Resilient Sprawl: An Alternative Auckland Plan

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ABSTRACT

In 2011, Auckland consolidated its seven councils into a single governing entity – the Auckland Council. Effectively, four cities and three rural districts were meshed into one city-region, with million and a half inhabitants.

For a year the new Auckland Council has worked on the Spatial Plan, a document to guide the development of a city expected to gain an extra million inhabitant in 30 years. The plan that has just been completed and adopted advocates a ‘compact city’ model, loosely based on New Urbanist thinking. The plan proposes a rough 70-30% split of development - 70 % within the existing cities boundaries, and 30 % outside.

This paper outlines an alternative growth strategy for Auckland to the official ‘compact city’ vision. Our proposition recognizes that the link between density and sustainability is much weaker than commonly understood. It also anticipates that the topology and technology of urban infrastructure is bound to profoundly change over the next couple of decades. This will further entice the centrifugal rather than the centripetal forces in the shaping of metropolitan form. We argue that the next million inhabitants of Auckland should be allocated, roughly evenly, to four main zones of the city-region: urban, suburban, peri-urban and ex-urban.

Our proposition also stems from the recognition that, in the face of climate change and expected resources shortages in the not too distant future, Auckland has neither time nor money to rapidly or radically transform its predominantly suburban urban form. Also related to security, we question the wisdom of encouraging high-density when this clearly
carries significant risk for a city founded on a very precarious natural site (volcanoes; earthquakes; tsunamis).

Keywords: Compact City, Sprawl, Linear City, Water City

Introduction

Global:
The world population continues to expand and this means the growth of all major world cities. The world faces a conundrum of how best to include all these new people within their cities while reducing the consumption of increasingly sparse commodities. The United Nations has forecasted a population growth of 2 billion between 2011 and 2041, and that approximately 2/3rds of the world’s population will live in urban environments (Auckland Plan, 2011, p. 22). This is an overwhelming number and means cities will be competing against each other to develop new technology, improve their economies and create higher quality living.

Global planning will be in a radical state of change between now and 2040 due to climate change and population expansion. Not only is the population growing it is also aging. This means that healthcare systems, transport, housing etc. will be have to be tailored to manage this change and adjusted to the meet the needs of a more elderly demographic. The expansion may also mean the creation of mega cities with populations of up to 80million people in one city. These are likely to be in developing nations such as China and India which may displace the world’s 30 largest economies such as San Francisco, Sydney, and Toronto. By 2040 the effects of climate change will be obvious with the increasing frequency of extreme weather events and the likely change of existing climate patterns. This may cause the shifting of populations from one location to another for safety and comfort. New Zealand is less likely to be effected by these patterns so may be encouraged to take refugees and other shifting populations. Sustainable locations will become more and more attractive to people and have an increasing importance in the global economy.

Cities will compete to attract skilled workers by being liveable; “Liveable cities need a competitive business climate and tax levels, a business-friendly culture, and excellent connectivity. To be recognised as innovation centres, cities will need to support education in the sciences and engineering; support the creation of leading research centres; foster closer links between those research centres and business; and foster collaboration between
complementary sectors to encourage the development of new products and solutions to pressing issues.” (Auckland Plan, pg.23, 2011)

**Auckland:**

Auckland is New Zealand’s largest city, home to an estimated 1.5 million people and one of the main commercial centres. This is one third of the entire country’s population. Auckland is economically unmatched by other New Zealand centres and is a hub of transport infrastructure with airports, ports, freight stations making Auckland a gateway to the rest of this trade dependent nation. Because of Auckland’s importance to the economy and trade, the wellbeing of the entire country is closely intertwined with its success or failure.

- 68% of international visitor arrivals and 76% of business arrivals to New Zealand come through Auckland Airport. (Auckland Plan, 2011, p.19)
- 47% of permanent and long-term arrivals in New Zealand have settled in Auckland. (Auckland Plan, 2011, p.19)

Auckland’s unique character has been primarily shaped by its history and geography. To this day, Auckland maintains its feel as a collection of villages joined together rather than just one big metropolis. The extensive waterways permeating the region help provide a lovely temperate climate and contribute to the wide diversity of the flora and fauna. This expansive city is set in an incredible natural setting rare amongst cities and is also very culturally diverse, giving Aucklanders a unique setting to live in.

This prominent metropolis is a typical post-industrial city. Valued as a lifestyle destination, surrounded by three harbours, and processing a benign climate it is at the same time guilty of many of the sins of the western new world city. Despite its setting, it is a sprawling car based suburban city where the citizens connect to a city of malls, big box retail, and office park through a pervasive motorway infrastructure.

