

Environmental Quality

This Environmental Quality Theme Paper has been prepared as part of the START – Sustaining the Auckland Region Together project. The paper reflects a range of views and does not represent official positions of the organisations involved

1.0 Introduction

This paper presents a summary of the expert group's discussion about the environmental quality dimensions of a sustainable future for the Auckland region. It proposes 'long term goals' for environmental quality, identifies opportunities and challenges that we will need to meet, and proposes a series of actions that might help to get us closer to those goals.

In this paper, environmental quality refers to the integrity and life supporting capacity of the region's ecosystems and natural resources. The scope encompasses air, land, water and biodiversity as well as the unique characteristics of the region's landscapes.

The group discussed whether or not to limit the paper to environmental quality within the region. The region's environmental footprint impacts on environmental quality nationally and internationally while degradation of the environment globally can affect Auckland. We resolved that the region would positively contribute to national and global ecosystems if our long-term vision was to have an ecological footprint less than our landmass, and if the region's stewardship of its ecosystems and natural resources became a model for the rest of the world.

Vision and End State Goals

Overall vision

Auckland's natural character and iconic features provide Auckland with a unique sense of identity. As New Zealand's most populous region; Auckland's ecological footprint is smaller than its landmass. Residents value, protect and enhance the integrity and life supporting capacity of the region's ecosystems. Auckland is a world leader in environmental technologies and a showcase for enhancing the natural environment through resource management and urban design.

Long term goals

Liveability

The cities and suburbs wake to a native dawn chorus.

The built environment seamlessly connects people to the natural environment.

Residents perceive the natural environment as fundamental to their wellbeing and act as stewards of the environment.

The natural character of the coast, volcanoes and landscapes is protected and enjoyed by Aucklanders.

Everyone can walk to a park, children can play in urban streams and people can swim and fish in our estuaries and harbours

Aucklanders are healthier due to cleaner air, water and soil

The sustainable harvest of indigenous flora and fauna is possible

Prosperity

Businesses thrive as stewards of the region's ecosystems and natural resources

The region's/NZ's economy thrives through the sustainable management of natural resources and the enhancement of the natural environment.

Fiscal processes enable a decoupling of economic transformation from environmental degradation

Auckland is a world leader in environmental technologies contributing to the quality of the region's environment and to economic prosperity

Residents all have access to clean air and water and the natural environment.

The regional community's concept of prosperity has moved beyond increased consumption to more socially and environmentally defined interpretations of well-being.

Local kaitiakitanga leadership in environmental management is of world renown

Ecological Health

Thriving populations of indigenous wildlife (flora and fauna) are distributed across the region and are present in urban areas.

A full range of ecosystems in the region are protected and enhanced.

Marine reserves, which cover a representative range of ecosystems, cover 10% of the coast, to support a sustainable marine harvest

Stretching beyond the region, green networks connect large natural areas

The region's state of the environment reporting consistently shows improved results

Governance frameworks and institutional arrangements provide effective stewardship of the environment.

Resilience

Indigenous ecosystems have been restored to a level of diversity and size that can survive shocks. There are reservoirs of indigenous species and habitats

The protection of productive soils, land and local food production create a thriving local agricultural economy and is sufficient to feed the region.

Local renewable, clean energy production provides the region's energy needs.

Government institutions value the environment and take a consistent and restorative approach to its stewardship

Local communities are the stewards of their local environments through adequate resourcing and devolved decision-making.

2.0 Seeds and Constraints

Current status

The Auckland region is formed by three large harbours, volcanic cones, bush clad ranges, fertile plains and is edged by 2,000km of coastline. Its physical form provides Auckland with a unique sense of identity and when asked what contributes to their quality of life, Auckland residents consistently list the open space, the coast and beaches and the clean environment.¹

Urban growth, forestry and rural activity however have significantly changed the ecology of the region. Historically, forest was the region's predominant land cover while today only 12% of the region's total land area remains as indigenous forest. Only 18% of the region's total land area remains as indigenous scrubland and it is believed that the region has lost around 90% of its wetlands.

