

AUCKLAND PERMACULTURE WORKSHOP SUBMISSION TO AUCKLAND UNLEASHED DISCUSSION DOCUMENT



Optimist

“It seems likely that globalisation driven by mass production, technological innovation, reduced communication costs and free trade agreements will support resumed economic growth”¹

1. Auckland Unleashed Discussion Document, page 43



Pessimist

“If the present growth trends in world population, industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next hundred years”²

2. Club of Rome: Limits of Growth, 1972. The Club of Rome was the first attempt to apply computer modelling to resources, population, and sustainability. Repeated computer runs using more sophisticated software and updated data give same result - 30 Years On. See also Millennium report, World watch Institute, <http://www.worldwatch.org/>



Realists...

“With growing population forecast, much depends on our future success in decoupling population and economic growth from the production and consumption on the environment”³

3. State of the Auckland Region: Summary,2010. Auckland Regional Council.



“If we do nothing, we still get to a post-carbon future, but it will be bleak. However, if we plan the transition, we can have a world that supports robust communities of healthy, creative people and ecosystems with millions of other species”⁴

4. Richard Heinberg, Post Carbon Institute - <http://www.postcarbon.org/about/> - Retrieved May 2011.



Introduction

Auckland Permaculture Workshop (APW) is a Not-for-Profit organisation that provides education and research services that support sustainable and resilient design of the Auckland bioregion. Our organisation is founded on permaculture design principles, which seek to create resilient communities through enduring, productive systems that provide for all human needs, while integrating people with the local environment. Our clients and students represent the growing pool of citizens that are concerned about how the World, New Zealand and Auckland will face the looming challenges of:

- Reduced oil and resource availability;
- Financial market instability and increasing inequality;
- Increased climatic instability and degrading environmental quality; and
- Degeneration of social equity

APW believe that the Auckland Unleashed Discussion Document (AUDD) has failed to characterise with appropriate weight the scale and range of global and local trends that will shape the Auckland bioregion for the next thirty years and beyond. In particular the discussion document insists that economic growth is both necessary and desirable⁵ and assumes that it is directly linked to quality of life and will make Auckland “the most livable city in the world”. APW challenge this assumption.

To support the vision of creating a vibrant and livable city, Auckland must address issues of: population, shelter and employment whilst adjusting to economic uncertainty, resource depletion, aging population and repairing previous environmental degradation.

The level of change required to support Auckland’s vision is well beyond incremental ‘tinkering’. Auckland’s endemic potential can only be “unleashed” through a ‘fundamental transformation’ of the way we relate to our environment, the global economy, and ultimately each other.

To thrive in the face of huge global challenges, Auckland will need a holistic and long term vision that “unleashes” the potential of the natural, social and cultural capital of our city while respecting the natural limitations and carrying capacity of our bioregion. APW contest that ‘resilience based planning’ is an approach with the capacity to deliver Auckland’s vision, whilst the existing ‘economic growth’ based doctrine is likely to exacerbate existing failings - We must plan to develop a resilient bioregional city.

This submission is in two parts - The first explores the principles that define strategic planning of Auckland. The second offers observations and opportunities for consideration for each sector considered by the AUDD. The opportunities offered are in no way comprehensive and present only a small selection of the

5. Auckland Unleashed Discussion Document pages 21 and 43.



innovations and initiatives that need undertaking to ensure that Auckland not only becomes the world's most livable city. Implementation of these opportunities will require both significant changes in public policy, regional governance, and the support of participatory local initiatives. Auckland Council will need to empower community groups and social entrepreneurs to drive change.

APW believe that pursuing many of the opportunities herein will help re-direct and guide Auckland towards resiliency and prosperity in a time of unprecedented change and uncertainty.



Part One

BACKGROUND



Global Mega Trends

The AUDD outlines four global mega trends that underpin the strategic direction of the document.

- Globalisation and the knowledge economy;
- Doing more with less;
- A global sense of urgency to fix the environmental problems of the modern world; and
- The growth of the services sector in western economies is being shaped by a second wave of innovation aimed at tailoring and targeting services.

Planning for the future requires accurate portrayal of current forecasted conditions. The AUDD has failed to characterise with appropriate weight some of the key future trends that are going to affect Auckland over the next thirty years. In particular, there is very little acknowledgement of the increasing instability of the global economy and the stated environmental issues. In particular, both peak oil and resource depletion are extremely understated. As a result, the AUDD has not made the necessary systemic connections between these phenomenon to establish coordinated strategies for building community resilience at local and regional scale.



Exponential Growth



- Energy use, fossil fuels in particular
- Consumerism and waste accumulation
- Emissions and pollution
- Debt
- Population
- Intensive agriculture, horticulture and forestry
- Rock phosphate and fertiliser production
- Deforestation
- Housing Needs
- Increasing cost of living
- Water consumption

Figure 01. Graph demonstrating general pattern of exponential growth in a range of systemic variables.



Diminishing Returns



- Availability of oil and cheap energy⁶
- Resource availability
- Climate stability
- Equality
- Topsoil and arable land
- Biodiversity
- Healthy, safe and affordable food
- Aging building stock and quality of living environment
- Diversity of rural landscape and economies
- Efficiency gains made through technological innovation
- Innovation as measured by patents awarded

Figure 02. Graph demonstrating general pattern of diminishing returns in a range of systemic variables.

6. International Energy Agency (IEA) has stated that peak oil occurred in 2006 (IEA 2010) and that the rate of global decline of conventional-oil fields is 6.4 percent per year (IEA, 2008).



The Worlds Most Livable City will be a Resilient City

A resilient city is one that has the ability to absorb and respond to change and continue to function in the same or similar way.⁷ The change can range from business as usual small scale disturbances through to unprecedented events requiring fundamental cultural transformation.⁸ A resilient community is therefore one that changes in response to forces it can foresee and also to forces that it cannot. A livable city must be able to effectively prepare itself and respond to the range and scale of changes we can expect over the next thirty years. *"We must prepare for business unusual. While the general trends are clear, it's impossible to specifically predict exactly how world events will unfold. Therefore, it's critically important that we build resilience on the individual, community, and global scale. Resilient people and communities are characterized by their ability to absorb shocks, disruptions and unexpected setbacks while maintaining their essential identity and values".*⁹

A resilient city also requires a degree of 'redundancy' or unused capacity within the system. When efficiency is the imperative, the consistent effort to "do more with less" will inevitably start to use up spare capacity. For example, our productive landscapes and conservation estates need to be large enough and have enough diversity to fill the vital roles of food production and maintain ecosystem function while having the capacity to withstand disturbances such as wind, flood, drought and fire. Likewise, a local economy must continue to provide people with their daily needs, maintain stable livelihoods and a sense of self worth

in their employment while absorbing and responding to external fluctuations in national and global economies. Failure to respond and adapt to any of these stresses will undermine the goal of a livable city.

Planning for resiliency requires a more "internally focused" society and economy, where domestic food, shelter and energy production are prioritised above exports and imports. Meeting local needs first builds a "sustainable" foundation based on local potentials and limitations that will support increased levels of infrastructure support and international engagement over the long term. The long term target of this approach is maximum well-being for all and is strongly aligned with the vision for making Auckland "the most livable city in the world".

