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ENVIRONMENT

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Environment

Auckland's natural environment is highly diverse and supports a wide (but somewhat threatened) range of different plants and animals. It also provides Aucklanders with resources, income, aesthetic beauty and space for recreation.

From Rural to Urban (with Increasing Intensification)

The Auckland environment is becoming increasingly urban, placing more strain on the natural environment. From 1987 to 2006 there was a 24% increase in built-up urban areas. Along with this growth was an increase in land density (people living on the land) and dwellings built. (See Appendix table A3).

Increasing urbanisation in Auckland leads to increased pollution of freshwater bodies and the marine environment, first through the release of sediment during land clearing and earthworks, and later by heavy metals and other toxic substances from rain runoff from roads and unpainted galvanised roofs. Long-term impacts on Auckland's biodiversity due to large-scale modification of natural habitats are also of concern (ARC, 2010b, pp. 10–11, 48).

Climate Change

Greenhouse Gas Emissions

Greenhouse gas emissions are widely believed to be changing the earth's climate. In the past two decades, New Zealand's greenhouse gas emissions have increased by around 23% (Ministry for the Environment, 2010, p. iv). During this time, the domestic transport sector has seen a 64% increase. The majority of this increase comes from road transport emissions (ARC, 2010a, p. 46). Auckland is the greatest contributor to New Zealand's road transport emissions (see the *Access* section).

The Effects of Climate Change on Auckland

Auckland is predicted to feel the effects of climate change in a variety of ways. It is estimated that over the next 70–100 years Auckland will become 3°C warmer (Ministry for the Environment, 2008b).

Climate change is expected to increase Auckland's natural hazards (RCAG, 2009, para 2.79). Auckland has a history of volcanic activity and in more recent times has experienced floods, droughts, cyclones and landslides (ARC, 2010b, p. 52). It is expected there will be little change to overall rainfall, but flooding may become four times more frequent due to more intense rainfall events (Ministry for the





Environment, 2008b). As extreme weather increases and sea levels rise, it is predicted that storm surges will impact heavily on coastal areas (Frame et al., 2010, p. 26).

The social and economic implications of climate change

The natural hazards Auckland faces could be highly disruptive, having significant social and financial consequences, threatening life and damaging buildings, infrastructure and natural environments (ARC, 2010b, p. 52). Despite this, most Auckland homes are not fully prepared for natural hazards and emergencies. Only 34% of households have enough water for 3 days, although the majority (81%) have a first-aid kit and essential medicines (See Appendix table A1).

Climate change will have other social implications for Auckland, such as increased global economic costs and the absorption of environmental refugees from other countries affected by climate change (Frame et al., 2010, p. 26).

Biodiversity

Auckland has a diverse range of habitats, and is home to more than 20,000 animals and plant species. Of these, almost 1000 are native to New Zealand (Social and Economic Research and Monitoring Team, 2008, p. 3). This includes more than 33% of New Zealand's native fern species and more than 50% of New Zealand's native bird species (RCAG, 2009, para 2.88).

Aucklanders have a responsibility to protect native animals and plants. Well over 200 of them are threatened species, some with populations so small they are even considered regionally extinct (ARC, 2010b, p. 49). The loss of native animals and plants is something the majority of Aucklanders say is important to them. The percentage of concerned Aucklanders has increased from 71% in 2000/01 to 76% in 2008/09 (Reid, 2009a).

Green Spaces

Auckland has approximately 40,000 hectares in regional parks (Lindsay et al., 2009, p. 12). These parks provide public green space for all Aucklanders.

The majority of Aucklanders find it easy to access the open green spaces, native bush, forest or nature reserves, while only 1.5% Aucklanders are unable to access any of them easily (See Appendix table A1). Deprivation plays a role in ease of access, with Aucklanders who have a household income of less than \$20,000 finding it more difficult to access green spaces (Reid, 2009b, p. 6). Satisfaction with access to green spaces varies between very satisfied (23%), satisfied (62%), neither satisfied nor dissatisfied (11%), dissatisfied (4%) and very dissatisfied (less than 1%) (see Appendix table A1).



The Marine Environment

Auckland's marine environments are experiencing pressures from population growth, commercial activity and the impact of fishing. There are increasing levels of run-off, sediment, stormwater and pollutants going into Auckland's harbours (RCAG, 2009, para 2.93). Of particular concern for swimmers is the amount of untreated wastewater overflowing to the sea. Sewage overflows occur often, usually during wet weather. In 2008, there were around 2500 overflows sending untreated sewage into the sea (ARC, 2010b, p. 20).

