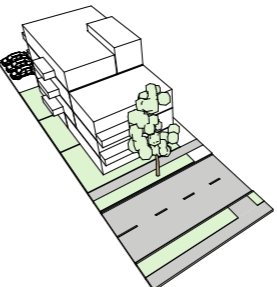
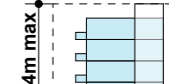
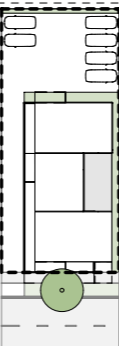
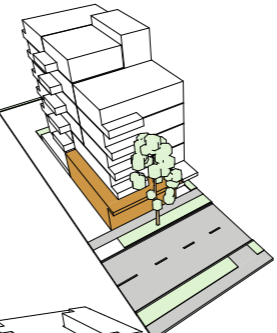
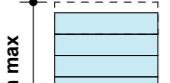
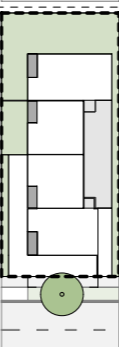
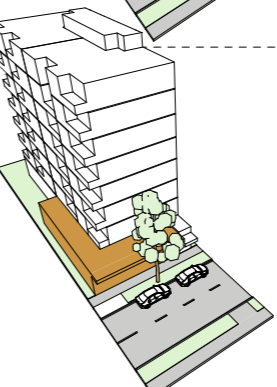

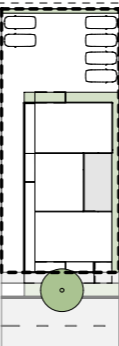
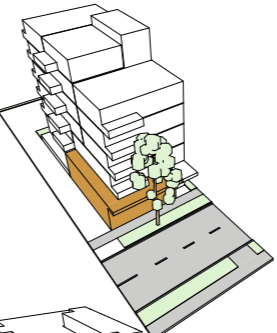

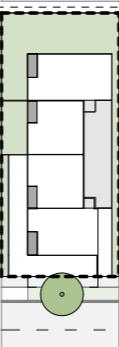
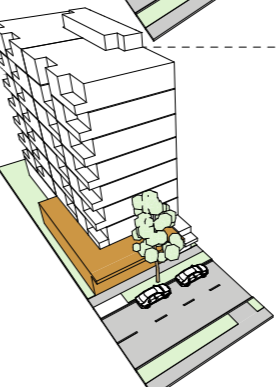

The density multipliers for each of the 5 categories within the outer suburban areas were developed through high-level testing of the various architectural typologies described above. From the typology testing, a density range for potential development was established for each Category area.

Density figures can be affected by a wide number of variables that shape a development on a particular site. These can include but not be limited to: lot size and proportion, lot orientation, aspect, topography, vehicle access requirements, service requirements, utility requirements and more.

Therefore, a figure at the conservative end of the range was selected as the final density multiplier for each Category. These figures are labelled as the ‘Averaged Category Density’ in the following pages and were utilised in the calculations of the potential development/ growth figures.