Natural areas are becoming increasingly fragmented, reducing the resilience of many ecosystems and species. For example, of the remaining 296 fragments of forest, wetland and scrub in the Manukau Ecological District, 85% of the sites are less than 5ha in size. The Auckland region biodiversity has also been impacted. The region currently contains 188 threatened plant species and 150 threatened animal species.

Urban development has slowly eroded landscape values and reduced the amount of productive land with a subsequent loss of elite soils. The region's fresh water ecology has been degraded by sedimentation, agricultural and stormwater pollution, and from numerous streams being piped within the urban development. Zinc and copper are increasing in concentration in the region's harbours. A report in 2002 to the Ministry of Transport estimates that air pollution causes at least 486 premature deaths per year in the Auckland Region. Fifty eight percent of these (253) are due to motor vehicle emissions.

More positively 16.9% of the region's land area is now protected as public open space. Due to predator control, native bird counts in the Waitakere Ranges are increasing, possum numbers are the lowest on mainland NZ, and forest ecosystems have generally recovered over the last 50 years. Forest clearance and wetland drainage has declined due to incentives and rules in District and Regional Plans. Significant gains have been also been made through the development of mainland islands (e.g. Tawharanui Regional Park), gulf island restoration (e.g. Tiritiri Matangi Island) and covenanting of forest remnants and wetlands on private land.

There has been a huge increase in individual and group action to protect environmental quality but this is still limited to pockets of the regional community. Social responsibility for the environment now appears poised a cusp; it could drop away or given enough support, take off.

Constraints and weaknesses

The societal belief that our prosperity requires ever-increasing growth and consumption has translated into an overt willingness to trade the environment off for development. This reflects a lack of understanding that the life-supporting capacity of the environment is critical to human survival. We continue to favour short-term needs over long-term goals and still believe that the market will provide a sustainable future.

¹ Annual Environmental Awareness Surveys. Auckland Regional Council

There is a lack of coordination of decision-making and programmes within and between government agencies for environmental management and habitat protection. Our planning and problem-solving rarely uses an integrated systems approach, but tends to focus on one problem or solution at a time. We lose the opportunity to identify policies and projects that can solve multiple issues or achieve broader ecological outcomes while at times our interventions end up creating problems elsewhere. There is a general lack of policies controlling emissions from vehicles and domestic fires and a lack of mainstream water conservation policies and practices.

Auckland's urban form is largely divorced from natural systems, is inefficient of land use and heavily reliant on motor vehicles. It is also extremely difficult and expensive to retrofit. District planning and consent processes do not take into account accumulative effects of new development and rarely prohibits activities. There is not enough respect for district plan provisions by consent authorities.

There is inadequate funding for ecosystem and habitat protection, and stormwater, waste water and potable water infrastructure, and there is a limit to the public's willingness and ability to increase funding through rates.

Government and business have not addressed the long-term strategic implications of price hikes and supply issues for non-renewable resources such as oil.

Plant and animal pests have become one of the major threats to biodiversity and will require ongoing and expensive management. The region lacks data to understand the status of our productive soils and there is a disconnect between planning for land, urban and agricultural land use and the preservation of elite and other productive soils.

We have not fully recognised the opportunities and the effort required to engage society in sustainability. Communication on sustainability is completely overshadowed by the millions of dollars spent on commercial advertising to increase the consumer lifestyle. In addition, the media's coverage of sustainability is still limited and usually only provides sound bite analysis of issues.

Impact of the Forces

Six 'Forces of Change for the 21st Century' have been identified as being likely to impact the Auckland region and its people over the next century. Considering environmental quality in light of the Forces, the following potential impacts emerge:

Climate change impacts

Challenges: Climate change will increase pressure on ecosystems. Increased storm surges and sea level rise will increase coastal erosion and reduce coastal ecology. Climatic changes will result in the loss of biodiversity as some species struggle to survive, particularly at the fringes and edges of coastal ecosystems. There are likely to be new incursions of pests and tropical diseases. Agriculture may be affected and monocultures such as pine forests could be severely impacted.

Damage to stormwater and wastewater infrastructure in coastal areas and increased high rainfall events would increase wastewater and stormwater pollution. If coastal and flood plains become riskier to inhabit there may be more pressure for urban development in areas of high ecological value or productive land. Auckland may need to accept environmental refugees, which will increase pressure on land use and resources.