The high concentration of heavy metals being found in Auckland's marine environments poses significant risk to marine ecology. Rates are particularly high in the middle Waitemata Harbour and the upper Tamaki Estuary in muddy estuarine sites and tidal creeks (ARC, 2010b, p. 189).

Aucklanders have been consistently reporting their concerns about marine pollution in the annual Environmental Awareness Survey, with 85–90% saying they are concerned about water pollution in beaches and harbours (Reid, 2009a). While many are concerned, less than 30% have actually experienced water pollution problems themselves (see Appendix table B2).

Fresh water

Stormwater, vehicle pollution and sediment run-off are all impacting on freshwater ecology. Auckland's urban streams have regular samples taken from them and the majority of samples measure as unsatisfactory for ecological health (Social and Economic Research and Monitoring Team, 2008, p. 6).¹

Nearly all of Auckland's fresh water comes from dams in the Hunua and Waitakere ranges, and the Waikato River (ARC, 2010b, p. 14). Water supply in Auckland is highly reliable in all metropolitan areas and most smaller communities (RCAG, 2009, para 2.88).

On average, each person in Auckland is using 180 litres each day for domestic purposes. The per-person rate rises to 300 litres per person per day when industrial use and leakages are taken into account (ARC, 2010b, p. 14). More than 52% of Aucklanders say their households are doing things to minimise water use all or most of the time; however, only 42.7% say they do this for environmental reasons (See Appendix table A1).

Air Quality

The main sources of air pollution in Auckland are domestic fires, industry and transport (Ministry for the Environment, 2008a). Transport is causing the most harm, with approximately 80% of air pollutants in



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Auckland coming from vehicles (ARC, 2010b). This is having a significant impact on the health of Aucklanders: it is estimated that there are more than 500 premature deaths in Auckland each year from air pollution, as well as numerous cases of ill-health (RCAG, 2009, para 2.80). Despite this, only 22% of Aucklanders feel air pollution has been a problem for them (see Appendix table B2).

One of Auckland's main pollutants, associated with both health and environmental damage, is PM10 (Ministry of Transport, 2009, p. 99).ⁱⁱ Although there having been general reductions in PM10 in Auckland in recent years (Social and Economic Research and Monitoring Team, 2008), Auckland is still regularly exceeding peak air-quality targets (ARC, 2007, p. 58).

Noise Pollution

Noise pollution in Auckland comes from events, transport, sports games, industry, music concerts and private parties. Aucklanders are increasingly concerned about noise in their neighbourhoods, with 78% expressing concern in 2008/09, up from 69% five years earlier (Reid, 2009a). Almost a third of Aucklanders felt noise pollution had been a problem for them personally (see Appendix table B2).

Soil Quality

Soil quality measurements are based on the chemical, physical and biological functions of the soil (Auckland Council, 2010c). In Auckland, 38% of monitored land is 'excellent', 55% is 'fair' and 7% is 'poor'. Native vegetation has the greatest proportion of 'excellent' and forestry has the greatest proportion of 'poor' (Auckland Council, 2010c).

When land is overstocked and over-ploughed, the result can be nutrient loss, soil biology loss, compaction, and a reduction in organic matter (Auckland Council, 2010c). This often means it can no longer be used in the same ways. For example, in the last 20 years approximately 330 hectares of prime agricultural soil has been irrevocably lost each year (ARC, 2010b, p. 10).

Erosion

Approximately half the land in Auckland is unstable i.e. either eroded or prone to erosion. Land stability has been relatively constant over the past decade with little change in the proportion of land considered unstable. Most erosion in Auckland is due to human activities (ARC, 2010b, p. 122).



Energy

Almost all the energy Aucklanders use comes from outside the region (ARC, 2010b, p. 17). On average, Auckland is using 179 petajoules each year, with about 56% of this going to transportation (Social and Economic Research and Monitoring Team, 2008).

The amount of energy Auckland is using per person is increasing. At current consumption rates, Auckland will need 65% more energy by 2031 (ARC, 2010b, p. 15). Approximately 55% of Aucklanders report making an effort to minimise energy use all or most of the time. Of these Aucklanders, 39% say they do this, at least partly, for environmental reasons (see Appendix table A1).