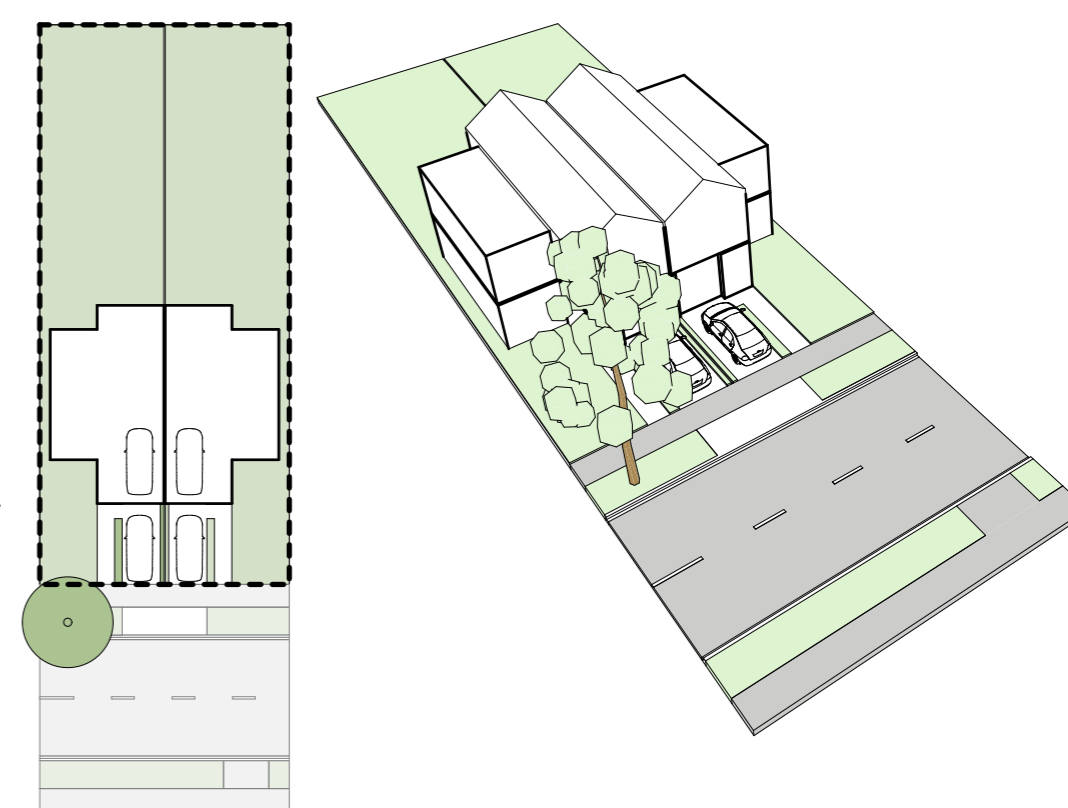
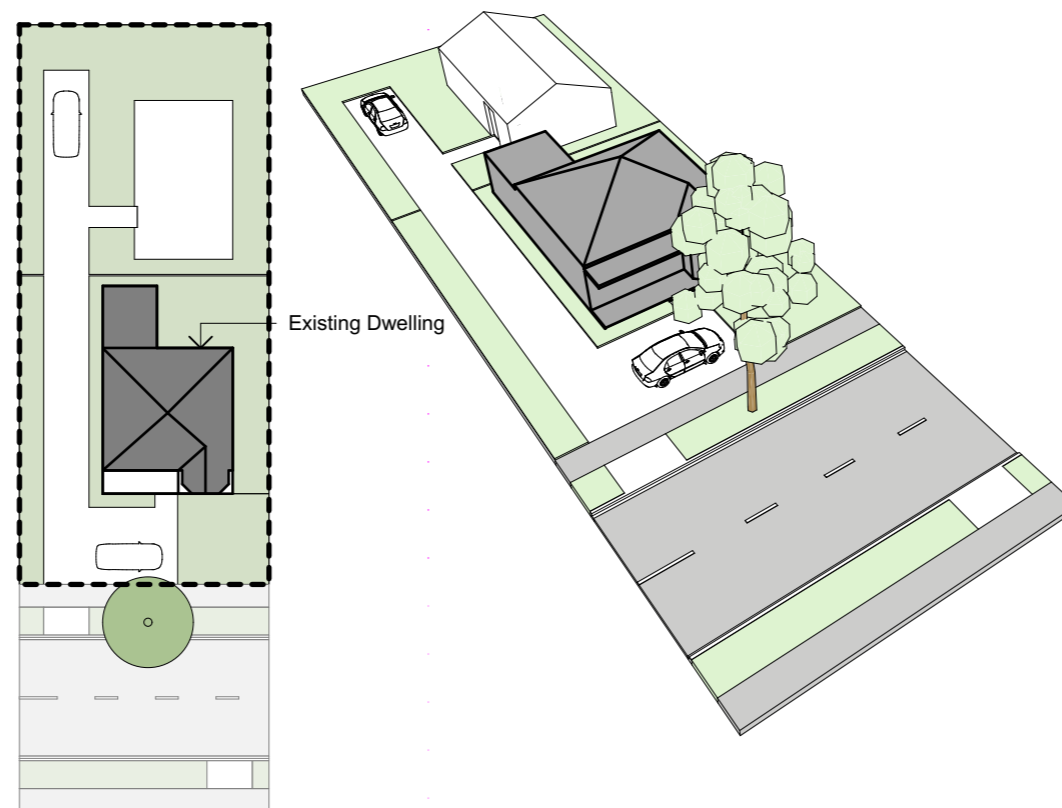
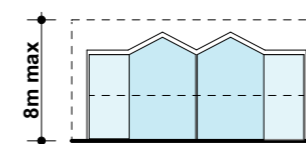
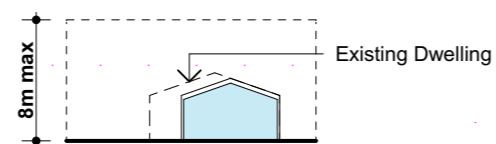
It is to be noted that Net density figures were applied – this means that vested roads and parks were excluded. These Net Density figures are based on private lots areas only.