Opportunities: The impacts of climate change are a driver to accelerate action as the region has a small window of opportunity to build robust ecosystems, green corridors and buffer zones for ecological resilience. A focussed effort on the development of wetland, mangrove and estuary systems would create natural flood protection coupled with greater restrictions on development of the coast and flood plains. Climate change may be seen as an opportunity to adapt and establish different native flora and agricultural crops.

Resource availability impacts

Challenges: Scarcity of resources will increase pressure on the region's ecology and natural resources. Economic recessions resulting from rising oil prices could reduce funding for environmental restoration. Rising oil costs will affect conventional agricultural practices dependant on petro-chemicals.

Opportunities: Auckland may be comparatively well off for water if we adopt demand side management early and NZ/Auckland could become self reliant on food. Resource costs may reverse the trend of consumerist life style choices, for example, oil scarcity may reduce private vehicle travel leading to reduced air and water pollution. Communities may be required to focus on local products and services leading to a greater self-sufficiency of local communities and social cohesion (for example, community based energy production, recycling human waste for agricultural nutrients, community gardens and recycling centres).

Technology impacts

Challenges: This is the greatest area of uncertainty; new technologies could have transformative effects both positively or negatively on the environment. Pressure to consider nuclear energy (with its long-term implications regarding wastes) may increase as global warming manifests itself and if investment in renewable energy sources and technologies is insufficient to meet demand.

Opportunities: Auckland and NZ could become a global leader in environmental technologies, energy efficiency, and habitat and endangered species management. This would provide Auckland with niche markets whilst providing the means to manage our own ecosystems and resources.

Globalisation impacts

Challenges: A scenario in which world/US markets collapse would lead to a NZ recession and reduce funding for sustainability management. Free trade agreements have potential to limit local environmental protection

Opportunities: As a small city, Auckland will need to play to its strengths for attracting investment, including preserving the quality of its environment (landscapes, air, water, beaches, harbours etc). Auckland could become a world leader in sustainability and environmental technologies. We have a limited, but unique potential to influence global worldviews and practices. Some fair trade agreements can contribute to environmental protection by adding emphasise to environmentally sound practices.

There may be the opportunities for massive habitat regeneration via carbon credits traded on the global market. Auckland's indigenous biodiversity contributes to global biodiversity and there is the opportunity to increase international agreements to enhance global ecology (especially for migratory species).

World views impacts

Challenges: It is questionable whether the region can become sustainable without fundamental shifts in public and institutional values. We may see a continued trend of

consumerism resulting in resource depletion and waste, or an alternative trend to more ecologically based values and lifestyles. Belief in future technological solutions may inhibit timely action.

There could be conflicting values around human use of indigenous flora and fauna, with a preservationist worldview seeing indigenous fauna and flora as untouchable, while a Maori world view could consider sustainable harvests appropriate.

Opportunities: Auckland could turn the 100% pure brand into a reality, leveraging off NZ's growing sense of identity and Auckland's iconic landscapes. Urban design could connect people to nature and to natural systems. We could also focus on shifting worldviews to increase societal understanding of the fundamental role the environment plays in our wellbeing, and the interconnected nature of the "things" within ecological systems.

Demographic change impacts

Challenges: Rapid population growth will erode productive land and place pressure on land with high ecological values. This will be accelerated by Auckland's continued suburban style development.

There is a trend (especially 30 years and under) towards a "me" society with a decline in civic responsibility. This poses a challenge for getting people to make decisions based on considerations for the environment and intergenerational equity. Auckland and NZ's aging population could result in less tax income and therefore less government funding for resource infrastructure and restoration.

Opportunities: New immigrants often have skills and values that can contribute to sustainability and can also bring entrepreneurial attitudes to develop more business opportunities that have a sustainable focus. They are often looking for ways to engage in their communities and programmes that encourage new immigrants into environmental action could be increased.

Despite the advent of the 'me' generation and the predominance of consumerism, there are young people who are committed to sustainable development. They need to be sought out, encouraged and supported.

