THE EMERGENCE OF A GREEN NETWORK FOR A FUTURE REGIONAL AUCKLAND

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ABSTRACT

This paper discusses how a green network for regional Auckland could emerge from a close study of both the ecological and social forces at work in contemporary New Zealand urbanism. The paper begins by reviewing the importance of a green network in the shaping of a regional city structure and maintaining the Auckland lifestyle. The authors develop a methodology based on two sets of criteria, environmental and social. Three case studies are developed, ranging in scale from the regional through to the local to test the design methodology. The paper concludes by suggesting that by guiding the emergence of a green network in the greater Auckland Region, the growing population will gain both a new enlarged public realm and ensure the continuation of the existing Auckland lifestyle.

INTRODUCTION

Compared with other major cities in the world, Auckland has a unique urban-nature relationship and a high quality lifestyle. One of the most distinctive features of Auckland is the balanced interaction between the urban and natural environments, that is manifested as decentralised urban districts integrated with a large range of green parks. (1, 2) Another element of Auckland’s identity is the traditional kiwi lifestyle, characterised by separate dwellings with their own gardens. Although Auckland has some serious urban challenges to face, including high house prices and worsening traffic congestion, the current green network of parks provides Auckland’s a high quality urban life with relatively limited crowding, minimal pollution (in comparison to many cities, especially in the Asia region), scenic beauty and easy access to outdoor spaces.

However, the increasing population and on-going urban expansion is challenging these advantages. Firstly, Auckland’s population is expected to grow significantly in the mid-term. According to the proposed Auckland Unitary Plan, the city’s population will grow from the current 1.4 million people to 2.4 million by 2040. (3) This will cause more pressure on both environmental and urban structures. Secondly, the continuing urbanisation process may continue to 2100. (4) This will mean that Auckland and its surrounding towns will keep growing after the current proposed Auckland Unitary Plan expires, which could potentially result in greater pressure on existing green spaces. These spaces are both public land such as parks and private land like farms and forestry. They are located both within the proposed RUB and outside, within the greater Auckland region.

Recent research has shown that cities and towns in the upper North Island, from Whangarei to Hamilton and Tauranga, have been growing as strongly as Auckland. (5) These regional towns and cities are expanding, getting ever closer to the boundaries of the greater Auckland city. The existing green spaces that Auckland’s value so much are coming under threat from this development. An example is the recent urban growth of Pokeno. Pokeno is now a burgeoning suburban town with large milk processing factory. The traditional green farmland of the north Waikato has been subsumed by the development of an Auckland suburb. The recent sale of a large farm in Wellsford for subdivision is another example of how the traditional green spaces of the Auckland landscape are changing northward as well as southward. Given this seemingly inexorable development, there is a need to urgently preserve the fragmentary existing public green space and to plan to retain and conserve private green space in the greater Auckland region, while allowing for future urban development.

AUCKLAND REGIONAL CITY THINKING

The research frames these issues within a review of recent international thinking on designing green networks from an environmental and social perspective. Three themes were reviewed around the research question; the regional city form, green networks and lifestyle urbanism.

THE REGIONAL CITY

The concept of a regional city or city-region could be described as, “the presence of a core city linked by functional ties to a hinterland”. (6) The framework of a city-region is a network of different-sized settlements. A number of urban spaces surround and related to a bigger centre city, they are hierarchized by
The development of city regions is a process of decentralisation. Peter Hall describes how a population is decentralised from cities to their suburbs, and then moved outside to smaller towns. During this process, cities play the core role within larger city regions. With continuous development, smaller cities and towns are incorporated into even larger 'mega-city regions'. Within the city-region context, studies of individual cities or towns are not enough to understand regional urban forms or to plan regional urban futures. To achieve this goal a whole city region has to be studied.

THE GREEN NETWORK

Worldwide design practices show that a green network is an essential element in shaping regional urban forms, in terms of providing ecological sustainability and maintaining a resilient environmental structure. A green network is made of different kinds of green space; public and private, native and exotic and of different scales, from regional parks to tiny fragments within larger urban developments. Green space also plays a critical role in enhancing the quality of individual life, especially acting as a sub-centre divider, a development direction guide, as a retrofitting tool, and as green infrastructure. Moreover, the accessibility to public green spaces, both parks and beaches, is one of the three key elements of the kiwi lifestyle, that include relatively low urban density and mixed dwelling types.

LIFESTYLE URBANISM

Lifestyle refers to people's urban life quality, which could include dwelling type, transport preference, green space accessibility and convenience of services. There is a lot of research that discusses the relationship between people's lifestyles, urban planning, and the provision of green space. However, there is not much research discussing the relationship between lifestyles and a regional city's spatial form.