Until recently, Auckland was divided into seven different councils; these have been joined into one overarching council to create the new ‘super city’. This new governing structure has led to the recent release of ‘The Auckland Plan’, a draft spatial plan to direct the development of Auckland and manage its growth from now until 2040. This is primarily as a response to the predicted population expansion for the region. The aim is for Auckland to become ‘the
world’s most liveable city’ while accommodating a new estimated population of 2.5 million by 2041. The plan proposes a rough 60/40 split of development, 60% within the existing cities boundaries and 40% outside.

The Auckland Plan aims to help Auckland achieve the goal of becoming the world’s most liveable city. This means a place that residents are proud of and want to stay in or return to and others want to visit, move to or invest in. A beautiful and loved city that is culturally rich and creative.

Creating the world’s most liveable city would attract and retain the skilled people needed for a strong economy. A good lifestyle isn’t enough to meet this goal, there also needs to be a more resilient and sustainable economy. A green Auckland with an emphasis on fairness, safety, and health would encourage prosperity and opportunity for all Aucklanders.

The council spatial plan aims to create a ‘quality compact city’ by increasing density within new boundaries (metropolitan urban limits) and limiting development growth outside of these boundaries with the exception of a few selected locations (Warksworth and Pukekohe). High quality design and the preservation of rural land are key components to this plan. The compact city model proposed is loosely based on New Urbanist thinking and a number of overseas case studies, and suggests that increasing density is the solution to creating a sustainable liveable city. Ideally the compact city model is supposed to limit and contain the much maligned urban sprawl that is seen to be taking over Auckland. The increased density should provide a more efficient use of public transport and is thought to reduce energy consumption, create a better social mix and a tighter community (Frey, 1999). The council also hopes that the denser city will

- Generate greater productivity and economic growth
- Make better use of the existing infrastructure
- Maintain rural character and productivity
- Reduce environmental impacts and
- Create greater social and cultural vitality

The new Auckland plan uses several techniques to concentrate urban growth within a defined geographical limit to encourage the compact city; encouragement of high-density apartments
and arbitrary development lines – RUB or Rural-Urban Boundary at the edge of city. There are several principles that are essential to the council’s compact quality approach.

- Quality First
- Generational change and transition to a quality compact form
- Growth primarily within existing urban areas
- A rural-urban boundary and staged release of greenfields sites
- Decade-by-decade housing supply

The details of these principles and how they will affect Auckland can be seen in the official ‘Auckland Plan’.

Much of the Auckland region is rural and it is proposed to continue to keep these areas rural and productive with limited development. In fact, approximately 70% of Auckland’s landmass is currently rural. Much importance is placed on rural land in Auckland, there needs to be a sustainable balance between production, protection and all activities associated with rural character.

Auckland’s urban environment is desired to become just as beautiful as the city’s natural setting. This is the aim of the quality compact urban plan suggested. Accessibility and aesthetics are an important part of this aim both in existing urban areas and in greenfield sites.

This paper outlines a possible alternative growth strategy for Auckland to the official ‘compact city’ vision. This proposition recognizes that the link between density and sustainability is much weaker than commonly understood, and that the topology and technology of urban infrastructure is bound to profoundly change over the next couple of decades. We argue that the next million inhabitants of Auckland should be allocated, roughly evenly, to four main zones of the city-region – urban, suburban, peri-urban and ex-urban.

This proposition stems from the recognition that, in the face of climate change and expected resources shortages in the not too distant future, Auckland has neither time nor money to rapidly or radically transform its predominantly suburban urban form. In addition, a high-density city model carries significant risk for a city founded on a very precarious natural site. We need an urban technological revolution. It will consist of a profound change in the design of urban technical systems. They will have to be clean, green, small, smart and decentralised.
Think of the new city as a giant farm - a sprawling artificial landscape that harvests clean energy, food, rainwater and treats and recycles its waste locally.

We believe that for Auckland to retain its status as one of the most liveable cities in the world, it has to exploit precisely its low density, because that factor makes its famous lifestyle possible.

Rather than trying to become a sustainable, compact city, New Zealand's largest metropolis should strive to become a super-liveable, resilient urban region. A low-density city that settles around its extraordinary landscape. We see that the implication of this idea has relevance to not only Auckland but too many other so-called sprawl cities around the world.