Environmentally Responsible Consuming

Approximately 72% of Aucklanders say they are concerned about the environment (Reid, 2009a). (See Appendix table B2 for more detail). However, when it comes to purchasing decisions, Aucklanders' social values are more of a priority than environmental values. Aucklanders are slightly more likely than the rest of New Zealanders to make environmentally responsible purchase decisions and are willing to pay more to do so (Jones, 2008, p. 13).

Reduce Reuse Recycle

Every year Aucklanders throw out approximately 3.4 million tonnes of waste. Auckland currently has three landfills, located in Redvale, Hampton Downs and Whitford (Waste Not Consulting, 2009). The amount of waste going into these landfills is increasing at a faster rate than population growth (ARC, 2010b, p. 19).

Approximately 65% of this waste could be recycled or reused (Auckland Council, 2010a). Most Auckland households are recycling the things they know can be recycled. Approximately 30% are recycling 'all' that can be recycled; the rest are recycling 'most' (54%), 'some' (10%), 'little' (3%) and none (1%) of what can be recycled (see Appendix table A1).

Reusing is another way in which landfill is being reduced in Auckland. An example of this is 'Freecycle Auckland' which encourage Aucklanders to give and receive used goods instead of throwing them into landfill or buying new (The Freecycle Network, 2010).



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Sustainable Development

Sustainable development refers to making sure Auckland is environmentally, socially, economically and culturally well, and ensuring this health for future generations (ARC, 2008, p. 10). This section focuses on sustainable development of the environment.

Currently, Auckland is taking many approaches that are not sustainable. In urban areas, urban sprawl and the low intensity of the city increases greenhouse-gas generation and pollution of waterways and the marine environment. In rural areas, subdividing and selling of fragmented farms changes land use and can create environmental harm (ARC, 2010b, p. 7). And in Auckland's coastal areas, intense housing development in coastal and estuarine environments brings ecological challenges.

Sustainable development is a way of thinking which needs to flow through all planning decisions if Auckland is to protect its unique environment. In doing this, there is much wisdom to draw on from Maori understandings of the relationship between the environment and people (Suzuki et al., 2009, p. 224).

Corporate Social Responsibility (CSR)

Auckland businesses can play a significant role in protecting the Auckland environment. One common thread amongst leading corporately responsible businesses is their determination to seek the most sustainable options internally and externally. This involves making sustainable choices for both services and within their management and administrative structures (Clendon, 2008, p. 16).

Increased CSR is being further driven by an increase in consumer demand for businesses to engage in business activities in a way which is sustainable (see *Environmentally Responsible Consuming*).

Emissions Trading

Emissions trading in Auckland presents a number of possibilities through increasing the price of carbon-rich goods and consequently encouraging more sustainable behaviour by households and businesses. Some of these behaviours include taking public transport, employing more efficient energy practices, and encouraging innovation (Neilson, 2008, p. 14).

While emissions trading can create opportunities for innovation, new jobs, attracting 'green dollar' investment, and environmental sustainability, it also raises concerns (Neilson, 2008, p. 14). These concerns have centred around its economic impact. However, predictions are that the New Zealand economy will keep growing under a carbon-pricing scheme, with only a slightly slower rate of growth



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(NZIER and Infometrics, 2009, p. vii). At the other end of the spectrum is the concern that if the price of carbon-rich goods does not increase by enough, it will not be sufficient to influence behaviour.

Community Gardens

Community gardens are part of an emerging trend towards local and community food production. There has been an increased drive in Auckland to find a way to use communities' skills, resources and spaces to grow edible produce. While community gardens are often described as environmental initiatives, they also have huge health and social benefits, fostering leadership, community development and cohesion, and increasing good nutrition and activity (EcoMatters Environment Trust, 2010a).

An example of achieving environmental and social goals through community gardening is the partnership between Ngati Whatua o Orakei and the City Mission. Together they have created a community garden to help homeless Maori connect to their community, develop skills and get nutritious food (Auckland City Mission, 2010).

The movement is growing in Auckland, with nine known community gardens located in central Auckland, and seven each in the west and south (EcoMatters Environment Trust, 2010b)

Appreciating Auckland's Environment

Appreciating Auckland's natural environment involves more than thinking in terms of the human benefits that can be attained from the environment. A recognition of the inherent value of the natural world encourages increased responsibility and protection of the Auckland environment.



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Endnotes

ⁱ Physical and chemical data is used to produce a water quality index (WQI) to measure the ecological health of a site. The index has a scale of 0 to 100, with the higher the score, the better the water quality (Auckland Council, 2010b).

ⁱⁱ Pollutants which have a particle size less than 10 microns.



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