The New Zealand lifestyle is widely praised and is a key attraction for overseas people. Bogunovich and Bradbury argue that Auckland's lifestyle will affect the development of a regional urban structure. They suggest that Auckland will become the 'world's lifestyle capital'. Based on the recognition of low-rise urban development pattern along SH1, they propose an alternative vision for Auckland 2040, a 100 kilometres linear conurbation. Their speculative development plan proposes a sustainable and resilient structure for Auckland's regional growth. The project outlined in this paper acknowledges the linear city concept, and extends it further to a 230 kilometre long city beyond Auckland regional boundaries and the current planning time frames.
METHODOLOGY

To facilitate this research, a specific methodology was developed. Through site visits, mapping and analysis, two investigations were established to guide the following design work.

The first investigation, based on environmental criteria, explores how green networks can shape a regional city's structure in both planning process and government policy. The investigation also provides measurements and specific design techniques for the development of a green network. In order to build an ecologically and socially effective green network, the research suggested that there is a need to not only maintain existing green spaces but also to create new green spaces. Strategies to increase the size of existing reserves and to encourage ecological linkages were explored to extend potential green spaces. (21, 22, 23)

The second investigation was based on developing social criteria through an investigation of an Auckland suburb; Remuera. Remuera, a traditional Auckland suburb, was chosen as an urban development model because of its low-density character and the easy and close connection of dwellings to green space. Based on an analysis of census data and maps of Remuera, three main conditions were identified; population density, dwelling types and green space accessibility. These conditions were used as ways to help a potential urban area to emerge in a future green belt.

Data on the selected conditions was analysed and mapped through GIS (Geographic Information System) software, one of the most powerful tools for understanding complex landscape and urban conditions. (24)

GREEN NETWORK FOR A REGIONAL AUCKLAND

How a green network might manifest at three scales; a regional Auckland, the Warkworth-Silverdale zone and the Puhoi village, was explored as case studies to test the research proposition.

REGIONAL AUCKLAND

The Regional Auckland study area covered Auckland, part of Northland, the Waikato and the Bay of Plenty. The study particularly focusing on a 10km buffer zone along SH1. This is the area identified by Bogunovich and Bradbury as being the infrastructure spine of a new linear regional city. As well as the main transport corridor, this route also contains other essential infrastructural services; the national electrical grid, main gas pipes and potable water. Infrastructure drives contemporary urbanism, the location of these services again emphasises the inevitability of urban development along this corridor. With this urban growth also comes the desirability of an established green network of public spaces for the recreation of the new citizens and to impede the tendency for sprawl. The study found that existing green spaces along the corridor, including public conservation sites, native forests and water bodies, where limited and fragmented, it would be difficult to link them into a contiguous ecological network. However through a GIS analysis, a large number of private green spaces were recognized as having the potential for extending the existing public green network. These areas are characterised as; exotic
forests, steep land, flood plains and rivers and streams. The research suggested that a regional green network could be established in the greater Auckland region by purchasing or encouraging the gifting of private land, and developing a revegetation process in conjunction with the repairing and regenerating the existing public green spaces. From Whangarei to Hamilton, six green networks were identified as buffers between future urban developments.

REGIONAL GREEN NETWORKS - THE GREENBELT

Because of the dual nature of the proposed green network, both as an ecological corridor and as a constraint on urban sprawl, the term green belt was introduced. The idea of the green belt, a park network around an urban settlement, is a well-known trope in 19th century urban planning. Six greenbelts are proposed, these would become a new green network along either side of the SH1. Five of the new greenbelts would be forest parks, and one would be a water park. Through a purchase and revegetation programme, the suggested green belts could expand to two or three times their current size. The largest proposed green belt would provide a green network from Warkworth to Silverdale, which would be nearly 15km along SH1. The shortest green belt would be made up of existing parks from Silverdale to Auckland, with a length of about 2.7km. The water green belt would be located from Tuakau to Huntly, including Lake Whangape, Lake Waikare and a small amount of forest. The location of the green belts are:

- Green Belt A, Waipu Gorge Forest and the Bynderwyn Hills.
- Green Belt B. Sunnybrook Reserve and the Dome Valley.
- Green Belt C, Fohuehue Reserve and Nukumea Reserve.
- Green Belt D. Coatsville Reserve and the Long Bay –Okura Marine Reserve.
- Green Belt E. Lake Whangape and Lake Waikare.
- Green Belt F. Taupiri Range and the Hakarimata Range.