In the process of developing a new plan and strategy for growth based off landscape methodology, NZ could discover gold; its industries would be embarking on a form of green knowledge economy that is certain to be the greatest growth stimulus in the 21st century and a big exports booster. As the student projects demonstrate there are many ways this method can be applied while protecting New Zealand’s natural heritage. Continuing to grow Auckland based on a centric, compact layout, supported by traditional, expensive and vulnerable infrastructure, while fencing it off from one of the best residential landscapes in the world - would be an environmental, cultural and economic tragedy.

**Proposition**

From the research we have done and the observations we’ve made we believe that the compact city model is not appropriate for the Auckland region and will prove ineffective and unachievable in the time frame proposed. Unfortunately we don’t see how it can change Auckland into “the world’s most liveable city” in the time frame proposed and without great cost. As can be seen in contemporary urban planning research there are other options available to us that may suit the topography and form better and create a more resilient city.

There are 6 main reasons we do not believe the compact city model suited for Auckland

- The car has already shaped Auckland’s growth.
- The geography and topography of Auckland poses problems for creating a high density city. The isthmus constrains growth patterns with its many estuaries, hills, basins and volcanic cones.
Modern technology (It/Et) indicates increased decentralisation and mobility. Personal automotive transport will become more expensive with the expected peak oil crisis, but the impact will be moderated by transport technology such as fuel efficiency gains, and energy source substitutions.

There is plenty of evidence that there is more to sustainability than cars, travel distances and density. Buildings are a primary culprit in GHG emissions and dirty energy consumption.

A new focus on resilience (instead of sustainability, understood as mitigation) tells us that low density urban development is less risky. On many accounts high density cities are dangerously dependent on outside resources and in the case of a natural disaster more damage could be done with the condensation of people and services.

Liveability and lifestyle is an important factor if Auckland is indeed to become one of the best cities in the world to live. Enabling a close connection to its extraordinary natural landscape is more likely to attract the type of people we are told we must draw to make Auckland a successful city. A unique city rather than attempting to imitate the dense urban environments of the Old World.

Our alternative development strategy sees landscape as the new infrastructure and is based on a close study of the recent history of Auckland’s development, which is a low-rise sprawling city along the north-south motorway system; with a strong acknowledgement of the importance of the natural water landscapes that permeate Auckland. We have also looked at the global economic and environmental picture and have concluded that cities play a critical role in the global battle for sustainable development.

(Champion, T. & Hugo, G. (2004). A new green urban economy seems inevitable, and is not only applicable for Auckland but may actually be easier to achieve in Auckland than in many other cities.

Our research indicates that Auckland should grow along two different rationales. The first is industrial and commercial growth in a linear pattern that follows the existing State Highway One and the second is residential growth seeking natural landscape and climate amenity patterns reflecting the many waterways and coastlines along the isthmus. These can be considered the’ Linear City’ and the ‘Water City’ respectively.
The shape of the Auckland isthmus has guided Auckland’s pattern of growth into a roughly cross shaped structure with a main north-south axis. The main linear axis is focused around State Highway One and the historical railroad that connect Northland to the rest of the North Island through Auckland. The linear shape and organisation is almost inevitable due to the natural suitability of land for urban development. The overall land suitable for urbanization is about 100km long and on average 15-25km in width. Even if there should be a reason to fight against the natural linearity, policies and instruments aimed at alternating the form would struggle to succeed. This is the essence of the ‘Linear City’. The linear city is the backbone of the transport network and metropolis. A series of urban nodes along the linear spine such as high-density, mixed-use town centres would punctuate important points along the backbone. Each node would have a specific emphasis on a particular service or industry or amenity that would make them unique and important in the greater scheme and complement the other development nodes.

As previously discussed, waterways form an important part of Auckland’s isthmus giving rise to the ‘Water City’ concept. (Toy, D. 2005). Aucklanders have a special relationship to the
water due to its permeating presence. The beach acts as a social catalyst to bring people together no matter their social position, similar to the square’s role in Europe. The challenge for intensifying Auckland’s urban development by the water is to find sites that are not going to attract the criticism of existing inhabitants, yet can provide a water experience. The use of industrial/brownfield sites is one opportunity that has not been fully explored for this purpose. Many obsolete industries are located on the edges of both the Manukau and Waitemata harbours. Although they are often heavily contaminated and in need of extensive remediation, their location next to the water means they have high real estate value. We suggest that local government agencies could take the lead in decontamination the foreshore and establishing treatment facilities. Auckland would then gain remediated harbour, a new green public foreshore and a zone of intensified accommodation for the increasing population—the ‘Water City’. The water city symbolises the attraction of the beach and waterside living and embodies the idea of a good life between nature and city.