Forces in summary

The impacts of future significant growth in the region coupled with the six forces of change will place extreme pressure on the region's environment. Incremental change or a business as usual approach will not ensure the long-term life supporting capacity of the region ecosystems or protect its natural resources. The region will need to address its level of energy and resource use and it will need to substantially improve environmental quality within the region and not just maintain current levels.

A coherent and integrative approach across central and local government policies and plans is required to address the cumulative impacts of these various forces. Government, business and the community sector will need to make fundamental shifts and take rapidly accelerated action. We will need to become global trailblazers and be willing to invest heavily in our sustainable future.

Actions

Long Term Shifts

1. **Winning over the hearts and minds of individuals, businesses, organisations landowners and decision-makers.**

“We must become the change we want to be” - Mahatma Gandhi

While recognising that current programmes exist, changing societal worldviews is a long-term venture and will require significant and coordinated effort. There are four critical “heart and mind shifts” required:

1. Accepting that environmental quality is fundamental to human survival as opposed to an aesthetic optional extra.
2. Increasing our sense of civic responsibility for current and future generations
3. Taking personal responsibility for our own individual influence
4. Acknowledging that the region will face enormous challenges and opportunities in the future and we will need to make some hard decisions and adapt to change.

The following inter-dependent approaches are recommended to achieve these shifts;

- Create tangible public goals to inspire people (e.g. the urban dawn chorus) and set milestones to demonstrate progress and maintain momentum. Create a sense of urgency by showing the challenges and opportunities of the future “forces”. Demonstrate the links between health and the environment.
- Demonstrate that all sectors of community are beginning to change. Showcase practical examples of best practice and demonstrate their benefits (on farms, in business, in households, within communities). Identify and develop leaders and advocates to influence their peers and increase our use of community networks.
- Provide programmes that support and build the capacity for change across all sectors of the regional community.
- Link people physically with the environment (including the marine environment) through urban form and design, open space and events and programmes.
- Ensure knowledge is shared between organisations and with the public. Demonstrate leadership by government agencies walking the talk
- Introduce a system that applies a monetary value to natural resources and ecological systems.
- Enhance buy in from business and industry through collaboration and pricing mechanisms

Regulation, economic instruments and education have to be well integrated, aligned and applied in practice. This will require that current policies are reviewed and developed to ensure regulation and economic instruments create bridges, not barriers, to sustainable practices. Whilst bringing the community on board, local and central government will also need to increase their role in regulation and enforcement to protect environmental bottom lines.

2. Land-use and urban form protects and enhances environmental quality

- Take a systems approach to land use planning. Identify solutions that can solve multiple issues and make tradeoffs transparent. Apply systems procedures whereby environmental goals and procedures are standardised regionally, while ensuring that actions reflect diverse local conditions. Use catchment management planning as part of a systems approach.
- Protect priority landscapes, land and marine ecological systems and resources through greater prescription of land and coastal use, increased regulation and use of economic instruments.
- The design of urban form and the built environment should minimise negative impacts on ecological systems and seamlessly connect people to the natural environment. The region's urban form should enable us to live within our ecological footprint.
- It is unlikely that the market will adequately provide quality urban design that meets environmental and social objectives. Local government will need to increase its role in urban design and development including its use of regulatory and economic tools.
- Stormwater infrastructure should be based on low impact urban design with no contaminants entering waterways or estuaries.
- Pollution from transport should be below WHO guidelines.

3. Governance frameworks and institutional arrangements provide effective stewardship of the environment

There are two key challenges for increasing the effective stewardship of the environment. The first is to achieve greater integration between government agencies. The means to achieve this include:

- Amalgamation of local authorities – virtual or real. The use of one district plan for the region that takes a more consistent and integrated approach to the natural environment and that replaces the current piecemeal approach.
- More cross ministerial groups working on a series of sustainability outcomes with local government.
- Increasing the scope for the Regional Growth Strategy with increased government collaboration within its review, implementation and political forum. Increase community buy-in to the growth model and intensification.
- Developing a set of sustainability principles and goals which are agreed to and implemented across national and local political agendas.
- Increasing collaboration between Auckland's local government agencies and central government agencies (predominately Transfund, Transit, Treasury, Ministry for the Environment, Ministry of Economic Development, Ministry of Transport, Department of Labour, Department of Conservation and Crown Research Institutes. This has begun with the establishment of the Government Economic and Urban Development Office but can be developed further.
- Increasing integration of bottom-up and top-down policy decision-making.