(See the Green Network Plan for details)

THE WARKWORTH AND SILVERDALE GREENBELT

From the regional green network analysis, a greenbelt in the Warkworth-Silverdale area was identified (see the Warkworth-Silverdale Greenbelt Plan for details). In addition to the green space criteria developed from the first case study, another set of green space design strategies were used to shape an ecologically effectively green network. The key strategies used in this case study include; buffering existing green spaces, revegetating potential green spaces, planting existing river/road corridors, and rezoning land use

The research suggested that through a carefully designed purchase process over 20 years, a public green space network could be built along the Puhoi Valley, located in the middle of the W/S greenbelt. This public park would be about 10 km long, adjacent to the Puhoi River and connecting the hinterland with the coast. Through the installation of camping grounds, walkways, recreation sites and car parks in the new park more social opportunities would be made available as well as improving the ecological value of the site. The W/S green network would provide more space for both native species and human social activities.

This case study suggests that through careful purchasing, gifting and a revegetation process, more land could be converted for use as public green spaces. For example, potential land for a green network, such as land with excessive slopes or land that could flood is not valuable. By using a GIS based planning methodology, critical sites can become identified and either purchased or landowner can be helped to gift the land. This makes the creation of a future green network more cost effective than buying the land in the future. An example of land that has been gifted by private land owners recently in the Auckland region is the 196 hectares of the Mangawhai North Forest gifted for a conservation reserve in 2014. The land included beach frontage, wetlands and dunes, and the Te Arai Stream. This gift, part of a property development deal, will combine with existing DoC and Council owned reserves to make up over 500 hectares of contiguous public coastal land south of Mangawhai.
The Puhoi village case study focuses on a smaller scale project to show how urban development could emerge within a proposed greenbelt. Social conditions from the Remuera study were used to generate urban and landscape strategies for Puhoi’s future structure. Important conditions included: allowing for an average population density of about 40-60 people/ha; determining the proportion of single houses to flat/apartments of around 7 to 3; allowing a maximum distance from each house to an adjacent green space of about 500m. Through the modelling of these unfolding conditions north of the Old Town, the research suggested that the population in Puhoi could increase 4 fold while maintaining the historic town centre.

Through a continuation of the environmental strategies developed in the large scale modelling; a new green space for the town was identified on the north side of the Puhoi River. This new green space would not only enhance the existing native environment, but would also make a strong connections between the historic town and the new town. Based on the existing topography and hydrological networks three green corridors would emerge across the new urban zone, linking the northern green space to the southern green belt. The design of residential gardens would be considered as a core element to be surrounded by new building clusters. Pathways instead of roads have priority to connect houses to gardens and parks (see the Puhoi Master plan for details).

The emerging urban landscape strategy for Puhoi suggests that a new town could develop with the construction of a green network. The new green space and ecological corridors would not only support a high quality built environment, but would also ensure a good quality of life with easy access to the native environment.
Given the current and future pressures on the greater Auckland region, the preservation and expansion of the current regional green space network would provide an important way to protect both the regions high quality environment and important lifestyle. Research findings from this project suggested that an enhanced and enlarged green network would not only offer the growing population of Auckland a new regional green network but could also provide more desirable urban land for a growing Auckland. The result of these two operations will enhance the quality of life for future citizens.

A regional green network would dramatically increase the accessibility to public green space for people living in the projected new cities and towns along the SH1 spine. Current towns around Auckland are mostly surrounded by private farm land or forests. By purchasing some of this private land, identified in the GIS mapping process, and encouraging a revegetation process, a large scale green network would start to be established. Citizens in the new towns and cities would have easy access to the new public green space network, all planned to be no more than 5km away from the new urban centres. The new green network would offers people a variety of outdoor activities, passive recreation and meet other social needs.

By preserving native ecotones, native species will be helped to move and migrate. Through the protection of public conservation sites, native bush and water bodies, plus establishing linkage through corridors from hills to the sea, the numbers of wild plants and animals could be increased. Their movement would enhance a resilient ecosystem and increase biodiversity, which are fundamental to the preservation of the Auckland regions native environment.

A green space network in the greater Auckland region would also prevent urban sprawl. Facing the persistent urban growth trend along SH1, cities and towns like Albany and Silverdale have almost connected together. The proposed green space network could contain some of the cities and towns on more or less their existing sites, while allowing new developments within the proposed green network. Urban sprawl threatens green space, it better to plan an effective green network around which future urban development can occur. Preserving green space in the greater Auckland region is not anti-development, but will rather result in better urbanism by identifying suitable sites for smart urban development instead of letting sprawl occur.

This research project suggests that a new green space network can contribute to improving the living environment of the new Auckland citizen. The new green networks will dramatically increase the access to green space for people living in the new cities and towns of regional Auckland while at the same time limit the growth of those town and cities thus preserving the enviable Auckland lifestyle.

**FOOTNOTES**


(20) Bogunovich, & Bradbury. (2012).