CATEGORY AND TYPOLOGY SUMMARY TABLE

Category	Storeys	Zones	Typology Examples		
1	 <p>8m max Up to 2 Storeys Infill Housing</p>	General Residential Zone	 <p>Typology A</p> <p>Dwelling No. 2 No. of Storeys 1-2</p> <p>Mix Illustrated: 3 Bedroom Existing House 2 Bedroom</p>		 <p>8m max 1-2 Story Infill House</p>
			 <p>Typology B</p> <p>Dwelling No. 4 No. of Storeys 2-3</p> <p>Mix Illustrated: 2 x 2 Bedroom 2 x 3 Bedroom</p>		 <p>11m max 2-3 Storeys Attached Houses</p>
3	 <p>14m max Up to 4 Storeys Apartments Mixed-Use Centres</p>	Medium Density Transitional Zones - Medium Density Zone - Mixed Use Zone - Centres Zone	 <p>Typology C</p> <p>Dwelling No. 10 No. of Storeys 4</p> <p>Mix Illustrated: 3 x 1 Bedroom 4 x 2 Bedroom 3 x 3 Bedroom</p>		 <p>14m max 4 Storeys Apartments / Apartments & Commercial</p>
			 <p>Typology D</p> <p>Dwelling No. 12 No. of Storeys 6 (1 Commercial, 5 Residential)</p> <p>Mix Illustrated: 3 x 1 Bedroom 4 x 2 Bedroom 5 x 3 Bedroom</p>		
4	 <p>21m max Up to 6 Storeys Apartments Mixed-Use Centres</p>		 <p>Typology E</p> <p>Dwelling No. 24 No. of Storeys 8 (1 Commercial, 7 Residential)</p> <p>Mix Illustrated: 10 x 1 Bedroom 10 x 2 Bedroom 4 x 3 Bedroom</p>		 <p>27m max 8 Storeys Apartments & Commercial</p>
			 <p>Typology D</p> <p>Dwelling No. 12 No. of Storeys 6 (1 Commercial, 5 Residential)</p> <p>Mix Illustrated: 3 x 1 Bedroom 4 x 2 Bedroom 5 x 3 Bedroom</p>		
5	 <p>27m max Up to 8 Storeys Apartments Mixed-Use Centres</p>	Centres of Sub-Regional Significance	 <p>Typology E</p> <p>Dwelling No. 24 No. of Storeys 8 (1 Commercial, 7 Residential)</p> <p>Mix Illustrated: 10 x 1 Bedroom 10 x 2 Bedroom 4 x 3 Bedroom</p>		 <p>27m max 8 Storeys Apartments & Commercial</p>

TYOLOGY A: 1-2-STOREY DETACHED, SEMI-DETACHED AND INFILL HOUSING

These include: standalone houses on a single lot; two housing units on a single lot that share a common wall down the middle; or the addition of a second household unit on the same lot as the original dwelling. These options generally range from single to double storey in height.



Typology A1 Infill Unit

Average Category Density **30d/ha**
 Dwelling No. **2**
 No. of Storeys **1-2**

Mix Illustrated: **3 Bedroom Existing House**
2 Bedroom

Typology A2 Semi-Detached House

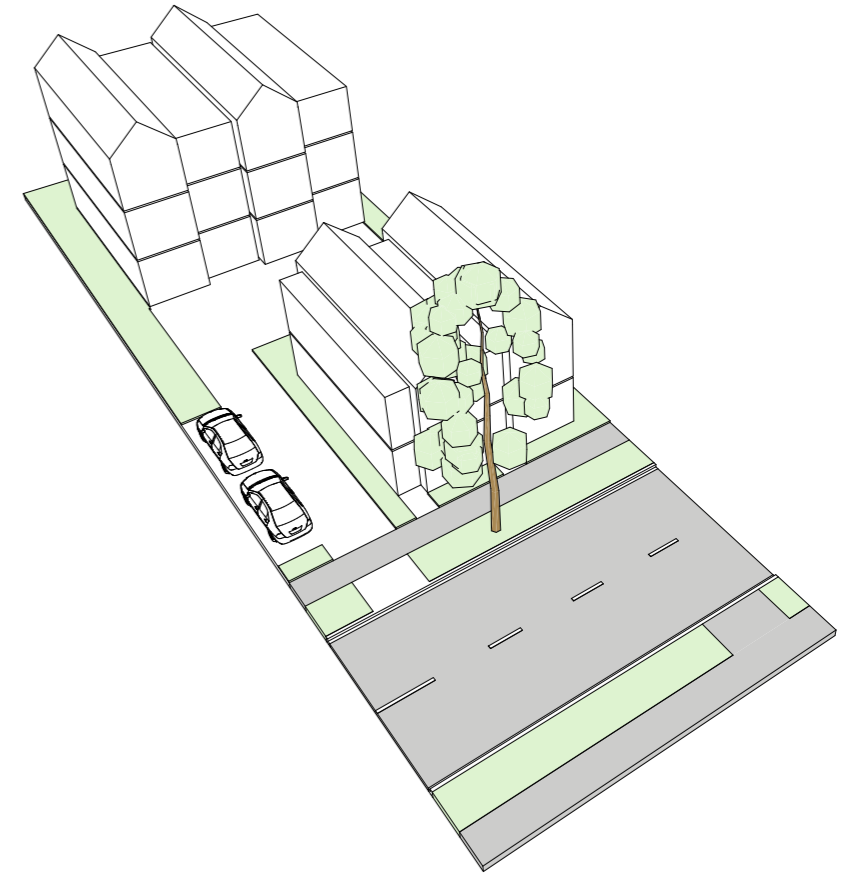
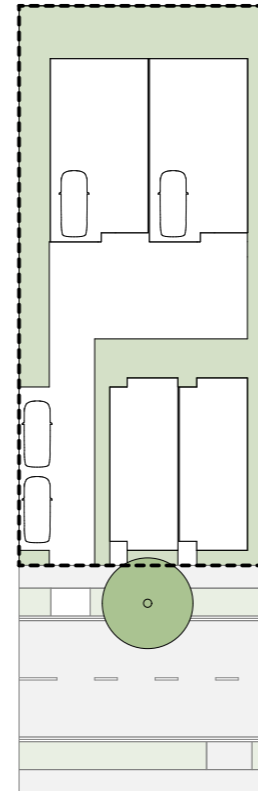
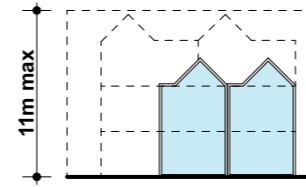
Average Category Density **30d/ha**
 Dwelling No. **2**
 No. of Storeys **2**

Mix Illustrated: **2 x 3 Bedroom House**

TYOLOGY B: UP TO 3-STOREY ATTACHED DWELLINGS

This typology includes Terrace Housing – houses that line up in a row with shared common walls between. They generally stand on their own piece of land with each unit having access to its own piece of ground level private outdoor space. They are generally 2-3 storeys high and don't have lifts. In certain variations of this typology, two units may be stacked one on top of another for example: a two-storeyed walk-up unit located over a single storey 1 bedroom unit.

For the purposes of this study, 2-3 bedroom units were utilised and units were not stacked vertically.



Typology B Townhouses

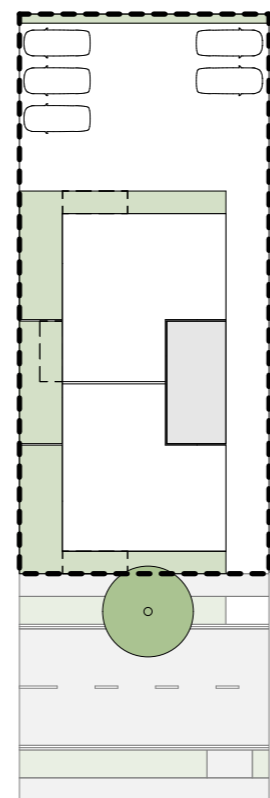
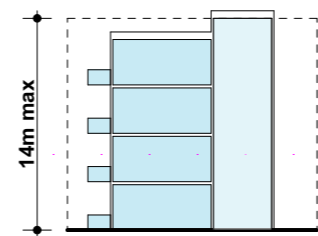
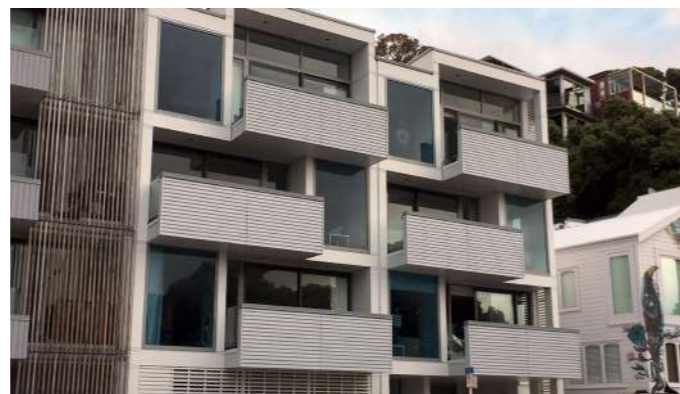
Average Category Density **55d/ha**
 Dwelling No. **4**
 No. of Storeys **2-3**

Mix Illustrated: **1 x 2 Bedroom**
2 x 3 Bedroom

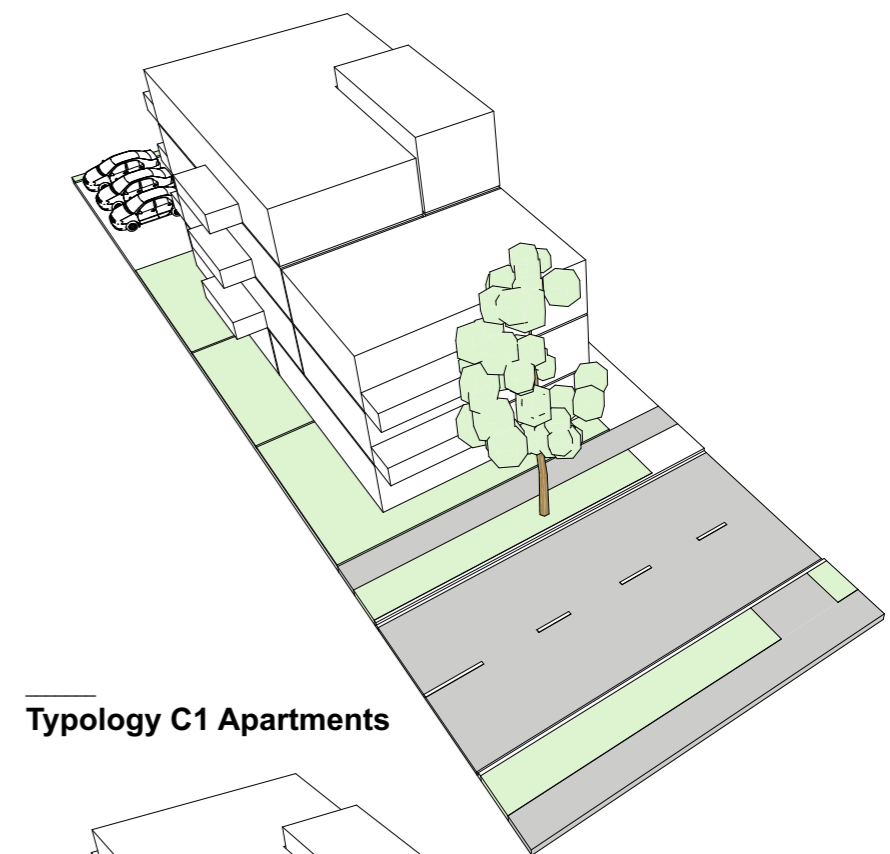
TYOLOGY C: UP TO 4-STOREY: APARTMENTS ONLY / APARTMENTS WITH COMMERCIAL

Apartments allow for a higher level of density by providing house-hold units stacked both horizontally and vertically and usually include a lift to provide access to upper levels.

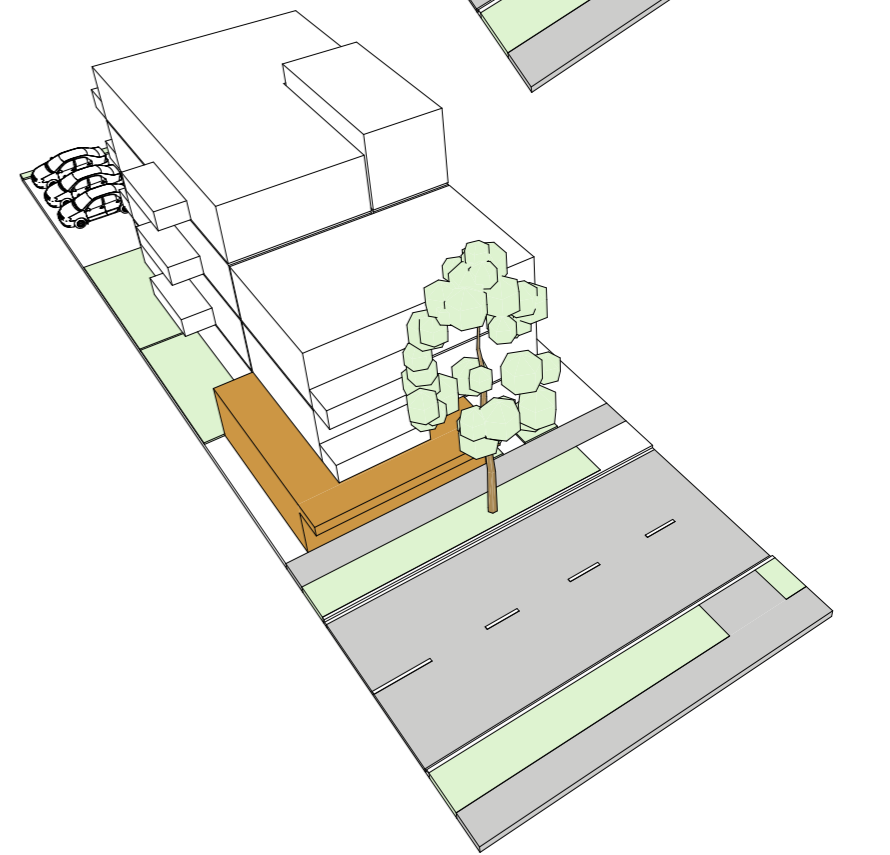
These are usually located closer to centres, community amenities, and high frequency public transport options. As such there are both an apartments-only typology option and an option incorporating a ground floor commercial tenancy with apartments over. For the purposes of this study a mix of 1,2 and 3 bedroom units were utilised.



Typology C Apartments
 Average Category Density **100d/ha**
 Dwelling No. **10**
 No. of Storeys **4**
 Mix Illustrated: **3 x 1 Bedroom**
4 x 2 Bedroom
3 x 3 Bedroom



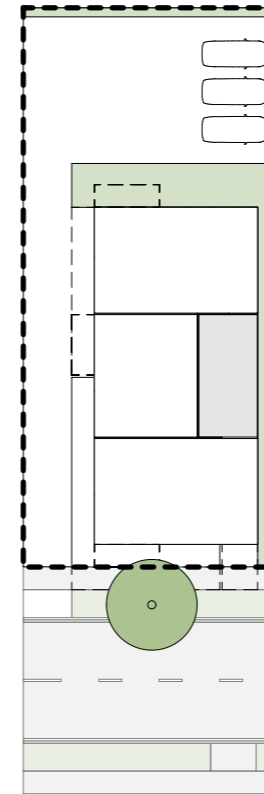
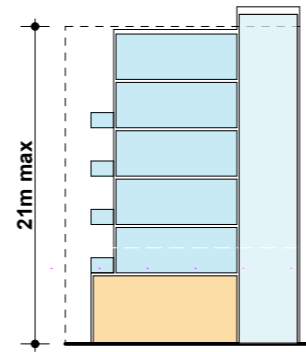
Typology C1 Apartments