7. William Rees. Thinking "Resilience". In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010

8. Davidson-Hunt and Berkes, 2003 quoted in Comfort (et al). Designing Resilience: Preparing for Extreme Events, 2010.

9. Post Carbon Institute - <http://www.postcarbon.org/about/> - Retrieved May 2011.



An Ecocity will be a Regenerative City

Regeneration implies restoring a system or environment to a more productive, resilient and prosperous state than it is currently. Ecosystems, given the opportunity, constantly tend toward a state of increased diversity, fertility and productivity. A regenerative city is one that employs these processes to provide people with food, water and shelter, restore historic environmental degradation and create sufficient areas of indigenous ecosystems in order to ensure self regeneration.¹⁰ The same principles are applied to the social and economic spheres with the regeneration of social, financial and natural capital. Core principles of a regenerative city are:

- Recognising that *"population growth and/or growth in the rate of consumption of resources cannot be sustained"*.¹¹
- Use of renewable resources at a rate less than or equal to the rate of natural replenishment.¹²
- Use of non-renewable resources at a rate that is reducing, where the rate of reduction is greater than or equal to the rate of depletion of the resource.¹³
- Ensuring that all substances introduced into the environment from human activities are minimised and rendered harmless to ecosystem functions.¹⁴
- Kaitiakitanga and stewardship - Integrating users' values, knowledge, practices and responsibility in the management of ecosystems and landscapes.

- Creation of a cyclical / closed loop urban metabolism that ensures long term symbiotic relationships between the city and its own productive bioregion.

10. Colin Meurk and Simon Swaffield. A landscape ecological framework for indigenous regeneration in rural New Zealand Aotearoa, 2000. In - Landscape and Urban Planning 50:129-144.

11 - 14. Richard Heinberg. What is Sustainability?. In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.



Part Two

RECOMMENDATIONS





People and Quality of Life

Quality of life must be at the very heart of the aspiration to create "the most livable city in the world". Therefore, creating a vision and a road map for Auckland requires us to think long term about the challenges and opportunities associated with maintaining and enhancing the quality of life for all Aucklanders over successive generations. Demoting economic growth tools as the primary measure of quality of life must be one of the first priorities of any council attempting to create the world's most livable city.

"Too much and too long, we seem to have surrendered community excellence and community values in the mere accumulation of material things. Our gross national product ... if we should judge [Auckland] by that - counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors and the jails for those who break them. It counts the destruction of our redwoods and the loss of our natural wonder in chaotic sprawl... Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country; it measures everything, in short, except that which makes life worthwhile".¹⁵

15. Adapted from Robert F. Kennedy address to University of Kansas, Lawrence, Kansas, March 18, 1968 - [Auckland] replaces "America".



Recommendation I

Formally Adopt Genuine Progress Indicators

Auckland must develop a more effective and diverse toolkit to measure a range of markers and targets that will make it a world-class 'livable city'. Measures of this nature are often described as Genuine Progress Indicators (GPIs) or Sustainability Indicators. These measuring tools, designed well, will form the bench mark to which we aspire and measure the progress of Auckland over time.

GPIs have been developed and adopted by multi-national organisations, nation states and regional governments around the world in response to a growing awareness of Gross Domestic Product's (GDP) inability to measure or reflect the true wealth and progress of countries and societies. GPIs are effective tools for local and regional governments to identify their own indicators of wealth and prosperity and to measure their own progress in relation to the indicators they have developed.

The United Nations Commission for Sustainable Development has developed comprehensive sustainability indicators to allow governments, organisations and communities to measure and compare their progress in sustainable development.¹⁶ These indicators are Poverty; Governance; Health; Education; Land; Demographics; Atmosphere; Biodiversity; Fresh water; Natural Hazards; Ocean, seas and coasts; Economic Development; Global Economic partnerships; Soil; Food; Shelter; Energy/Fuel; Rate of Change; Biological Productivity; Biological Diversity; and Consumption and Production patterns.

16. United Nations Commission for Sustainable Development.

17. Measuring New Zealand's Progress Using A Sustainable Development Approach: 2008, Statistic New Zealand.

Recently the Ministry for Social Development and the New Zealand Treasury Department have developed GPIs to set targets, measure changes and re-define progress. Statistics New Zealand have also developed national sustainable development indicators to measure progress and change.¹⁷ These are: Population; Biodiversity; Air and atmosphere; Water; Land use; Energy; Transport; Waste; Innovation; Work, knowledge, and skills; Economic resilience; Living conditions; Health; Social connection and governance; and Culture and identity.



Recommendation II

Establish a Transition Network Task Force

Auckland must develop strategies for adapting to short and long term systems change. Nowhere is this more evident than the short term need to adapt to rapidly decreasing supplies of oil and the resulting contraction of the economy and the long term effects of climate change. In short, Auckland must plan how it is going to transition away from a fossil fuel based economy toward greater self reliance. In order to progress, APW recommends that a *Transition Network Task Force* (Task Force) of professionals is established to research our dependencies and vulnerabilities and develop strategies and policies for the required transition. The task force would in the first instance focus on three distinct areas:

i) Peak Oil

Establish an agency that can develop a detailed post-carbon mobility plan and facilitate its effective implementation (see also *Recommendation XI*).¹⁸

ii) Climate Change

This Task Force will also need to be responsible for strategies and policies related to climate change mitigation and adaption that are unique to Auckland. This agency will need to be able to have sufficient political power to influence council policy and local governance in order to safe guard environmental, social and economic securities and qualities for current and future citizens that are threatened by climate change.

iii) Local Community Development

Set up formal frameworks to recognise, fund and support community generated transition initiatives.¹⁹ Part of this framework will likely involve establishing seed funding for transition initiatives that seek to address energy restrictions and continued energy price increases, climate change, local economic regeneration and development.

18. For example: City of Portland Peak Oil Task Force - Descending the Oil Peak: Navigating the Transition from Oil and Natural Gas, Final Report, March 2007. <http://www.portlandonline.com/bps/index.cfm?a=145732&c=42894>.

19. A transition initiative is a self organised grass roots community group with the intent of "catalysing change by creating enthusiasm in communities to begin exploring and implementing the practicalities of rebuilding local economies in all their aspects", Rob Hopkins, 2008. *The Transition Handbook: From Oil Dependency to Local Resilience*.



Recommendation III

Develop Education and Skills Training for _____

a Post Carbon Auckland

Building resilience across the region will require widespread understanding by the citizens of Auckland of why and how economic and social structures will need to adapt to a post-carbon era. Citizens will also need opportunities to access and develop new skills and knowledge relevant and appropriate to these inevitable changes. *“This will require knowledge and skills that are not commonly acquired in most formal educational settings today. There are numerous areas in which people will need to be educated, not only to meet the needs of an energy-constrained future but to develop their own useful livelihoods. The post-carbon era is going to require our re-conceptualizing many already existing programmes, extending some programmes to include new areas of knowledge, and, in some cases, developing entirely new programmes of study”*.²⁰ Listed below are examples of the areas of skill training likely to be required for transition towards a in a post carbon future.