The resulting concept is a combination of the water and linear city, creating a deliberate duality. The two ideas highlight the tension in contemporary life between the rationality of work and the hedonism of free time and consumption. This new combination heralds a new culture of urban living—the interaction of work and play and economy and lifestyle. The
linear city is the symbol and guarantee of Auckland’s efficiency and the water city is the symbol and locus of Auckland’s status as the ‘world’s lifestyle capital’. The new urban sustainability paradigm sees horizontality as a strength, not a weakness. It is about a regional approach, smarter use of low density areas, and hybrid infrastructure. In other words, about creating a symbiotic relationship between the city and its region; pursuing polycentric development with multiple densities across the entire region; and an integrated mix of green, blue and grey infrastructure.

Most of the global urban landscape in the 21st century will be suburban and peri-urban. However this is not the parasitic suburbia of the 20th century, completely dependent on urban infrastructure. This is a productive, low-density landscape, consisting of partly autonomous properties, which are supported by a highly decentralized, ‘smart’, ‘clean’ and literally green infrastructure.

**Case Study--Potential Periurban Growth Areas East of Auckland**

To explore how this proposed landscape design approach could be applied to Auckland, three groups of students in the Bachelor of Landscape Architecture program at Unitec undertook a studio project to apply this methodology to South-East Auckland (Maraetai, Whitford, Clevedon, Wairoa). They used a landscape approach rather than a zoning approach to create a structure plan, and then divided selected locations spatially according to different landscape patterns and allocated development types and densities accordingly. They demonstrated how this approach to development can influence and shape the region with a range of approaches and outcomes. Although the focus for this project was on South-East Auckland the results and explorations are relevant throughout the Auckland Region.

In the first stage each group designed a growth strategy (structure plan) for an area outside the current metropolitan limits in South-East Auckland. Then during the second stage, each individual student took a selected site located within their initial group growth strategy plan and developed it into an urban design scheme. In the third stage students further developed detailed designs of green infrastructure, primarily water management techniques, included in their urban design scheme. The overall focus of the studio was on low impact urban design, ‘liveability’ (high quality of life) and ecological performance while accommodating new population growth.
Growth strategies

This section covers three different development scenarios created by the student groups. Each one explores what influenced the decisions made and the goals of the created structure plans.

1. South East Auckland Development Strategy
Matthew Burson, Chris Judd, Olivia Koch, Anna Squires

A focus on compact quality aims to improve the quality of life in a new Beachlands/Maraetai development. The site has been analysed with an emphasis on landscape conditions and the awareness that within the next 50 years the population will increase by approximately 1 million in the Auckland region. The target is to preserve, develop and enhance.

Analysis resulted in the selection of an area for the extension of the Auckland MUL (metropolitan urban limits). The new boundary follows a series of ridgelines and roads to develop and protect catchments inside and out of this new boundary, particularly the Clevedon Valley flood plain. It was important to connect this new development with the existing Auckland city.

The focus of the growth strategy is on the coastal settlements of Beachlands and Maraetai. This zone is defined by two main ridge lines that form a catchment and create a clear geographical boundary. This zone makes up 1/5 of the total extended MUL area, and development ideas in this smaller area could be projected throughout the extended zone. The plan is representational of the mixed use model such as that employed in Tauranga, which will be applied throughout the extended MUL.

The final result of the analysis combines all of the important information collected and provides the basis for determining the areas of development and density. These zones are shaped according to the relevant landscape elements and also the key ideas of high quality of living and ecological performance and enhancement. Tauranga was used as a case study helped to formulate a model for density zones and provided a framework for forming a city with a high quality of life. This new type of development has the potential to help cities grow in a positive way with less impact on the landscape. This model could help Auckland in maintaining its status as one of the most liveable cities in the world.
2. Vertical Sprawl: Ferry Infrastructure
Andrew Priestley, Rudolf Iseli, Eli Nathan, Jordan Draffin

*Embracing vertical sprawl to enable maximum density over a small footprint and to ensure valuable productive and amenity landscapes are used to their full potential. This will be centred on a planned ferry system.*

This strategy is based on coastal, ecological and public transport systems which can enhance and provide for the broad urban environment as well as ecological enhancement of waterways and established existing vegetation. Broad densities zones are integrated with ecology and coastal infrastructure.