Typology C2 Apartments over Commercial

TYOLOGY D: UP TO 6 STOREY: APARTMENTS WITH COMMERCIAL / APARTMENTS-ONLY

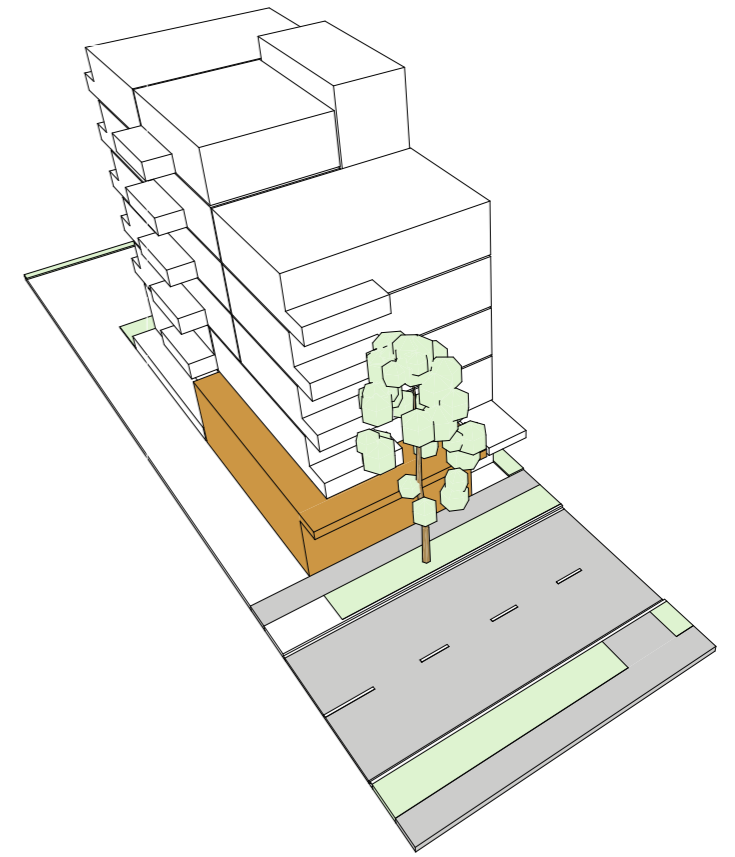
This typology refers to buildings with residential opportunities, generally in the form of apartments, incorporating ground floor commercial tenancies. This typology option was applied only to centres ranging from suburb centres to town centres which would allow better access to a number of amenities including grocery stores/ supermarkets, community amenities, and high frequency public transport options. There is also an apartments-only option shown as an alternative. For the purposes of this study a mix of 1,2 and 3 bedroom units were utilised.



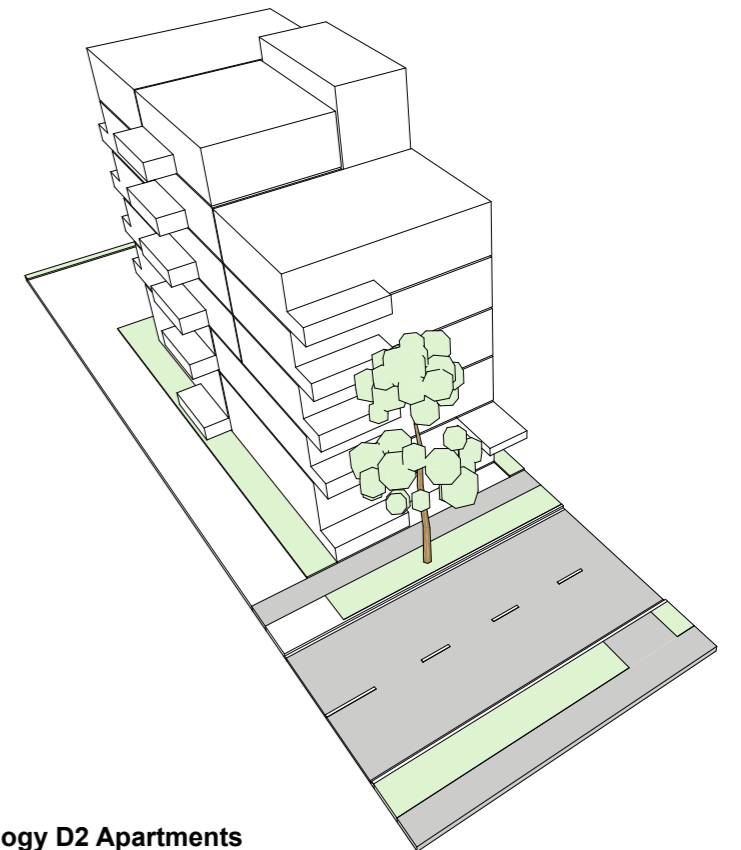
Typology D Apartments

Average Category Density **130d/ha**
 Dwelling No. **12**
 No. of Storeys **6**

Mix Illustrated: **3 x 1 Bedroom**
4 x 2 Bedroom
5 x 3 Bedroom



Typology D1 Apartments over Commercial

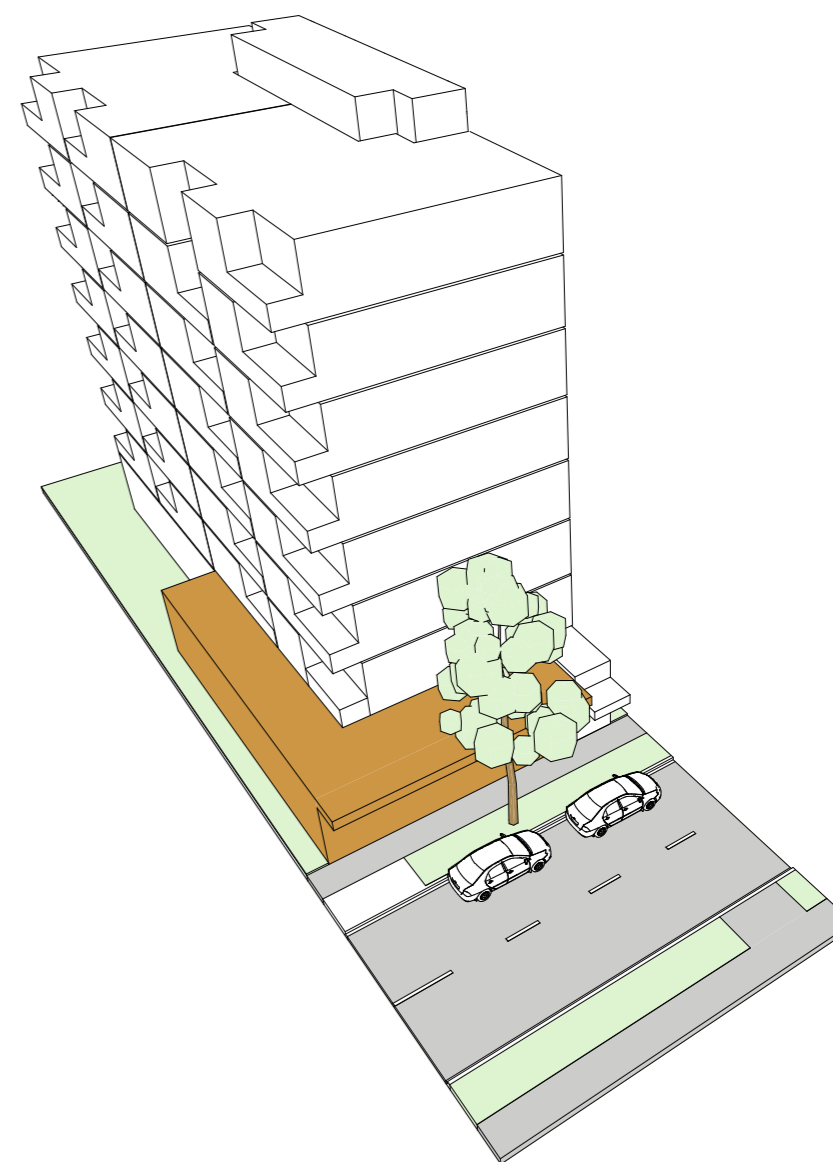
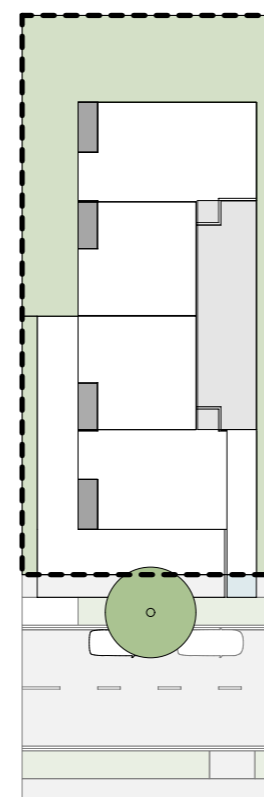
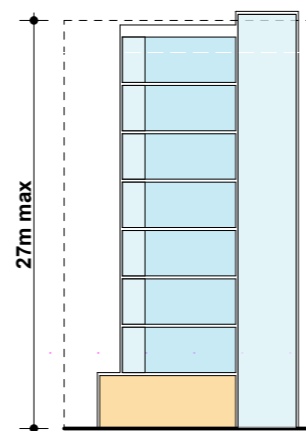


Typology D2 Apartments

TYOLOGY E: UP TO 8 STOREYS MIXED-USE WITH APARTMENTS AND COMMERCIAL

This typology only applies to sub-regionally significant centres Johnsonville and Kilbirnie.

This mixed-use typology refers to buildings with residential opportunities, generally in the form of apartments, incorporating ground floor commercial tenancies. The primary difference between this and Typology D is the allowable height which is supported by the more significant centres and related amenity.



Typology E Apartments with Commercial Centres of Sub-regional Significance

Average Category Density **300d/ha**
 Dwelling No. **24**
 No. of Storeys **8 (1 x Commercial, 7 x Residential)**

Mix Illustrated: **10 x 1 Bedroom**
10 x 2 Bedroom
4 x 3 Bedroom