The second challenge is to achieve higher priority for environmental quality across all levels of government. Recommended means to address this include:

- Identifying key tipping points for ecological systems and their consequences to social and economic wellbeing.
- Central government considering their decision-making in light of all four well beings, just as local government is now required to do under the LGA 2002.

- A resource use taxation system and fiscal arrangements that align with resource consumption.
- More robust provision of government funding for environmental protection, infrastructure and restoration.
- Increased use of regulation and enforcement to protect environmental bottom lines.

Catalyst actions

The group ranked a long list of catalyst projects and the overall priorities were:

- a regional plan and restoration programme for green corridors using a systems and an integrated catchments approach
- using scenario building in a provocative way to show people the consequences of their actions
- identifying key natural areas and landscapes that are no go for development
- providing incentives for low impact urban design and disincentives for non low impact urban design
- identifying a group of celebrities/ leaders to advocate sustainable living by their inspirational examples
- supporting community initiatives that demonstrate iconic sustainable actions such as re-vegetate a volcano or develop local/household production ability
- economic incentives to support protection of environmental.

Catalyst projects should be designed in a way that carefully selects and integrates sets of economic, regulatory and voluntary tools/mechanisms. The following is the full list of the group's proposals.

1. Create one regional environmental development plan for Auckland which would:

- Focus on the restoration and long-term protection of green and blue corridors including ecosystem protection and enhancement, food production, bike and walking trails, green infrastructure and amenity values
- Focus on an integrated catchment management concept including urban development, ecosystem protection and enhancement, agriculture and food production, energy and transport
- Assess the cumulative effects of development underpinned by established baselines which meet internationally recognized criteria for land, water and air
- Identity key natural areas and landscapes that are "no go" and cluster housing & growth developments to avoid key landscapes & site lines
- Frame/engage developments and programmes around the harbours - taking water transport more seriously

2. Undertake a major green and blue network restoration programme based on the one regional development plan.

3. Increase low impact design. This could include one or all of the following:

- Incentivise low impact sustainable design including water, air, land and energy
- Create a low impact design sub-division which is not connected to main infrastructure
- Provide a **real** financial incentive for solar water heating

- Require a dual water management system for all new houses, water tanks and reticulation systems and subsidise household rain tanks for existing houses

4. Develop and support community based initiatives which have multiple benefits. These could include:

- Local resource recovery centres to dramatically reduce waste to landfill.
- Develop local/household food production ability within 25% of Auckland households

5. Increase Environmental education: This could include one or all of the following:

- Increase the Enviroschools programme and move focus to sustainable futures. Incorporate sustainability strongly into core curricular requirements
- Create an iconic environmental education and information centre
- Significantly up-scale level of sustainable development training across disciplines at University
- Implement a high profile multi targeted collaborative programme which uses scenario building out 100 years to show people consequences of actions and celebrities and community leaders to promote messages

6. Actively restructure the use of economic instruments to deliver more sustainable outcomes, through, for example:

- Addressing environmental quality outcomes directly by reviewing and revising all government economic instruments (taxes, rates, levies, charges, tradable permits, deposit schemes, subsidies and credits). This may include shifts to resource usage rather than income generation as a prime driver in a taxation regime
- Review current cost /benefit analysis systems and discounting rates for future benefits. This may involve zero based discounting on infrastructure or social projects and could include monetisation of commodities currently considered as externalities to the financial model
- Increase use of market-based economic instruments and incentives to support sustainable practice and to support protection of environmental values (waste management, biodiversity, air quality, green corridors, marine ecosystem protection, riparian fencing, etc)

7. Reduce air emissions:

- Introduce emissions standards for all vehicles.
- Develop maximum fuel consumption limits for all classes of vehicle entering the fleet (new and used imports).
- Introduce emissions testing as part of the WOF/COF.
- Adopt in-service emissions screening (e.g. remote sensing) for enforcement, education and monitoring.
- Stop removal/tampering with emissions control equipment such as catalysis.

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