- Business and Finance: Setting up and running local businesses, banks and currencies;
- Health Sciences: Developing health-care delivery and product alternatives including alternative therapies and green medicine.
- Community Development and Governance: Empowering citizens to work with local boards, decentralised decision-making, delivery of services in an equitable manner and participatory conflict resolution processes.
- Agriculture and Forestry: Training in organic growing, seed saving, agroforestry and analogue forestry and permaculture systems design;
- Culinary Arts: Food processing, preparation and preservation;
- Building and Construction: Retrofitting old housing and building stock;
- Engineering and Industry: Refashioning metals for practical tools and machinery;
- Re industrializing for small-scale local production of necessary goods;

20. Nancy Lee Wood, 2010, Community Colleges: A Vital Resource for Education in the Post-Carbon Era. In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.



People and Economy

Global cities have an increasingly extensive reach into national and international markets. As such, today's cities are as dependent on rural production as they have ever been but today's 'rural hinterland' is now distributed across a global network of trade. This global reach reduces local economic diversification and development while increasing wealth leakage, resource extraction and exploitation, employment insecurity and vulnerability to global market forces. In particular, free trade and globalization break down the barriers among national economies, facilitating the specialization of economies toward a few products or services which it has 'comparative advantage' over others for domestic production and ultimately for export. This "singular emphasis on maximizing growth through trade assumes a stable world and unchanging market conditions—that is, that there are few risks associated with either specialization or trade dependence... The fact is that the real world is one of rapid ecological and cultural change, and in these circumstances perhaps nations should be asking whether narrow specialization and trade or greater structural diversity for self-reliance would better serve their needs for enhanced socioeconomic resilience"²¹.

The Business Alliance for Local Living Economies (BALLE) is a network of socially responsible businesses that believe that local, independent businesses are among our most potent change agents, uniquely prepared to take on the challenges of the twenty-first century with an agility, sense of place, and a relationship-based

approach to sustainable development. The two core principles underpinning BALLE are:

"The wealthiest communities are those with the highest percentage of jobs in businesses that are locally owned. A growing body of evidence suggests that local ownership in businesses pumps up the multiplier effect of every local dollar spent, which increases local income, wealth, jobs, taxes, charitable contributions, economic development, tourism, and entrepreneurship."²²

"The wealthiest communities are those that maximize local self-reliance. This doesn't mean that they cut themselves off from global trade. But they rely on trade only for the diminishing universe of goods and services that they cannot competitively provide for themselves."²³

21. William Rees. Thinking "Resilience". In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.

22 + 23. Michael H. Shuman. The Competitiveness of Local Living Economies. In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010. See also - The Business Alliance for Local Living Economies - <http://www.livingeconomies.org/>.



Recommendation IV

Develop a Bioregional Economy ²⁴

Auckland is a distinctive bioregion characterized by a unique landscape and assemblages of flora, fauna, people and culture. A resilient bioregion is best supported when both local and global economies respect the potentials, limits, and carrying capacities of the bioregion and recognizes the grass-roots concerns, talents, and visions of local communities that make up the bioregion.²⁵ APW recommends that the following key concepts and strategies are implemented:

i) Self Regulation

- Develop Genuine Progress Indicators to measure and monitor local social, environmental and economic performance (See Recommendation I) including formal recognition of the natural limits and carrying capacity of the Auckland bioregion (Figure 3 below).
- Encourage triple and quadruple bottom line accounting.
- Introduce taxes and tariffs on all capital degrading and exploiting practices and behaviours and financial transactions. For example: Escalating taxes for oil based transport (See Tax Oil Based Transport - Recommendation XI).

ii) Refueling²⁸

- Constantly reinvest into all forms of capital - Natural, built, human, social, cultural, and financial. For example see Recommendations III + V.
- Build in 'redundancies' - Safety nets, flexibility and sub-optimal efficiencies to build resistance against natural and man made disturbances through to

unprecedented events

- Maximise multiplier effects of local economies by creating a bioregional currency; investing in financial management structures that use and encourage interest free transactions and services; and support transition initiatives to create their own local complementary currencies (See Recommendation III).

iii) Stretch Imports²⁶

Stretch imports to ensure that any import entering a local economy is utilised to its fullest before its useful life is spent and is utilised to refuel, capture further and different imports and / or invest in new important replacing initiatives. Two ways of achieving this are

1. Incorporating imports into new exporting enterprises; and
2. Replace imports with local production and shift purchases to other imports.

iv) Substitute Imports²⁷

"To be self-sufficient and vital, cities and their surrounding regions must replace imports with their own raw materials, goods, services and expertise. By replacing imports, cities and their surrounding regions may, enlarge markets for local and nearby rural goods, increase the numbers and kinds of local jobs, increase transplants of city work into the local region, create new uses for the technology of rural production, and grow city capital".²⁸

24. After Jane Jacobs, 1985 (City Regions); Robert Thayer, 2003, John Lyle, 1999 among others.

25. Robert Thayer. Life Place: Bioregional Thought and Practice, 2003.

26 - 28. Jane Jacobs. Cities and the Wealth of Nations: Principles of Economic Life, 1985 and The Nature of Economics, 2000.

27. Robert Thayer. Sustainable City Regions: Re-localising Landscapes in a Globalising World, 2005. In - Landscape Review - Volume 9(2).





Figure 03. Self Regulate: Auckland's Ecological footprint is 4.8 times the region's land.



Figure 04. Refueling: Urban and rural communities are constantly reinvesting into all forms of capital throughout the bioregion - Natural, built, human, social, cultural, and financial.





Figure 05. Stretch Imports: Incorporate some imports into new exporting enterprises; and utilise to refuel, capture of further and different imports and / or invest in new important replacing initiatives.

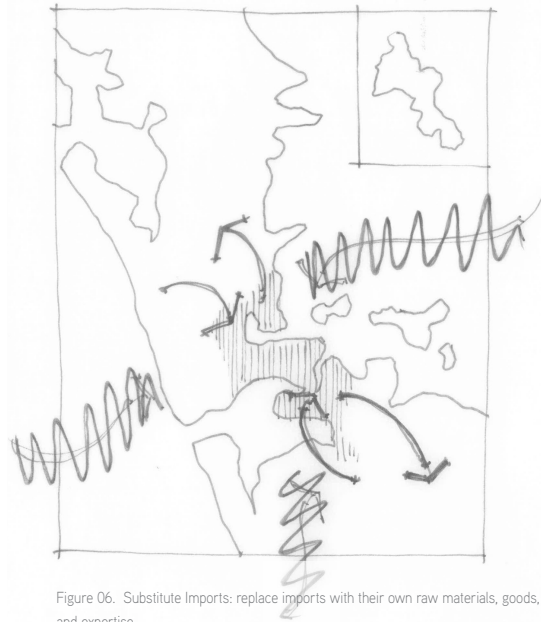


Figure 06. Substitute Imports: replace imports with their own raw materials, goods, services and expertise.



People and Environment

“Human beings exist wholly within nature as part of natural order in every respect. To accept this unity seems to be difficult for those ecologists who assume - as many do, in understandable anger and despair - That the human species is an interloper in the natural order of things. Neither is this unity easily accepted by economists, industrialists, politicians and others who assume - as many do, taking understandable pride in human achievements - That reason, knowledge, and determination make it possible for human beings to circumvent and outdo the natural order. [People] unwilling or unable to breach a barrier that they imagine separates humankind and its works from the rest of nature will be unable to hear what this [submission] is saying”.²⁸

Auckland must develop a human inclusive ecosystem management approach to the landscape which is less dependant on human excluded reserves as the primary means of maintaining healthy ecosystems and protecting and restoring biodiversity.²⁹ An integrated approach where conservation objectives are knitted throughout our productive rural and urban landscapes is required in order to create a “long term matrix of sustainable and self regenerating ecosystems within which productive land use can be undertaken”.³⁰ This framework will by necessity be implemented by the community for the community and will therefore embrace the principles of Kaitiakitanga and stewardship, incorporating users values, knowledge, practices and responsibility as well as education and active learning into the ongoing management and habitation of the bioregion.

28. Adapted from Jane Jacobs. The Nature of Economics, 2000. [people] replaces “readers” - [submission] replaces “book”.

29. C. Meurk and S. Swaffield. A landscape ecological framework for indigenous regeneration in rural New Zealand Aotearoa, 2000. In - Landscape and Urban Planning 50:129-144.

30. Simon Swaffield. Sustaining the Country: Ideals, opportunities and imperatives for future rural landscapes, 2008.



Recommendation V

Create a Regenerative Green Infrastructure Network

The long term viability of Auckland requires that the ecosystem services provided by healthy natural environments are maintained in perpetuity. The ecosystem services of fundamental importance are the production of raw material, water purification and quantity control, composting of waste and cycling of nutrients; creating and maintaining soils, biological productivity and diversity, natural pollination and pest control, local atmospheric and climate regulation and carbon sequestration.

In order to ensure that these services are self supporting and regenerative, Auckland must map, design and implement a green infrastructure network (the network) across the entire bioregion. The network will not only protect and maintain existing healthy ecosystems but restore historic environmental degradation. The network will be composed of indigenous and exotic species and incorporate the three key landscape elements of “wetlands and waterways, erosion prone slopes, and regenerating areas of tall woody vegetation and scrub”.³¹ It would support a range of sociocultural functions including recreation, connection to nature and carefully managed production of raw materials.

APW recommend that a 50 year target be set to establish a regenerative green infrastructure network across 20% of the bioregion³² so that “within fifty years for every 80ha in production, 20ha of land in the local landscape should be allocated to regenerative landscape functions such as biodiversity, water quality, carbon sequestration, shelter, and micro climate and access to recreation”.³³

80:20:50

80% Urban and Rural and 20% Regenerative Green Infrastructure Network in 50 Years

31 + 33. Simon Swaffield. Sustaining the Country: Ideals, opportunities and imperatives for future rural landscapes, 2008.

32. Colin Meurck and Simon Swaffield (2000) propose an 80:20 ratio for rural productive landscapes. Hall and Meurck (2006) propose patchwork matrix coverage of 3% as well as riparian networks and road linkages across urban landscapes for self sustaining biodiversity. Significant overall reduction of stream and wetland health, as measured by criteria such as pollutant loads, habitat quality, and aquatic species abundance and diversity, begins when 10 percent of a water catchment is covered with impervious coverage (Arnold and Gibbons, 1996: *sighted by Ferguson, 1998*). With impervious coverage of more than 30 percent of a water catchment, impacts become severe and degradation is almost unavoidable. As such, the 20:80:50 framework has been adopted for ease of interpretation.



Recommendation VI

Diversify Rural Landscapes

Increasing uncertainty and variability in both climate and market systems means that production landscapes need to shift from short term, working at the environmental margins to becoming more resilient to external stress and self-generating in terms of basic functions including biodiversity, hydrology and carbon³⁴.

Auckland has approximately 2,500 square kilometres of rural land.³⁵ Taking into account the 80:20:50 recommendation for a Regenerative Green Infrastructure Network (Recommendation V) - The Auckland bioregion has approximately 2000km² of rural land for production. What this land does produce must be managed and harvested at a rate less than or equal to the rate of natural replenishment, limit its use of nonrenewable resources and ensure that all substances introduced into the environment are rendered harmless to ecosystem functions (See an *Ecocity will be a Regenerative City*). Among other strategies, this will require coupling productive uses with regenerative processes (see also *Refuelling - Recommendation IV*) such as rotation cropping,³⁶ contour plowing and terracing, agroforestry³⁷ and analogue forestry³⁸. When managed carefully, the

rural landscape of Auckland will provide economically viable crops while stabilising steep and erodible slopes, building soil, stabilising microclimates and hydrological functions and enhancing biodiversity.

APW recommends that potential long term regenerative productive land use opportunities for food, fibre, fuel and structural timbers are investigated, mapped, designed and subsidised as a means of framing and guiding the economic processes of Import Stretching and Import Substitution (See Recommendation IV)³⁹. Among other benefits, a diversified rural landscape and economy growing structural timbers will provide the basic building material for our children and our children's children and will underpin the emergence of a new regional architecture that is embedded within and throughout the bioregion.

34. Simon Swaffield. *Sustaining the Country: Ideals, opportunities and imperatives for future rural landscapes*, 2008.

35. Auckland Regional Council, 2009.

36 - 38. David Holmgren. *Permaculture: Principles and Pathways Beyond Sustainability*, 2002. 36 - Rotation Cropping rotates fertility demanding annual crops with longer rotations of soil building perennial pastures. 37 - Agro forestry integrates productive use of trees into conventional agricultural systems. 38 - Analogue Forestry mimics the indigenous climax ecosystem by recreating the structural and functional interactions of the natural forest, using both indigenous and exotic plants.

39. For example: NIWA. *Use of Climate, Soil and Crop Information for Identifying Potential Land Use Change in the Hokianga and Western Kaipara Region*, March 2003 mapped and interpreted climatic and soil data to determine growing of specific crops including commonly imported produce such as peanuts and bananas and tea. The report showed potential for all crops assessed within the region. The report also provided information on market potential, required infrastructure and growing requirements.



Recommendation VII

Develop a Cradle to Cradle Urban Metabolism

On average, every Aucklanders creates around 1 tonne of solid waste, processes 60 - 110 kgs of recyclable materials and produces 100m³ of wastewater per year.⁴⁰ This means that less than one tenth of the materials processed in Auckland is recycled into another product. The remaining material is managed as 'waste' in a linear process model from extraction through to production, use and disposal. While reductions in the availability of energy and materials will mean that Aucklanders will consume less, Auckland must design waste out of the system if it is to maintain critical ecosystem services such as soil fertility and reduce economic leakage. The only way to resolve this issue is to develop a cyclic urban metabolism. APW recommend that Auckland adopt the principles of cradle to cradle resource management and develop policy and industry to support the two discrete metabolisms or nutrient flows of a bioregion - biological and technological nutrients. *"The first is the biological metabolism, or the biosphere - The cycles of nature. The second is the technical metabolism, or the technosphere - The cycles of industry, including the harvesting of technical materials from natural places. With the right design, all of the products and materials manufactured by industry will safely feed these two metabolisms, providing nourishment for something new"*⁴¹

Key strategies should include but not be limited to:

- Invest in cradle to cradle industries that either utilises 'waste' product from another industry or utilise the 'nutrients' of other industries to create new products and services.
- Develop and support employment and education programmes for cradle to cradle initiatives (See Recommendation III - *Develop and support education and skills training for a post carbon Auckland*)
- Establish neighbourhood resource centres that support activities such as community composting and sharing/co-ownership models for cars, bikes, tools etc.
- Social advocacy aimed at reducing the consumption of throwaway products and packaging and de-normalising waste
- Increase the responsibility of both consumers and producers of throwaway products and packaging through the introduction of public policy such as Extended Producer Responsibility (EPR), which "establishes a legal chain of producer custody that extends through the entire product life cycle".⁴²

40. State of the Auckland Region: Summary, 2010. Auckland Regional Council.

41. Michael Braungart and William McDonough. Cradle to Cradle: re-making the way we make things, 2002.

42. Bill Sheehan and Helen Spiegelman. Climate Change, Peak Oil, and the End of Waste. In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.



People and Place

As Auckland adapts to diminishing resources and energy “the scale of the landscape will change in response to a permanent rise in the price of transportation and shipping fuels. Air travel will become less accessible, as will shipping of high mass, low value-added materials and goods. This will necessitate the re-establishment of more local supplies and shorter transport distances for people and goods, and for the first time in human history the perceived size of the world will expand. In response, the ‘grain’ of the landscape will become finer. More people will populate the rural landscape, while cities and towns will become more compact”.⁴³

The transition into a time of increasing population, declining levels of access to cheap energy and resources will significantly affect the flow and movement of energy, people and goods - It will however have less influence on the movement of information, which is “relatively immune to entropic thermodynamics”.⁴⁴ Telecommunications and rapid information exchange, virtual reality, blurred social spaces and increases in ‘online’ communities will continue to change the dynamics of exchange within the bioregion and the way Auckland interacts and engages with the world and the rest of the country - What Manuel Castells describes as a reorganisation from the “space of places” to the “space of flows”.⁴⁵ Auckland will be better described as a network culture rather than a “Compact City”.⁴⁶

43 + 44. Robert Thayer. Sustainable City Regions: Re-localising Landscapes in a Globalising World, 2005. In - Landscape Review - Volume 9(2).

45. Manuel Castells. The Space of Flows, 1996, 2nd ed. 2000. In - The Castells Reader on Cities Social Theory, edited by Ida Susser.

46. Auckland Unleashed Discussion Document page 126 “There is no doubt that the Mayor and Councillors have set themselves a challenge to deliver on the vision of a quality compact city”.



Recommendation IIX

Food City ⁴⁷

The Regenerative Green Infrastructure Network and the Diversified Rural Landscape provide the foundation for a resilient bioregional city that is deeply reflective of its natural heritage and productive potential. This will principally require balancing the protection and enhancement of class 1, 2 and 3 soils,⁴⁸ with the careful development of the rural villages and landscapes to accommodate up to 50%⁴⁹ of Auckland's expected 640,000 new residents to 2040.

This proposal challenges the widely held assumption that existing migration patterns of rural to urban environments are inevitable and ongoing. Instead reductions in the flows of energy and resources will result in a significant shift in employment opportunities in Auckland. This shift in livelihood will necessitate a greater percentage of people living in rural landscape to be in close proximity to Auckland's long term, productive renewable resources. As such, the recommendation for a 'food city' is a metaphor that captures the full variety of food, fibre, fuel and structural timbers that can be grown in a way that develops diversity throughout rural and urban environments, conserves and enhances ecological services and increases regional self reliance.

Together with Recommendations V and VI, APW recommend that the following strategies are undertaken:

- Regenerate and develop existing rural villages.
- Develop new settlements where existing infrastructure (in particular electrified rail - See Recommendation IV) coincides with geographically suitable areas of land with access to fresh water and high productive potential (See Recommendation V).
- Support of grass roots organisations and local businesses such as the Auckland Food Alliance⁵⁰, Oooby⁵¹ and New Zealand Tree Crop Association.⁵²

See figure 07 over page for broad spatial arrangement of 'Food City'.

47. After Richard Weller. Food City. In - Boomtown 2050: Scenarios for a Rapidly Growing City, 2009.

48. Water and Soil Division, Ministry of Works. Landuse Capability Survey Handbook, 1974 states that class 1, 2 and 3 soils are suitable for cultivation of crops, pastures, or forestry.

49. Patterns and form of development to meet this goal would need to pursue a range of approaches. For example: Boomtown by Richard Weller proposes a number of scenarios: Performance Orientated Development (POD) - Self reliant high density centres for 32,000 people on approximately 400ha of land supported by rapid and quality transit systems; and Food City - Enough food for a city of two million people is produced on area of 400km² with a population dispersed throughout at a density of between 15 and 60 dwellings/ha (approximately 20% of Auckland's Rural land area).

50. Auckland Food Alliance - <http://aucklandfoodalliance.org/>.

51. Oooby - <http://oooby.ning.com/>.

52. Auckland Tree Crop Association - <http://www.treecrops.org.nz/>.





Figure 07. 'Food City'.





North West

Mixed timber production utilising agro and analogue forestry principles on steep and erodible slopes and rolling hill country, with smaller discrete cropping and grazing on alluvial plains. Population growth would be primarily served through the regeneration of existing rural villages and new nodal development along rail corridors.



Mangere

Develop the remaining rich soils of Mangere and surrounding areas as a bioregional centre for urban market gardening. Urban agriculture and associated knowledge and skills training (*Recommendation III*) become catalyst for extensive regeneration of communities in need.



Auckland South

Market gardening utilising crop rotation, contour plowing, terracing and agro forestry on volcanic soils and alluvial plains with smaller areas of analogue forestry on steep and erodible slopes. Population growth would be accommodated through the regeneration of existing rural villages, new nodal development along rail corridor and a network of new settlements interspersed amongst areas of intensive cropping.



Urban Auckland

Urban agriculture implemented throughout city including individual lots and community gardens as part of the urban restructuring process (See *Recommendation IX*).



Recommendation IX

Urban Restructuring

As more people shift into rural areas and the landscape begins to diversify, cities will become more compact, the mobility of people and the distribution of goods will be organised primarily around walking and cycling, uses will become more diverse, and the 'grain' of our urban environment will also become finer. The most important question around mobility is not how to move more people more efficiently around the city, although this still needs to be radically restructured (see Recommendation XII) - The question is how to remove the need for people to move extensively around the city and region on a day to day basis?

APW recommend that Auckland restructure its urban landscape in order to create walkable 'live - work - play - learn' environments where all daily needs are met within walking and cycling distance from a person's or family's place of residence. This will require that people are employed much closer to home and daily goods are produced and distributed more locally. New mixed use developments, will be created by changing the uses of existing buildings and building on existing impervious surfaces such as carparks and in some cases within existing road corridors. Restructuring strategies will include, but not be limited to:

- Intensify existing and create new mixed use centres of 4 - 8 story buildings.⁵³ (See Recommendation IIX)
- Introduce multiple new uses into existing large areas of the city that are currently dominated by large scale single use structures - For example:

Lincoln Road, Henderson; Neilson Street, the Industrial belt running between and including areas of Onehunga, Penrose, Mount Wellington and Ellerslie through to ; East Tamaki; Manukau; Wairau Valley; large areas of Albany, and George Bolt Drive and the surrounding approach to the airport.

- "Creative Infill"⁵⁴ Transform the way we use our buildings and neighbourhoods so that those areas of the built environment that stand empty and unused throughout either the day or the night are used more intensively day and night.
- Expand existing retrofit programmes and services across all building sectors and create new areas of enquiry exploring decentralised, integrated infrastructures in order to make existing building stock and neighbourhoods significantly more energy and water efficient than today.

53. Jason F McLennan, Density and Sustainability - A Radical Perspective In - Trim Tab, Spring 2009. Describes the density as the "Sweet spot" - While the question of ideal density is far from an exact science and will vary for different cities, there is increasing evidence to suggest that urban environments with 4 - 8 story buildings with an average density of around 70 - 240 dwellings/ha maximises social cohesion, economic vitality and energy efficiencies, particularly mobility (See also Recommendation XII - Decentralise).

54. Julia Levitt, Creative Infill, 2011. In - World Changing: A Users Guide for the 21st Century Edited by Alex Steffen.



Recommendation X

Climate Change City

Auckland, as New Zealand's largest city representing over a quarter of the country's population, has a responsibility to the nation to develop clear policies and strategies to mitigate and adapt to the affects of climate change. In particular, Auckland must think and act critically in response to scientific data about projected sea level rise and changing weather patterns. APW recommend that Auckland develop strategies to address two primary areas - Sea Level Rise and Changing Weather Patterns.

i) Sea Level Rise

Planning for long term adaptation to sea level rise to 2100 should consider three scenarios.⁵⁵

- Small: 0.3m - 0.6m
- Medium: 0.6m - 1.3m
- Large: 2m - 5m

Mitigation measures and adaptive strategies will require all existing and proposed development areas are assessed against 100 year scenarios and a commitment is made to ongoing research and review of current scientific understanding and

public policy long term. Changes in sea level will also require ongoing "protection, adaptation and retreat"⁵⁶ strategies are employed along coastal settlements. At some time over the next 100 years, areas of land will be 'reclaimed' by the sea and 'soft' coastal edges consisting of indigenous and exotic vegetation should be allowed to establish themselves. Low lying areas of contaminated land will need to be repaired before the event so not to contaminate valuable land and larger ecosystems.

ii) Changing Weather Patterns

Auckland is likely to be hotter and drier and when it does rain, it will be more intense⁵⁷. This will increase the intensity and frequency of extremes of drought and deluge, expand risk to individuals and communities, and limit supplies of fresh water for drinking, cooking, cleaning and irrigation. In order to stabilise access to fresh water and reduce the stress of drought and deluge Auckland must reduce the amount of impervious surface in urban environments to below 30% of a given catchment⁵⁸ and seek to store as much fresh water within and throughout the landscape as possible - Shallow and deep aquifers, in humus and top soil, vegetation, wetlands, rain gardens, small dams and rain water tanks.

55. Small: New York City has created a task force looking at responses to two projected sea level rise scenarios - 0.3 - 0.6m by 2080 and 1 - 1.4m by 2080. Medium: Netherlands is planning for sea level rise of between 0.65 - 1.3m by 2100 and 2-4m by 2200; From The land of the Rising Sea by Ruth Laugesen, 2011 - (The Listener May 14-20 2011). Large: World renowned climate scientist James Hansen proposes that sea level could change as much as 5m by 2100 - http://www.columbia.edu/~jeh1/mailings/2011/20110118_MilankovicPaper.pdf.

56 + 57. Ministry for the Environment. Planning for Climate Change and Effects on Coastal Margins, 2001.

58. Significant overall reduction of stream and wetland health, as measured by criteria such as pollutant loads, habitat quality, and aquatic species abundance and diversity, begins when 10 percent of a water catchment is covered with impervious coverage (Arnold and Gibbons, 1996: sighted by Ferguson, 1998). With impervious coverage of more than 30 percent of a water catchment, impacts become severe and degradation is almost unavoidable.



People and Infrastructure

Infrastructure provides the essential conditions for settlement and includes both physical systems and social networks. Physical systems include roading, transport, land use, distribution networks, energy, storm water, waste water, drinking water and telecommunications. Social networks include community, educational, health, cultural and recreation facilities and services. AUDD outlines the key infrastructure priorities - Transport systems, social infrastructure, broadband, energy, water and wastewater.⁵⁹ These infrastructure systems are all large, centralised networks. With the exception of energy, it is proposed that these systems continue to be designed and managed at this scale over the next thirty years⁶⁰. This includes Auckland's social infrastructure of "schools, tertiary institutions, hospitals, district and high courts, libraries, arts and cultural facilities, sports and recreational facilities and open space"⁶¹, which "has tended to 'hub' around key sites within the region".⁶²

Large, centralised infrastructure is expensive and energy intensive to construct and maintain. America for example is now facing an increasingly expensive burden of post World War II infrastructure network, which include "airports, harbours, roads, sewers, bridges, dikes, dams, power corridors, terminals, treatment plants" that are now suffering from lack of repair and maintenance".⁶³ Due to their sheer scale, large centralised infrastructure systems are monopolies where only a small proportion of disproportionately large contractors are big enough to manage this scale of project.⁶⁴

Waste water in particular presents a significant long term issue for Auckland. The Central Interceptor project for Mangere for example is going to cost in the order of one billion dollars in today's money.⁶⁵ "Replacing and expanding large centralized treatment systems and their miles of supporting infrastructure either nearly bankrupts local governments or will do so over the coming decades... New centralized treatment plants can mean billions in construction costs, with millions more in annual operations costs. Only to see even more money needing to be spent a few decades later to do the same again".⁶⁶ As well as being expensive, Auckland's waste water systems have additional environmental issues of waste water over flow, and possibly of more concern over the long term, the mining of soils of minerals and nutrients⁶⁷.

Finally, arguments for deregulation, corporate rate tax cutting, privatisation and outsourcing of public services generally don't account for the spin off benefits and synergies associated with the public delivery of services, in particular the equitable distribution of capital and the equalising effect this can have on class differences.⁶⁸

59 - 62 + 65. Auckland Unleashed_ Discussion Document. [60] Page 174 - "Increased focus on renewable (and localised) energy production with reduced transport fuel dependency".

63. Belanger. Redefining Infrastructure, 2009. In - Ecological Urbanism, Edited by Mostafavi and Doherty.

67. The linear process of food production consumption, waste water treatment, ocean and/or land fill systematically strips soils of minerals and nutrients.

64, 66 + 68. Jason F McLennan, Flushing Outdated Thinking: Transforming Our Relationship With Water and Waste. In - Trim Tab, Fall 2009.



Recommendation XI

Create Post Carbon Transport Infrastructure

Auckland must transform its transport infrastructure to facilitate the movement of people and freight with significantly less oil than today. The predicted rates of decline⁶⁹ and Auckland's dependence on imported fuels⁷⁰ requires a rapid response and should be a priority for infrastructure funding - "By 2025 richer countries should plan to reduce their use of liquid fuels for transport—almost all oil—by about 40 percent below 2007 levels."⁷¹ In order to achieve this target Auckland needs to pursue three overarching strategies simultaneously.⁷²

i) Transition Task Force - See also Recommendation II
Establish an agency that can develop a detailed post carbon mobility plan and facilitate its effective implementation.

ii) Redirect Capital Investment
Complete existing motorway projects under construction and terminate all other existing programs and plans that expand airport and highway capacity for more oil-fueled mobility and redirect human and financial resources toward radically improving walkability (Recommendation IX), retrofit all streets for bicycles, introduce grid-connected electrified bus network, enhance electrified rail network⁷³, and increase capacity of ferry and other water based transport.⁷⁴

iii) Tax Oil Based Transport

Introduce an escalating tax on oil used for transport to reach \$0.50 per litre within a few years⁷⁵. The proceeds of the tax should be used to a) "induce individuals and businesses to retire what could soon be stranded assets, including jet aircraft and motor vehicles that can be fuelled only by petroleum"; and b) "stimulate private, state, and local investment in electric mobility infrastructure in much the same way that motor fuel and airline ticket taxes are used now for expanding aviation and road infrastructure."⁷⁶ (See also Self Regulate - Recommendation IX)

69. International Energy Agency (IEA) has stated that peak oil occurred in 2006, (EIA 2010) and that the rate of global decline of conventional oil fields is 6.4 percent per year (IEA, 2008).

70. Nearly 60% of Aucklands energy needs are met with oil - 98% of this is imported - Rilke de Vos, personal communication.

71. 72, 75 + 76. Richard Gilbert and Anthony Perl. Transportation In The Post-Carbon World. In - The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.

73. Projects such as city rail loop need to be evaluated with reference to probable economic contraction and the resulting changes in the knowledge economy, in particular financial sector trends and probable changes of urban to rural migration.

74. Development of water based transport needs to be planned carefully with particular regard to sea level rise - See Recommendation X Climate Change City.



Recommendation XII

Decentralise / Distribute

Regional infrastructure such as care for rare or complicated illnesses⁷⁷ and regional energy production, including wind production⁷⁸ must be maintained and enhanced. However decentralised infrastructure has several advantages over centralised systems:⁷⁹

- Decentralised systems for energy and water are more cost effective from a life cycle perspective;
- Allow for more innovation due to the scale of solutions available;
- Spread funds throughout the community by supporting smaller businesses and keeping more public funds closer to home;
- Accommodate development without having to expand municipal capacity
- Reduce dependence on centralized funding
- Reduce vulnerability to large and unprecedented trauma; and
- Safer from a national security standpoint.

In order to leverage these advantages, APW recommend that, where communities and environments are not put at risk both physical and social infrastructure are *Decentralised* and/or *Distributed* (figure 09). Note that these strategies do not promote a decentralised urban grain or urban sprawl per se, and in some instances promote higher densities than usually occur in Auckland.

i) Decentralise

Re-imagine neighbourhoods and communities as a network of interconnected 'Eco districts'⁸⁰ that share infrastructure such as heat generation and ventilation, generate on site renewable energy, and harvest and recycle rainwater and waste; prioritise pedestrians and cyclists and access to public transport; as well as combining mixed residential and commercial development, neighbourhood scale parks, schools, community centres and services, and enhanced IT infrastructure. 'Eco districts' are optimal in dense urban environments of 4 - 8 story buildings at a density of around 70 - 240 dwellings/ha (Recommendation IX). At lower densities 'softer' infrastructure systems can be pursued. In this scenario, the landscape becomes part of the essential infrastructure integrating storm water, waste water, potable water, energy production (fuel for space heating and water heating), composting, food production and wildlife habitat (See Recommendation VII)

ii) Distribute

Small and numerous centres are located at mid level transportation hubs for easier access. Other services are brought directly into communities, through many small, scattered, local neighbourhood centres.⁸¹

77 + 81. Care for rare or complicated illnesses will need to remain in centralised high-level hospitals - Cindy Parker, MD and Briand Schwartz, MD, Human Health and Well-Being in an Era of Energy Scarcity and Climate Change in The Post Carbon Reader: Managing the 21st Century's Sustainability Crises. 2010.

78. Auckland Unleashed_ Discussion Document. Page 158.

79. Jason F McIennan, Flushing Outdated Thinking: Transforming Our Relationship With Water and Waste. In - Trim Tab, Fall 2009.

80. Johanna Brikman - Ecodistricts: An Opportunity for a More Comprehensive Approach to Sustainable Design. In - Trim Tab, Winter 2009/2010.



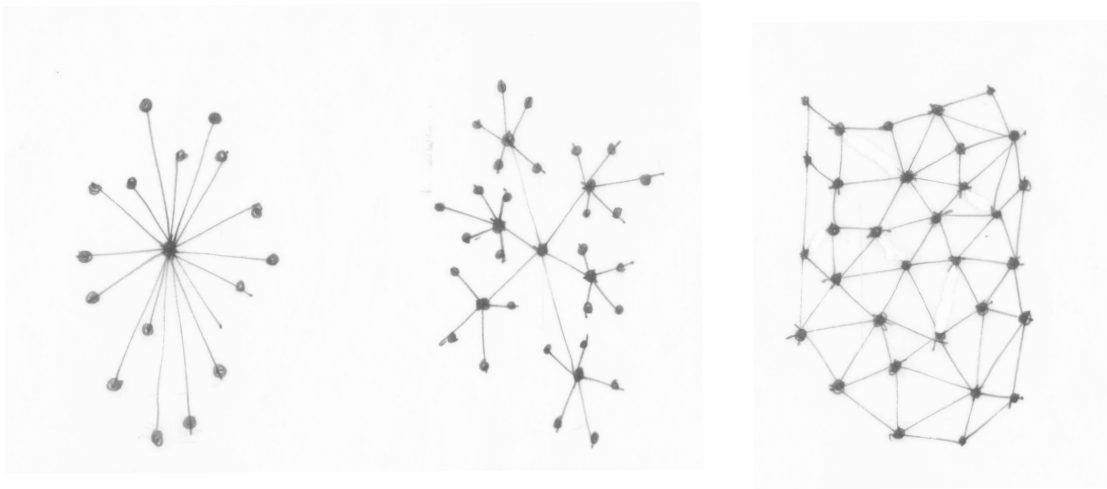


Figure 09. From left to right - Centralised , Decentralised and Distributed Networks.



Implementation Monitoring and Review

The most important recommendations guiding implementation in this submission are:

- I) Formally adopt Genuine Progress Indicators;
- II) Establish a Transition Network Task Force;
- III) Develop Education and Skills Training for a Post Carbon Auckland; and
- IV) Develop a Bioregional Economy.

GPIs provide strategic direction by framing with equal value the major flows of energy, matter and information that constitute the Auckland Bioregion and set bench marks for monitoring, measuring and reviewing progress and performance. The Task Force brings into focus the imperatives of peak oil, resource depletion, climate change and local action. Education and skills training builds resilience and prepares citizens by disseminating new skills and knowledge relevant and appropriate to a challenging and uncertain future. Education and skills training also creates the human and social capital needed for a new bioregional economy, which provides the essential infrastructure required for ongoing and open ended processes of refuelling, import stretching and import substitution.

The recommendations range in scale, scope and complexity but have in common both top down and bottom up thinking and actions. In the first instance they are recommendations for public policy and regional governance. On the other hand,

many of the recommendations will need to be implemented at a grass roots level by a concerned and active citizenship, through bottom up participatory processes and small scale local initiatives. Auckland Council could support initiatives through funding opportunities, targeted taxes and public policy changes. Alternatively businesses, community groups and social entrepreneurs could pick these initiatives up directly.

There are clearly major policy and management challenges in implementing the recommendations outlined in this submission. Many require market intervention and in some cases, actively challenging central government decisions such as the implementation of regional fuel tax and challenging funding and construction of projects such as the Roads of National Significance.⁸²

Implementation is most challenging when considered in isolation:

"None of our global problems can be tackled in isolation. We must connect the dots to get to the source of these challenges, not just their symptoms, and to maximize what little time and resources we have to address them".⁸³

"Connecting the dots" and getting "to the source" of the challenges we face will require systemic interventions that address multiple issues concurrently, will best be achieved when mutually supportive recommendations are pursued

82. Government Policy Statement on Transport Funding for four additional "Roads of National Significance" - Auckland Transport Blog, <http://transportblog.co.nz/2011/05/15/submit-on-the-2012-gps/> Retrieved, May 2011.

83. Post Carbon Institute - <http://www.postcarbon.org/about/Post>. Retrieved May 2011.



simultaneously and the transformative potential of positive feedback loops are maximised. For example:

- Food City (Recommendation IIX), an electrified regional rail network (Recommendation XI) and a Diversifying rural landscape (Recommendation VI);
- Developing education and skills training (Recommendation III), Urban restructuring (Recommendation IX) and a Cradle to cradle urban metabolism (Recommendation VII); or
- The creation of a Regenerative Green Infrastructure Network (Recommendation V); to improve resilience in the Climate Change City (Recommendation X).

*"If nature is our model, what does it mean for human industries to be involved in maintaining and enriching this vibrant tapestry? First, it means that in the course of our individual activities, we work toward a rich connection with place, and not simply with surrounding ecosystems; biodiversity is only one aspect of diversity. Industries that respect diversity engage with local material and energy flows, and with local social, cultural, and economic forces, instead of viewing themselves as autonomous entities, unconnected to the culture or landscape around them."*⁸⁴

Finally, Auckland does not exist in isolation and must be considered in terms of

its relationship to neighbouring regions and city regions - Northland, Waikato, Hamilton and Tauranga. "Synergetic economic strategies to increase co-operation"⁸⁵ is a sensible long term strategy when each of the regions and city regions are also undertaking a process of import stretching and substitution (Recommendation IV). In this instance 'co-operation' is a strategic objective for the co-development⁸⁶ of resilient bioregional cities, where each is becoming increasingly self reliant within the opportunities and carrying capacity of their bioregion rather than collectively dependant on global markets in which they have little to no influence.

84. Michael Braungart and William McDonough. Cradle to Cradle: re-making the way we make things, 2002.

85. Auckland Unleashed_ Discussion Document, page 155.

86. After Jane Jacobs - City and the Wealth of Nations, 1964 and The Nature of Economics, 2000.



Conclusion

Economic globalisation and capitalism in their current form are not viable long term options. Simply put, exponential growth on a finite planet is not possible. The vulnerabilities of this current global system and the impacts it has caused are becoming increasingly obvious. International phenomenon such as climate change, resource depletion and increasing global financial instability will only continue to intensify over time. Over the next 30 years Auckland will experience fundamental changes as a result of these global trends and we need to plan for them today. In order for Auckland to become the world's most livable city in such a future the Auckland Plan needs to focus on resilience as a model for sustainable development. In this document Auckland Permaculture Workshop have only begun to scratch the surface. A lot more research, planning and design is required to develop a truly resilient and prosperous future for Auckland in the next three decades and beyond.

The perspectives and recommendations generated for the draft Auckland Plan submission presented herein are based on years of formal and informal research on the issues mentioned and gleaned from International Best Practices. In order to ensure that the concepts and recommendations presented in this document are understood in the context they were intended, Auckland Permaculture Workshop would like to present our recommendations to council face to face.





Biographies

Finn Mackesy

Bachelor of Anthropology and Bachelor of Psychology (University of British Columbia, Canada); Post Graduate Diploma of Teaching (University of Victoria, Wellington); Permaculture for Third World and Indigenous Peoples (Erda Institute, NSW); Advanced Permaculture Design training (Golden Bay and Matakana).

Finn is a qualified educator, facilitator and design consultant with a passion for community empowerment and resilience. After completing his Permaculture Design Certificate (PDC) in 2002 with Robin Francis, he completed a 6 month internship at Djanbung Gardens, NSW, Australia. Finn also spent time living and working with David Holmgren and his family on their property in Victoria. In 2003 he completed an advanced permaculture course in Golden Bay and trained in accelerated learning and facilitation under the tutelage of Robyn Clayfield. Since that time Finn has been actively involved in permaculture education, community development and facilitating change throughout Aotearoa New Zealand. He is the founder of GORSE Ltd, a design consultancy specialising in education, facilitation and community empowerment. He is the outgoing chairperson of Permaculture in New Zealand, as well as a cofounder of CommonGround Community Gardens, Transition Pt. Chevalier, Grey Lynn 2030 and All Good Education Ltd. Starting in 2011, Finn now works as an Environmental Education Advisor for Auckland Council. Finn brings to APW a thorough understanding of teaching pedagogy and practice, dynamic facilitation and accelerating learning practices, a love of human cultures and a breadth of experience and exposure to indigenous knowledge and sustainable practices from around the globe.

Gary Marshall

Bachelor of 3-Dimensional Design (UNITEC, New Zealand), Advanced Permaculture Design training (Golden Bay and Victoria, Australia), and Masters Landscape Architecture, (Lincoln, Canterbury).

Gary is a passionate designer who discovered permaculture through his ongoing investigations into all things design. After completing his Permaculture Design Certificate (PDC) in 2003, Gary completed an advanced permaculture course in Golden Bay, which included living and working with David Holmgren and his family on their property in Victoria, Australia. Having spent a year immersed in permaculture, he went on to complete a Masters degree in Landscape Architecture at Lincoln University. After completing his masters in 2006, he worked at DJ Scott Associates. During this time he earned recognition for his teams winning entry in the Vision for Matiatia design competition and went on to work on a number of projects for public and private sector clients and is involved in tertiary education programmes at UNITEC. Gary is now working at Jasmx where he is team leader of the Auckland Landscape Architecture team. He is a cofounding member of Grey Lynn 2030 and Marshall Design Studio Ltd, a permaculture design consultancy. Gary brings to APW an extensive understanding and working knowledge of landscape design, urban design, design history and theory, landscape ecology, permaculture, water sensitive design and design education.



Rilke de Vos

Bachelor of Engineering (Environmental), Hons 1 (University of Queensland).

Rilke is an environmental / process engineer seeking to identify solutions to future problems before they arise. For Rilke, exposure to the concepts of permaculture came at an early age - he grew up on an almost self-sufficient small farm in Auckland's rural fringe. His desire to protect wildlife and live from the land, sent him in pursuit of an Environmental Engineering degree from the University of Queensland, Australia. This background provided the basis for consulting as a chemical engineer in the design of facilities such as: offshore / onshore oil and gas petroleum refining, municipal solid waste gasifier and bio-fermenter design, fertiliser prilling and metals recovery. Rilke is now a director of Regenovations Limited - a consultancy which seeks to identify how energy sector developments interact with the 'economic' and 'environmental' aspects of our society. Some of this work involves interpreting and communicating how energy choices and developments will affect our future (e.g. Methane hydrate development, electric car uptake, smart urban growth). Other work focuses on supporting the development of energy technologies such as: biogas utilisation; sunflower biodiesel, passive solar, gasification of municipal solid waste and algae biomass conversion. In order to complement his theoretical knowledge with applied skills, Rilke devotes substantial time to supporting transition town movement, planting of community gardens, developing eco-villages and applying sustainability principles to his own life. The outreach to permaculture education is a new and exciting dimension of this. Rilke brings a highly pragmatic and strategic understanding of energy-economic-environment interaction to the APW.



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