As the metropolitan area of Auckland continues to grow, people need to utilise a wider variety of public transport options such as the proposed new ferry system. Case studies of Sydney and Vancouver guided the decision to create a viable and enjoyable compact urban layout embracing many of Auckland’s natural features. This is one of the main reasons for concentrating development in the Beachlands/Maraetai area. The aim is to provide similar recreational values found on the North Shore in a South-East Auckland context while providing a viable alternative to living elsewhere in Auckland and commuting to East Tamaki. Thus reducing peak flows North/South on Auckland’s SH1.

3. Auckland Growth Strategy
Blair Clinch, Dave Parker and Aidan Power

*A focus on development in the foothills surrounding the Clevedon floodplain intends to preserve the high quality soils and rural character within the floodplain. This concept has been derived through a landscape ecological approach with a goal to define the areas in need of revegetation.*

This strategy investigates the possibilities of an alternative model of urban development–horizontal urbanization outside the proposed Auckland urban limits. The focus is on the ecological performance and ‘liveability’ (high quality of life) of the proposed developments.
This development strategy is channelled through a framework of understanding landscape ecological systems.

The focus is on the Clevedon Valley, located east of Papakura, in South-East Auckland. After investigation it was discovered that the majority of the Clevedon Valley is a floodplain with highly productive soils and that the local residents desire to keep the regions rural character. A key aspect of this growth strategy is the preservation of the floodplain as productive land for crops and pastoral use with no development. Through the preservation of the natural floodplain, the rural character will also be preserved.

Analysis of the site revealed that development was best suited to the foothills of the Clevedon Valley where the soils are not as productive and on appropriate slopes with no important land cover. The slight variations in these characteristics of the site and also the closeness to existing infrastructure and settlements dictated the densities of development in the foothills. Because of the development in the foothills, revegetation was considered due to the possible contamination of the water running through the valleys in the foothills and down in to the floodplain due to the development. Revegetation was also proposed within the floodplain to filter runoff that might negatively affect waterways in the valley.

Reflection on SE Auckland Project

The project outcomes generated a few conclusions.

• Depending on landscape metric prioritisation, outcomes fell into three strategic categories: promote development opportunities, enhance ecological areas or protect productive land.

• The approach tended to be landscape conservative; only a couple of projects favoured extreme development scenarios.

• Concluded that not one strategy was more feasible over another for such a large area, and that aspects of each could potentially be adopted over time.

• Each project could be framed within a longer timeframe e.g. initial growth around existing settlements + transport nodes, followed by development of slopes and then finally ridges.
Not surprisingly each group came up with unique growth strategies and designated areas of land retirement. The general observation after this first phase was that there wasn’t actually that much land in South-East Auckland suitable for development without encroaching on land that either wasn’t appropriate for building or was more suited to other purposes such as agriculture.

The individual urban design development phase also differed depending on each student’s areas of research and conclusions as to what would create the most sustainable landscape driven development. These ranged from more compact nodes of high density development to low density subdivisions. These demonstrate some resulting outcomes that reflect possible new planning options for the Auckland region.

**Conclusion**

This investigation demonstrates how a landscape-based methodology for an ecological urbanism can be developed from a close understanding of both infrastructure and landscape to produce a radically new design for the post-city Auckland. Approaching the city as a landscape, internally supported with green, grey, smart infrastructure, (Mostafavi, M. (2010). Wellington 2040 (2011). offers a fresh direction. In Auckland’s case, due to a fortunate set of historic and geographic circumstances this new model would be easy to implement. By accepting a low-rise, regionally polycentric city (Hall, P., & Pain, K. (Eds.) (2006). Auckland can become a new model of urban-regional development of relevance for all low-density cities in the world. This is significant as similar cities now compromise 60% of all the urban fabric in the world, and within 10-20 years might even reach 90%. For them, the compact city model is of little relevance.

We foresee that Auckland 2040 will be a linear city, with a 100 km long ‘infrastructure spine’ running through its middle. On both sides of the spine, there will be suburbs with town and suburban centres. The spine itself is like a necklace - a corridor of fast-transit and other high order infrastructure connects a dozen of city-hubs. On the spine’s flanks, both along the sea and the land side, are the suburbs with varying densities. They are endowed with all the local and natural amenities and supported by a mix of green and technical infrastructure, with varying degrees of independence/reticulation.
There will be variations in Auckland’s growth and the student projects demonstrate how and why this occurs. However, the acceptance of landscape structured growth is key to creating a new Auckland that is both sustainable and highly liveable.

References:


