



# Future Focus

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## Section 8 Healthy Environments

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2010  
Population Health | Health Waikato



## Healthy environments

### 9.1. At a glance

Physical and social environments have a significant impact on the lives and health of communities living within them. However, the relationship between health outcomes and environmental factors can be difficult to determine. People living in communities of low socio-economic status or lower cost housing areas are less able to remove themselves from adverse environments (e.g. busy intersections or pollution prone areas) than those living in more affluent areas.

#### Healthy housing

An increasing commitment to healthier housing in New Zealand has resulted in a number of housing insulation and energy efficiency projects now occurring across the Waikato DHB region.

These projects target uninsulated housing all of which at different stages of development and implementation. The need for a more coordinated approach to planning has been identified.

#### Transport

The Waikato Regional Land Transport Strategy (2006) reinforces the need to move away from a 'car-centred' focus for land transport, planning towards a more multi-modal approach across the region e.g. walking, cycling, rail and public road transport. Some of these modes are active and influence the level of physical activity.

#### Sub-regional growth

Population growth projections for the Waikato region will place pressure on land, infrastructure and other resources, and also have direct and indirect impacts on public health.

An integrated sub-regional growth management strategy ("Future Proof") is being implemented by Hamilton City Council, Waipa District Council, Waikato District Council, Environment Waikato, and partnering agencies.

#### Air quality

Growing evidence shows a link between poor air quality and mortality, and hospital admissions for cardiovascular and respiratory disease and restricted activity days. The main source of respirable particulate polluted air (PM<sub>10</sub>) emissions in the Waikato DHB region is solid fuel home heating (e.g. wood burners).

Several urban areas monitored in 2007 within the common area shared by Environment Waikato and Waikato DHB did not meet the national environmental standard for air quality.

### **Drinking water**

Population Health administers a drinking water assistance programme in the Waikato DHB region, on behalf of the Ministry of Health. Since this programme was established in 2005, 71 small supplies in the Waikato DHB region have benefited from the programme.

Fluoridation of community drinking water supplies plays a key role in contributing to improving the oral health of populations. All Hamilton city residents have access to fluoridated water as do many Ruapehu (part) and South Waikato District Council residents.

### **Collaboration**

Health and wellbeing is a shared responsibility. Collaborative action (policy, planning and implementation) between the health sector, central and local government, and communities is further needed to improve community health and wellbeing. With this in mind, Population Health also works alongside other stakeholders (e.g. emergency services) to undertake activities to meet public health service requirements to prepare for and respond to a public health incident or an event of potential public health consequence (e.g. flu pandemic).

Drinking water, sewage and solid waste disposal, housing, air quality, land use and urban development and transport, are areas of particular interest to regional councils and/or territorial authorities and public health and have potential to impact on population health and wellbeing.

## 9.1 Introduction

This *Future Focus* section provides a profile of environmental factors that have an impact on population health and wellbeing within the Waikato DHB region.

As outlined in the main introduction, health and wellbeing can be influenced by a variety of factors; many of which lie outside the direct influence of the health sector.

Improving health and wellbeing is a shared responsibility<sup>1</sup>. The health sector alone cannot provide all that is necessary for health improvement as health is in part determined by the settings in which people live their lives. A cross sector approach is required where central and local government agencies and community stakeholders work together to influence environmental factors that impact on people's health and wellbeing.

The focus of this section is to highlight physical (and some social – housing, transport and urban development) environmental factors which have an impact on health and wellbeing. This discussion is structured under the following headings:

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[9.1 Introduction](#)

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### Case Study 9.1: Tokoroa Warm Homes Clean Air

Good health and wellbeing are linked with the state of the physical and built environment. Quality of life is often directly related to the standard of and people's exposure to these environments<sup>2, 3</sup>.

## 9.2. Health priorities

Population health and wellbeing is compromised where:

- access to safe water supplies and effective sanitation services is limited
- access to clean air is limited
- access to adequate housing is limited
- access to efficient and well connected transport options is limited
- health and wellbeing is undermined by development
- there is not protection from health hazards and contamination; and
- land development and use is not monitored and controlled, to minimise or eliminate adverse health issues.

Population Health has identified these to be priority areas for consideration and action to help minimise public health risk and maximise health improvement for people living within the Waikato DHB region.

## 9.3. Working together to create environments that support healthy living

Environments often affect everyone living within them. While many of the issues pertaining to improving environments to support healthy living relate to all age, gender and ethnic populations, it is worth noting that people living in communities of low socio-economic status or lower cost housing areas are less able to remove themselves from adverse environments (e.g. busy intersections or pollution prone areas) than those living in more affluent areas.

Environmental factors have a significant impact on the lives and health of communities however, causality between health outcomes and environmental considerations can be difficult to determine<sup>2, 3</sup>.

Drinking water, sewage and waste disposal, housing, air quality, land use and urban development and transport, are areas of particular interest to regional councils and/or territorial authorities.

There is potential benefit in public health working alongside regional councils and territorial authorities to influence policy and planning in these areas and help improve health outcomes for high need populations<sup>2, 3</sup>. Given this, these areas have been identified by Population Health to be priorities for the Waikato DHB region.

## 9.4. Living and working conditions: Housing, transport and urban development

### 9.4.1. Housing

Housing is an important determinant of health and wellbeing. Internationally and in New Zealand, many health conditions have been associated with occupancy of substandard (including cold, damp and overcrowded) housing.

These health conditions include respiratory disease such as Asthma, and infectious diseases such as tuberculosis, meningococcal disease and acute rheumatic fever, as well as lead poisoning, injuries and mental illness<sup>4</sup>.

#### Healthy housing in New Zealand

An increasing commitment to healthier housing is reflected in a government Budget 2009 announcement. This will see more than 180,000 New Zealand homes have access to grants for insulation and clean heating over the next four years, as part of a major investment in household energy efficiency.



Photo courtesy of South Waikato District Council

This investment (\$323.3 million), over four years, is for a campaign to fit homes with insulation and clean heating devices such as heat pumps and approved wood burners. The scheme, which is open to owners and occupiers of houses built before 2000, will start on July 1, 2009. The New Zealand insulation fund's goal is to see up to 60,500 homes being insulated each year by 2012 - 2013.

An outcome of healthy housing commitment to date has included a number of housing insulation and energy efficiency projects being launched across New Zealand. These projects target older uninsulated houses and households containing people with chronic respiratory conditions.

Such projects are also likely to identify people living in areas of lower socio-economic status and populations with an over-representation of Māori and Pacific people as they experience greater health inequalities. These are also the populations who suffer a disproportionate burden of morbidity and premature mortality.

A recent New Zealand randomised controlled trial showed that a relatively modest investment in insulation per house can lead to significant improvements in the householder's self-reported health, fewer general practice visits and a lower risk of children having time off school or adults having sick days off work<sup>5</sup>.

Of the top 10 avoidable hospitalisations, four can be either directly attributed to, or made worse by the environments that people live in including whether their homes are warm and dry. These are respiratory infections, ear, nose and throat infections, chronic obstructive pulmonary disorder (COPD) and asthma (refer *Future Focus* [Chronic conditions](#) section).

### **Healthy housing in the Waikato**

A number of housing insulation and energy efficiency projects are now occurring across the Waikato DHB region. While there have been insulation retrofits completed in all territorial authorities across the Waikato DHB region (Table 2), co-ordinated 'projects' are only occurring in some territorial authorities. Examples include projects in Waitomo, Ruapehu (Taumarunui area) and South Waikato territorial authorities.

The projects that are occurring across the region are all at different stages of development and implementation, with different criteria for household participation. A need for a more coordinated and sustainable approach to healthy housing planning and implementation has been identified.

The Healthy Homes Energy and Efficiency Forum was formed in the Waikato region in 2008 to advocate and coordinate healthy housing across the region.

To date, representation on the group includes Environment Waikato, Energy Efficiency and Conservation Authority, Ministry of Health, Ministry of Social Development, Waikato DHB, WEL Energy Trust, Hamilton City Council, Waikato Primary Health Organisation, Huntly Energy Efficiency Trust, Energy Options, Trust Waikato, Patricia Energy Trust, Wilson Energy Efficiency and Waipa Networks.

The forum has agreed to fund a short-term independent scoping role to develop a business plan for healthy housing across the region. This will include a stocktake of healthy housing stakeholders and their respective boundaries, each organisation's priorities and responsibilities, mapping housing retrofit activity that has occurred to date with respect to deprivation and known housing stock age, and identifying funding criteria and gaps.

This will be used to inform future healthy housing advocacy and work priorities across the Waikato region.

Population Health's role within this forum will be to support the monitoring of healthy housing activity and related data across the Waikato DHB region. This monitoring will track progress to date and help ensure that future planned activity targets vulnerable

population groups and territorial authorities where there is known to be degraded air quality and older housing stock.

The focus for future healthy housing activity will be in those territorial authorities whose residents are at greater risk of experiencing poor health outcomes due to poor air quality or uninsulated housing.

A high percentage of the housing stock within the Waikato DHB region was built prior to 1980, and therefore potentially uninsulated<sup>6</sup> (Table 1). Over three-quarters of housing stock in the South Waikato and Waitomo territorial authorities was built prior to 1980.

**Table 1: Number and percentage of pre-1980 housing within the Waikato DHB region, by area.**

Area	# pre-1980	Total	% pre-1980
Hamilton City	26,264	43,469	60%
Hauraki	3587	5517	65%
Matamata-Piako	5611	7891	71%
Otorohanga	1573	2105	75%
Ruapehu (all)	3574	4868	73%
South Waikato	6482	7235	90%
Thames Coromandel	7920	17,037	46%
Waikato	6876	10,299	67%
Waipa	7323	12,598	58%
Waitomo	2148	2683	80%
Waikato DHB	71,358	113,702	63%

Note: Information obtained from Quotable Value New Zealand.

Source: Atatoa-Carr, P. (unpubl.) Healthier housing Waikato: Stocktake and GIS mapping of houses in the Waikato region that have undergone insulation retrofitting. Waikato DHB Population Health internal document.

As at January 2007, information was available on 3491 houses within the Waikato DHB region which had received an insulation/energy efficiency package<sup>6</sup>. The houses that have had their retrofits completed are spread throughout the districts within the region.

From north to south within the Waikato DHB region, fewer households have received insulation packages despite the fall in the average ambient air temperature. In addition, a greater percentage of houses in the southern territorial authorities of the Waikato DHB were built before 1980 and are unlikely to be well insulated, if at all<sup>6</sup> (Table 2).

**Table 2: Number and percentage of pre-1980 houses within the Waikato DHB region to January 2007 with an insulation package retrofitted, by area.**

Areas	# completed	# pre-1980	% pre-1980 completed
Hamilton City	563	26,264	2.1%
Hauraki	174	3587	4.9%
Matamata-Piako	276	5611	4.9%
Otorohanga	2	1573	0.1%
Ruapehu (part)	128	3574	3.6%
South Waikato	94	6482	1.5%
Thames-Coromandel	500	7920	6.3%
Waikato	1526	6876	22.2%
Waipa	117	7323	1.6%
Waitomo	111	2148	5.2%
<b>Waikato DHB</b>	<b>3491</b>	<b>71,358</b>	<b>4.9%</b>

Source: Atatoa-Carr, P. (unpubl.) Healthier housing Waikato: Stocktake and GIS mapping of houses in the Waikato region that have undergone an insulation retrofit. Waikato DHB Population Health internal document.

When the houses that have received insulation retrofits are analysed by potential need (based on age of housing stock or low-income of occupancy), it is notable that 10% or less of pre-1980 or low-income houses in the region have received an insulation package, with the lowest percentage of low income households retrofitted being in Otorohanga, Waikato and South Waikato territorial authorities<sup>6</sup> (Table 3).

**Table 3: Number of houses within the Waikato DHB with a household income less than \$30,000 per annum and the percentage of these houses insulated, by area.**

Area	Houses insulated	Households with income <\$30000 per annum	% of houses completed*
Hamilton City	521	13,125	4.0%
Hauraki	174	2625	6.6%
Matamata-Piako	276	3438	8.0%
Otorohanga	2	942	0.2%
Ruapehu (part)	128	1806	7.1%
South Waikato	94	2577	3.6%
Thames-Coromandel	499	4707	10.6%
Waikato	1522	3993	38.1%
Waipa	117	4344	2.7%
Waitomo	111	1155	9.6%
<b>Waikato DHB</b>	<b>3444</b>	<b>38,712</b>	<b>8.9%</b>

\*if all insulated are in this low income bracket.

Source: Atatoa-Carr, P. (unpubl.), Healthier housing Waikato: Stocktake and GIS mapping of houses in the Waikato region that have undergone an insulation retrofit. Waikato DHB Population Health internal document modified to include Waikato DHB region.

### 9.4.2. Transport

The primary function of transport is the movement of people between places, enabling access to social and leisure activities, goods and services. Therefore, transport is an

important determinant of health, facilitating access to work, education and social networks<sup>7</sup>.

Transport can have a range of beneficial and detrimental effects on health<sup>8</sup>. Positive effects include forms of recreation and exercise that increase physical activity (a major modifiable factor for preventing and reducing mortality), as well as access to employment, education, shops, recreation, social support networks and health services, and enabling economic development. However, too close proximity to high volume



Photo courtesy of Environment Waikato

roads can adversely affect health in terms of air quality, noise and risk of injury.

Harder to measure are the effects of severance<sup>i</sup> on communities, the impact of isolation and stress on wellbeing, and the impact of unequal distribution of effects on health inequalities<sup>9</sup>

Rural populations that have significantly less access to transport and transport-related physical activity opportunities are also likely to face issues such as lack of footpaths for people to safely walk on<sup>10</sup>. Rural people are more likely to be dependent on car travel to access services, which are likely to be further away<sup>11</sup>. Those on low incomes and/or without cars living in rural areas are thus likely to be doubly disadvantaged, because of the high cost of car travel and the lack of alternatives.

Older persons use walking as a more regular transport mode than younger New Zealanders (those over 80 years make one-quarter of their journeys by foot), and thus their access is more affected by the quality of footpaths and walking tracks<sup>11</sup>.

Accessible and affordable transport has been identified as a gap for people with disabilities in New Zealand<sup>2</sup>. A survey of people with disabilities in Auckland found people from five specific disability groups (physical, sight impairment, intellectual, age, and parents of young children with disabilities) regarded transport as their highest priority need (ahead of areas such as employment and education)<sup>12</sup>.

Getting on and off public transport is the principle barrier to using public transport for adults with disability.

<sup>i</sup> Severance refers to the range of community effects from small increases in journey lengths/times through to the situation where journeys are no longer made, or alternative facilities are visited, due to additional inconvenience or danger caused by a busy or wide road (Chinn and Davies, 1996)

### **New Zealand Transport Strategy**

The New Zealand Transport Strategy<sup>13</sup> was released in 2008 with the overall vision that by 2040, people and freight in New Zealand will have access to an affordable, integrated, safe, responsive and sustainable transport system (refer *Future Focus* [Appendix](#) section).

The strategy sets out key objectives for transport that are requirements of the New Zealand Transport Strategy. These include<sup>3 22</sup>:

- assists economic development
- assists safety and personal security
- improves access and mobility
- protects and promotes public health; and
- ensures environmental sustainability.
- Four of the five objectives listed above are factors that influence health and wellbeing, with the fifth (protecting and promoting public health) a direct public health outcome.

### **Waikato Regional Land Transport Strategy**

The Waikato Regional Land Transport Strategy (2006)<sup>14</sup> aims to create a regional land transport strategy that meets goals as prescribed in The New Zealand Transport Strategy<sup>13</sup>.

The current land transport strategy reinforces the need to move away from a 'car-centred' focus for land transport planning towards a more multi-modal approach across the Waikato region e.g. walking, cycling, rail and public road transport<sup>14</sup>. Some of these modes are active and have the potential to have a positive impact on community health and wellbeing<sup>3</sup>.

The Waikato expressway has recently been identified by government as being a road of national significance. This indicates it will be a priority in future road planning and implementation. It will also have potential implications regarding ensuring there is effective connectivity for communities adjacent to the expressway.

While the region's transport priorities as indicated in the Regional Land Transport Programme<sup>15</sup> are predominantly state highway and rails based, a more balanced multi-modal approach has been taken in the Hamilton/Waikato/Waipā area around the city where more than 90% of the regional population growth will occur.

There is a greater emphasis on public transport infrastructure in urban centres, and predominantly within Hamilton<sup>14</sup>.

### Passenger transport

The Waikato Regional Passenger Transport Plan 2007 - 2010 reinforces the need for an integrated approach to passenger transport planning. Transport options such as active transport modes (e.g. bus/van services) within any given environment have the potential to influence the level of physical activity<sup>3</sup> in itself a determinant of health and wellbeing.



Photo courtesy of Environment Waikato

The plan reiterates the Regional Land Transport Strategy's specific direction for passenger transport. This is that passenger transport be developed as a realistic and attractive alternative for commuters in the Hamilton, Waipa and Waikato sub-region and potentially beyond the sub-region linking to other areas.

### Transport and physical activity

The Healthy Eating Healthy Action (HEHA) Implementation Plan<sup>16</sup> which promotes active transport options and a national cycling and walking strategy are two examples of policy initiatives that have been implemented<sup>17</sup>.

These strategies aim to prioritise safety and security by improving road safety, and addressing crime and personal safety around walking and cycling. They also aim to strengthen foundations for effective action through an integrated sustainable approach, developing skill bases, collaboration and coordination of effort.



Photo courtesy of Environment Waikato

The intention is to create supportive environments and systems influencing land use and design to encourage walking and cycling, improve networks and connectivity to influence individual travel choices.

Thames Coromandel and Waipa territorial authorities have developed walking and/or cycling strategies. Otorohanga and Waitomo (joint West Waikato strategy), Waikato and South Waikato are in the process of developing walking and cycling strategies<sup>18,19, 20</sup>

These strategies are intended to guide and strengthen walking and/or cycling related developments within their respective regions. Hamilton City Council has confirmed a

commitment to sustainable active transport within its Access Hamilton Strategy<sup>21</sup> and had also developed 'Cycling, Walking and Mobility in Hamilton -An Active Travel Plan'<sup>19</sup>.

### **Transport and access to health care services**

While increasing attention is now being paid to the environmental determinants of health, advances in medical technology mean that medical treatment and secondary prevention provided by health care services also contribute significantly to health status<sup>11</sup>. There is evidence that primary care services in particular have an impact on population health status, and the potential to influence other determinants of health.

In the 2002 - 2003 health survey, lack of transport was identified as one of the top six barriers to accessing general practice services by Māori and non-Māori. This was particularly true for Māori women who were significantly more likely than non-Māori women to report lack of transport as a barrier<sup>11</sup>.

National health transport policies are contained within the Ministry of Health's National Travel Assistance Policy<sup>22</sup>. The policy carries the intent of ensuring timely and equitable access for all New Zealanders to a comprehensive range of health services. Waikato DHB aims to ensure equitable access to health services for those living in rural and isolated areas. To enable this, Waikato DHB aligns activities to the overarching National Travel Assistance Policy<sup>22</sup>.

### **Transport and access to other services**

Employment and education are both key determinants of health along with access to social services and community facilities<sup>11</sup>. Availability and physical accessibility of transport, cost of transport, safety and, security of roads, walkways or public transport are all identified barriers to access.

#### **9.4.3. Urban environment development**

Affordable and quality housing, effective urban design, access to green spaces, safe drinking water, and access to attractive public transport options are all key public health considerations when planning developments<sup>17</sup>.

Urban development has seen increased interest in active transport modes. This is in part due to the clear links between environments that enable active transport and physical activity, and a desire to increase sustainability<sup>23</sup>.

Other aspects such as crime prevention, safety and connectedness are also important considerations from a public health perspective<sup>24</sup>.

### **New Zealand Urban Design Protocol**

Urban design is an approach to planning the 'make up' of towns and cities in order to influence social, cultural, economic and environmental activities and states within those towns and cities.

The New Zealand Urban Design Protocol (Ministry for the Environment), describes urban design as "the design of the buildings, places, spaces and networks that make up towns and cities, and the ways people use them"<sup>25</sup>. The overall aim is to change the way towns and cities are thought about in relation to sustainable development.

Councils in New Zealand are heavily involved in urban design initiatives targeting their communities, towns and cities. Managing urban growth is a significant factor for councils and links to impacts on health and wellbeing<sup>3, 26, 27</sup>.

The Public Health Advisory Committee has included urban environments and health as part of its current work programme and hopes to identify intersectoral solutions and opportunities for further health sector involvement in urban development issues. It hopes to identify national and international examples of best practice in improving health through effective urban planning and management.

### **Urban design in the Waikato**

Hamilton City territorial authority has developed Vista: Hamilton City Design Guide, as a tool to assist council policy makers and planners in the development of buildings and urban environments that work well now and into the future<sup>28</sup>. The New Zealand Urban Design Protocol was used as a framework in the development of Vista.

### **Growth and environment management in the Waikato**

Population growth projections for the Waikato DHB region will place pressure on land, infrastructure and other resources, and also have both direct and indirect impacts on public health. Planning for sustainable growth means ensuring existing and future infrastructure (e.g. drinking water facilities and transport corridors) are protected and local communities are supported by their town centres.



Photo courtesy of Environment Waikato

Hamilton City, Waipa and Waikato territorial authorities, and Environment Waikato are all committed to the development and implementation of an integrated sub-regional growth

management strategy (“Future Proof”) with partnering agencies: tangata whenua, Matamata-Piako District Council (Morrinsville) and the NZ Transport Agency<sup>29</sup>.

The goal is to have an agreed and approved strategy and implementation plan completed by mid-2009<sup>ii</sup>.

Public transport, employment, and natural resources are examples of other factors that determine population health and wellbeing within these districts that will be considered in the development of the sub-regional growth strategy.

The Thames-Coromandel Peninsula “Blueprint Project” brings together communities and authorities to look forward to 2050 and build an integrated plan for protecting and enhancing the special character of the peninsula now and in the future<sup>30</sup>.

“Shore Futures” is a growth management project in the Kawhia/Aotea catchment that will provide an overall framework within which to address issues such as population decline and coastal housing developments<sup>31</sup>.

## **9.5. Resource management: Air, water, waste**

### **9.5.1. The Resource Management Act and local government**

The Resource Management Act (1991) provides a system for environmental planning and management based on environmental legislation that local and central government administer to manage the impact of human activity on the environment<sup>32</sup>.

Population Health protects the health and safety of the community (and vulnerable groups within the community) by ensuring public health issues are identified and addressed in decisions on the sustainable management of natural and physical resources.

### **9.5.2. Air quality**

Air pollution from domestic and industrial sources is a health risk for communities. It is associated with raised morbidity and mortality and increased hospital admissions<sup>33</sup>.

Odour, heating and ventilation can all contribute to air quality issues, which can be caused by a variety of sources including:

- Natural: geothermal emissions, rock containing asbestos, pollens and dust.
- Synthetic: manufactured products containing asbestos, medium density fibreboard and formaldehyde.
- Domestic heating: coal, wood and gas.

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<sup>ii</sup> further information can be downloaded from:

[www.futureproof.org.nz/file/Futureproof\\_Strategy\\_Implementation\\_Mar\\_2009.pdf](http://www.futureproof.org.nz/file/Futureproof_Strategy_Implementation_Mar_2009.pdf)

- Vehicles.
- Industry.

There are known risks associated with living and working in conditions where there are recognised levels of contaminants above national guidelines. The health effects of short and long-term exposure to PM<sub>10</sub><sup>iii</sup> emissions are the subject of considerable international research<sup>34</sup>.

Growing evidence shows a link between annual average PM<sub>10</sub> levels and a number of factors influencing health; such as mortality, hospital admissions for cardiovascular and respiratory disease and restricted activity days<sup>35</sup>.

One recognised air contaminant of concern within the Waikato region is small airborne particles known as PM<sub>10</sub>. The importance of PM<sub>10</sub> is that particles of this size are respirable, that is, they are not trapped in the upper airway but can be carried into the alveolar gas exchange surfaces of the lungs<sup>iii</sup>.

### **Air quality in New Zealand**

In October 2004, a set of national environmental standards for air quality<sup>36</sup> were introduced by the Ministry for the Environment. This means that each regional authority must meet and enforce the same standard and achieve compliance by 2013. In some circumstances, councils can impose stricter standards.

The national environmental standards include standards that ban activities which discharge significant amounts of toxins such as dioxin into the air; impose design standards for new wood burners and set air limits for a small number of pollutants, including fine particulate matter (PM<sub>10</sub>).

Domestic heating, a major contributor to PM<sub>10</sub> pollution, tends to be time-specific in terms of time of day and seasonality, prompting the Ministry for the Environment to introduce a 24-hour PM<sub>10</sub> limit in addition to an annual standard<sup>37</sup>. The PM<sub>10</sub> standard is an average of 50µg/m<sup>-3</sup> in a 24 hour period, and 20µg/m<sup>-3</sup> annually<sup>38</sup>.

The government has announced a review of these standards (June 2009) to ensure they are practicable and achievable.

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<sup>iii</sup> Particulate Matter less than 10 microns. A criteria air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles allows them to easily enter the air sacs in the lungs where they may be deposited, resulting in adverse health effects. PM<sub>10</sub> can result in adverse health affects, and cause a reduction in visibility.

### Air quality in the Waikato

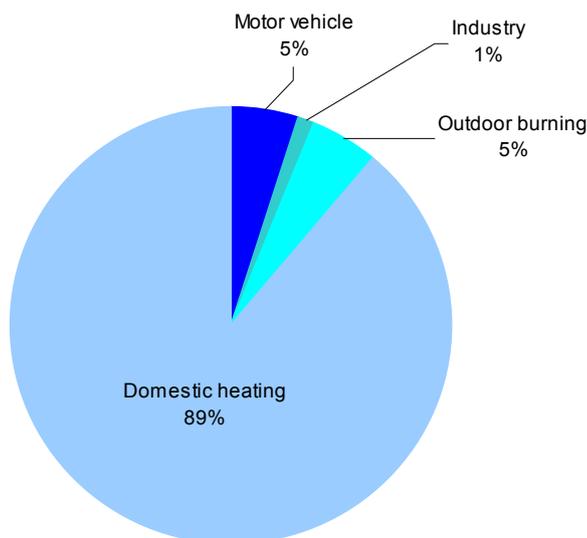
Waikato DHB priorities include reduction in the incidence of heart disease and chronic obstructive pulmonary disease, both of which can be adversely affected by PM<sub>10</sub>. The elderly and people with pre-existing conditions are more susceptible to health impacts associated with exposure to PM<sub>10</sub><sup>35</sup>.

The main source of PM<sub>10</sub> in the Waikato DHB region is solid fuel home heating (e.g. wood burners). Older wood burners and open fires are a particular problem and this is made worse by using damp or green wood, coal or rubbish as fuel. Other sources include outdoor burning, vehicle emissions and industrial discharges.



Photo courtesy of South Waikato District Council

**Figure 1: Sources of PM<sub>10</sub> in Tokoroa**



Source: Tokoroa Warm Homes Clear Air Project Plan (2005)

The significant standard for the Waikato at this time is the PM<sub>10</sub> ambient standard, which limits emissions to an average guideline value of 50µg/m<sup>3</sup> in a 24-hour period (with no more than one exceedence of this level permitted in a 12-month period) and an average guideline value of 20µg/m<sup>3</sup> annually.

Several urban areas monitored (particularly Tokoroa, Te Kuiti, and Putaruru) (Table 4) within the common area shared by Environment Waikato and Waikato DHB, do not meet this standard at present and therefore significant changes will be required to comply with the national environmental standards by 2013 without resource consent restrictions.

Environment Waikato has measured spatial patterns of PM<sub>10</sub> in Hamilton City using mobile monitoring equipment and noted the highest PM<sub>10</sub> emissions recorded when measurements were taken in winter 2008 were in the neighbourhoods of Fairfield, Frankton, Hamilton East and Melville. The average concentrations were higher in these locations at this time than at the Peachgrove Road permanent monitoring site<sup>39</sup>.

Environment Waikato indicated through a media release in early 2009<sup>40</sup> that besides reducing funding for home-heating conversions, the council is expecting to propose restricting air quality monitoring within their region to those areas already being measured. This combined with changes to the levels of funding of air quality work programmes confirmed in the Environment Waikato 2009 - 2019 Long Term Council Community Plan are likely to result in the Environment Waikato region complying with the national environmental standards for air quality by approximately 2030.

In 2009, Horizons Regional Council implemented systematic air quality monitoring in their region for the northern Ruapehu territorial authority area (Taumarunui). Occasional air quality monitoring had been undertaken by Horizons Regional Council (e.g. winter months 2001 - 2003) which identified Taumarunui ward as an area experiencing unacceptably poor air quality<sup>41</sup>.

The national environmental standards require regional councils to show improvements in air quality from 2008 onwards to achieve compliance by 2013. If they cannot comply, resource consents for certain air discharges will be restricted and this could mean that some industries will not be allowed to operate in the designated air shed<sup>36</sup>.

These Resource Management Act restrictions are likely to hold back economic development in areas which already experience lower economic activity.

In addition, the Waikato Regional Plan (Environment Waikato, 2007), while listing the same PM<sub>10</sub> limits as the national environmental standards, states an air shed will be considered degraded if PM<sub>10</sub> levels are between 66 - 100% of the regional ambient air quality guidelines (identified from national environmental standards).

This approach is an attempt to ensure the policy response does not just focus on a short-term achievement of meeting the national environmental standards in 2013, but has a longer-term goal to further improve community wellbeing by continuing to reduce air pollution over time.

**Table 4: Summary of PM<sub>10</sub> monitoring results for September 2006 to August 2007.**

Urban area	Hamilton µg m-3	Matamata µg m-3	Putaruru µg m-3	Te Kuiti µg m-3	Tokoroa µg m-3
Maximum PM <sub>10</sub> concentration	46	34	56	58	91
Measured NES exceedences	0	0	2	4	11
Annual average	15	13	16	17	17

Note: Table excludes Taupo data as this area is not within the Waikato DHB region

Source: Environment Waikato Technical Report 2008/11<sup>42</sup>

During 2007, PM<sub>10</sub> concentrations were measured at six sites within the common area shared by Environment Waikato and Waikato DHB: Hamilton, Tokoroa, Te Kuiti, Matamata and Putaruru. The towns with concentrations of PM<sub>10</sub> found to be in excess of the national environmental standards were Tokoroa, Te Kuiti and Putaruru.

The annual average across all areas shows that the PM<sub>10</sub> concentrations are acceptable for most of the year.

Tokoroa has been the focus of air quality work to date in the Waikato. This is due to the combination of high levels of PM<sub>10</sub> in winter (and associated number of exceedences of the PM<sub>10</sub> standard), the local climatic conditions, older housing stock, and the proactive activity of the local council and their citizens.

## Case study 9.1

# TOKOROA warm homes clean air

In 2006, Waikato DHB among other agencies such as Environment Waikato, South Waikato District Council, Raukawa Trust Board and South Waikato Pacific Island Health Committee, began a project in Tokoroa.

The project focuses on generating better air quality by cleaning up domestic heating, and insulating homes to make them warmer – both of which have an impact on people's health.

In winter, a large number of Tokoroa residents use wood burners to heat their homes, and wood burners create smoke, which carries small particles (called PM<sub>10</sub>) that are harmful to our health if we inhale them. The project focuses on helping residents to choose cleaner heating systems, insulate their homes and use their wood burners more efficiently.



Photo courtesy of South Waikato District Council



Photo courtesy of project Steering Group

In the short-term, the steering group aimed to make residents aware of the issue and encourage them to fix it. Phase one of the project comprised a general awareness campaign for the people of Tokoroa, including the elderly, low socio-economic groups, Maori, Pacific Island people, landlords and businesses or retailers.

Twelve homes in Tokoroa were used as a pilot. They were emission tested, then retrofitted with new heating systems.

Emission testing in 2008 indicates a slight improvement in PM<sub>10</sub> levels, though this cannot be directly attributed to the project.

The evaluation of the first phase indicated that the majority of those interviewed had some knowledge of the project, and some already made changes to their heating and insulation options. Others had had their homes assessed and were working through assessor's suggestions.

The second phase of the project has focused on retrofitting insulation packages into homes and installing clean heat appliances for households that meet predetermined criteria (eg households with low income). To date approximately 318 houses have had an insulation package, and 325 have had a clean heat appliance installed.

More recently, the community participated in a process that assessed the potential health impact of proposed heating policy options. Strengthened community capacity is also demonstrated in the Raukawa Trust Board assuming responsibility for completing the insulation work.



Achieving national environmental standards for PM<sub>10</sub> emissions in Tokoroa would reduce 2004 mortality estimates from 10 deaths per year (assuming no threshold) to seven deaths per year<sup>43</sup>.

Achievement of the same standards for PM<sub>10</sub> emissions in Te Kuiti would reduce 2004 mortality estimates from three deaths per year (assuming no threshold) to two deaths per year.

By comparison, achievement of the national environmental standards for PM<sub>10</sub> in Hamilton, if there were no population increase for the city and assuming no threshold, would result in a reduction in premature mortality of around 10 deaths per year. This estimate changes to a reduction of approximately one death when population growth is factored in.

The high levels of PM<sub>10</sub> emissions in Tokoroa are attributable to the use of wood burners for domestic heating estimated to make up approximately 90% of total PM<sub>10</sub> emissions. Other minor sources include outdoor burning, vehicle emissions and industrial discharges.

Wood burners are popular for home heating in many rural areas of the Waikato region such as Tokoroa, partly because of availability of fuel at a low cost in close proximity and the limited range of heating options typically used in older homes.

An estimated 65% of the stock of solid fuel burners in New Zealand are pre-2000 and are inefficient by today's standards. Cleaner alternatives in terms of PM<sub>10</sub> emissions include fixed and portable electric systems, flued gas burners, low-emission wood burners or pellet burners.

### **9.5.3. The Local Government Act and wellbeing**

The Local Government Act (2002) should be seen as an overarching framework for all areas that make up the goal of improving environments to support healthy living<sup>44</sup>.

Local government has a wide range of functions including historical roles in public health. The Health Act (1956) has largely determined the traditional local authority regulatory role in drainage, sewage, water supply, public health emergency management, communicable disease and nuisance control.

In addition, related legislation such as the Food Act, Sale of Liquor Act, Resource Management Act, Building Act, Civil Defence Act, Hazardous Substances and New Organisms Act, and the Local Government Act has conferred powers and legislative requirements on local government<sup>1</sup>.

The Local Government Act in particular, has increased local government flexibility to widen its traditional public health role into social and cultural areas by requiring local government to 'promote the social, economic, environmental and cultural wellbeing' of their communities<sup>44</sup>.

The Act requires councils to work with the community to identify 'community outcomes' and to report on progress to achieve them. It encourages a climate of collaboration and partnership between local government and other stakeholders, increasing opportunities for collective action where there are shared goals<sup>1</sup>.

The four wellbeing factors (social, economic, environmental and cultural) that regional authorities and districts are charged with enhancing under the Local Government Act expand the scope of influence of regional and district planning and implementation<sup>44</sup>.

#### 9.5.4. Drinking water

New Zealand has relatively high rates of largely preventable enteric or gastro-intestinal disease. For example, the campylobacteriosis rate in New Zealand is twice that of England and three times that of Australia and Canada<sup>45, 47</sup>. Infection in many cases is likely to be caused by drinking contaminated water, from both private supplies and inadequately treated reticulated supplies.



Photo courtesy of the Ministry of Health

The ongoing pressure for changing rural land use can lead to more inorganic and organic pollutants entering water bodies. Of particular concern are: nitrogen from fertilisers, nitrogen/ammonia from animal urine or silage, micro-organisms from animal faeces and sediment from the destruction of the surface structure of wet soils by livestock.

Population Health undertakes activities to assess the performance of drinking water suppliers (district council, community or privately owned) to determine whether or not they are:

- complying with the requirements of the Health (Drinking Water) Amendment Act (2007)
- taking all practicable steps to comply with requirements of the drinking-water standards; and
- where applicable, implementing their public health risk management plans.

Grading of water supplies is undertaken by Population Health to provide a public statement of the extent to which a community drinking water supply achieves and can ensure a consistently safe and wholesome product'.

The grading is a measure of confidence that a drinking water supply system will not become contaminated, rather than an absolute indication of quality at a specific time<sup>45</sup>.

An assessment is made of the likelihood of contamination throughout the drinking water supply process including source water quality, treatment plant effectiveness and reticulation system security.



The supplier needs to show evidence the water is correctly checked for the likely presence of bacteria and viruses, protozoa and chemicals. The results of these gradings are published in the Ministry of Health's Register of Community Drinking Water Supplies in New Zealand.

Table 5 below provides information on the numbers of registered community drinking water supplies and percentage of the Waikato DHB population, by territorial authority, which has access to a registered drinking water supply.

All reticulated supplies serving more than 25 people per day for more than 60 days per year in the territorial authority's geographical area should be listed, including those owned or managed privately or by other organisations (e.g. schools). Registered drinking water supplies may cross territorial authority boundaries.

**Table 5: Number of registered drinking water supplies within the Waikato DHB region, by territorial authority.**

Area	# supplies	Total population served	Total district population
Hamilton City	2	132,226 <sup>^</sup>	129,249
Hauraki	10	15,456	17,193
Matamata-Piako	22	18,449	30,480
Otorohanga	13	6,138	9,075
Ruapehu (part)	20	9,834	8,712
South Waikato	13	20,324	22,641
Thames-Coromandel	26	21,320	25,938
Waikato	37	24,406	43,959
Waipa	22	32,313	42,501
Waitomo	15	6,679	9,438
Waikato DHB			339,186

Note: Waikato DHB figures included are an estimate based on source data. The total Waikato DHB population by territorial authority (2006 census) has been provided as a comparison.

<sup>^</sup>Data includes residents outside Hamilton City

Source: Ministry of Health and Environmental Science and Research Ltd (ESR). Retrieved 22 January 2009 from: [www.drinkingwater.co.nz/](http://www.drinkingwater.co.nz/)

The Institute of Environmental Science and Research, on behalf of the Ministry of Health, produce the Annual Review of Drinking Water Quality in New Zealand.

This report gives a summary of the microbiological and chemical quality of the registered water supplies. Most rural supplies within the Waikato DHB region do achieve protozoal compliance. Hauraki, Matamata-Piako and Otorohanga territorial authorities run supplies have achieved improvements in bacteriological compliance during 2006 - 2007. Waikato run supplies showed the greatest decline in performance since 2005<sup>46</sup>.

### **Fluoridation**

Fluoridation of community drinking water supplies plays a key role in contributing to improving the oral health of populations as it helps ensure equal access of all residents regardless of where they live and has no associated compliance costs.

The provision of fluoridated water to the population is largely controlled by territorial authorities (Table 6) (refer *Future Focus* [Children and youth](#) section).

All residents of Hamilton City Council have access to fluoridated water. Over half of the residents of Ruapehu and South Waikato territorial authorities have access to fluoridated water, with less than one-fifth of Waikato residents having access. Remaining territorial authorities within the Waikato DHB region do not currently provide any fluoridated drinking water.<sup>47</sup>

Note that some communities may have access to a fluoridated water supply that is not acknowledged in the Ministry of Health's Register of Community Drinking Water Supplies.

**Table 6: Waikato DHB region population with access to a fluoridated water supply, by territorial authority.**

Area	Fluoridated water supply population*	Total district population^	% fluoridated water supply
Hamilton City <sup>§</sup>	132,226	129,249	102.3%
Hauraki	0	17,193	0%
Matamata-Piako	0	30,480	0%
Otorohanga	0	9075	0%
Ruapehu (part)	5100	8712	58.5%
South Waikato	13,300	22,641	58.7%
Thames-Coromandel	6850	25,938	26.4%
Waikato	15,517	43,959	35.3%
Waipa	0	42,501	0%
Waitomo	0	9438	0%
Waikato DHB	172,993	339,186	51.0%

\* Data for communities with access to a registered community drinking water supply that is tested for fluoride.

^Data by territorial authority taken from NZ Census 2006

§Data includes residents from outside Hamilton City Council area

Source: Ministry of Health and Environmental Science and Research Ltd (ESR). Retrieved 21 July 2009 from: [www.drinkingwater.co.nz/supplies/priority2plantsfordet.asp?detcode=B23](http://www.drinkingwater.co.nz/supplies/priority2plantsfordet.asp?detcode=B23)

### Drinking Water Assistance Programme

Population Health administers a Drinking Water Assistance Programme in the Waikato DHB region, on behalf of the Ministry of Health. Taranaki District Health Board is responsible for the programme in the Ruapehu territorial authority area.



There are two stages to the programme; technical assistance and capital assistance. The technical assistance aims to assist in improving the quality of drinking water supplies which serve a population of fewer than 5000. Following on from this some supplies may also be eligible for capital assistance from the Ministry of Health.

Since this programme was established in 2005, 71 supplies in the Waikato DHB region have participated in the programme. There have also been various expressions of interest from territorial authorities, marae, schools, and private supplies.

An example is Waitomo territorial authority which has benefited from the programme with capital assistance to support improvements to their Benneydale and Mokau drinking water supplies.

### 9.5.5. Recreational water quality

Water contaminated by human or animal excreta may contain a range of disease-causing organisms. Run-off from farmland during wet weather can carry both disease causing organisms and chemical contaminants.

When swimming and other high-contact water sports are carried out there is risk contaminated water will be swallowed, inhaled or enter the body through cuts, or contact with ears, nasal passages or mucus membranes. In addition, consuming shellfish gathered from contaminated waters can pose health risks.

Rather than try to measure all potential disease-causing organisms, certain indicator organisms are used to give a measure of the degree of faecal contamination. The microbiological indicator used for freshwater is *E.coli*, while the indicator used for coastal waters is enterococci levels<sup>48</sup>.

Anecdotal evidence indicates the occurrence of blue green algae (cyanobacteria) in the Waikato River and other water bodies in the Waikato region has become increasingly regular over recent years. Under favourable conditions, cyanobacteria cells can multiply and form blooms in lakes and slower flowing rivers.

The Waikato River is susceptible to blooms because of the prolonged water retention times in the hydro dams along its length, as well as from blooms in its source waters at Lake Taupo.

Some species produce natural toxins called cyanotoxins, which, when cyanobacterial cells are blooming, are a potential threat to people and animals if present in drinking water or if people and animals come into contact with the water during recreational activities.

Regional councils have a responsibility for environmental monitoring, which generally includes recreational water quality monitoring. Environment Waikato, as an example, monitors a representative sample of swimming beaches around the Waikato region to determine how good the water quality is for contact recreation such as swimming and surfing. East and west coast beaches are monitored in alternate years.

During 2006 - 2007, 10 sites for the west coast were measured and during 2007 - 2008, six sites in the Hauraki Gulf and 10 sites in the Coromandel (east coast) were measured.



The Hauraki Gulf had the highest rate of meeting either the 'excellent' or 'satisfactory' standard 100% of the time (Table 7).

**Table 7: Proportion of water samples collected at swimming beaches 2006 - 2007 on the west coast and 2007 - 2008 on the east coast and Hauraki Gulf by standard.**

Zone	Excellent	Satisfactory	Unsatisfactory
East Coast	90%	8.3%	1.7%
Hauraki Gulf	81.9%	18.1%	0%
West Coast	80.7%	15.7%	3.6%

Source: [www.ew.govt.nz/PageFiles/1996/data.csv](http://www.ew.govt.nz/PageFiles/1996/data.csv). Extracted from MARCO Benchmark Indicator Data Report October 2007, Choosing Futures Waikato.

Population Health works with local and regional councils to alert the public and mitigate risks when naturally occurring contamination or contaminant spills are detected.

Fresh water quality is variable, for information on water quality for contact recreation at specific areas please refer to Environment Waikato or Horizons Regional Council.

#### **9.5.6. Sewage treatment and disposal**

Population Health has a role to reduce the potential public health risks from sewage treatment and disposal. It does so by undertaking surveillance and evaluation of controlling authorities, management of public health aspects of sewage treatment and disposal and microbiological quality of receiving water, and managing the health risks and consequences of treatment failures and contamination events.

Onsite wastewater treatment and disposal systems for human and animal effluent, can, if not properly designed or maintained, expose people to raw or inadequately treated sewage effluent, potentially causing illness (predominantly infectious diseases).

People can be exposed to pathogens, for example, viruses, protozoa, bacteria and parasites present in the effluent by direct contact with effluent that has ponded on the surface, and through contamination of groundwater drinking supplies and contamination of recreational water.

Failing onsite wastewater systems can contaminate the property on which they are located as well as adjoining properties and waterways. In some areas, an increase in the size of the permanent population or an increase in the number of onsite disposal systems can overwhelm the ability of the soil to dispose of wastewater adequately.

Many coastal areas in the Waikato DHB region have seasonal contamination problems, both in winter if groundwater levels are high, and during the summer visitor influx.

Health protection officers are designated by the Ministry of Health to monitor and assess potential public health risk. They use statute, guidelines, standards and accepted public health practice in the investigation and assessment of public health impacts of resource consents as well as promoting the need for reticulated sewerage and centralised treatment systems in areas not adequately serviced.

#### **9.5.7. Marine biotoxin monitoring and shellfish quality assurance**

Population Health coordinates a marine biotoxin monitoring programme, where water samples are analysed for potentially toxic algae and the shellfish are tested for marine biotoxins and commercial harvesting restrictions overseen. Public health warnings advising the public not to collect shellfish are issued as and when required.

One of the requirements of the programme is that all marine farming areas have a responsibility to identify all actual and potential sources of pollution which may affect water quality at the marine farm to determine the effects of agricultural run-off, wastewater treatment plants, septic tank systems, boating and wild life.

The effects of rainfall and the tides in the distribution of pollutants are also assessed. This also includes a water quality sampling programme.

The data is used to determine the harvesting restrictions for the marine farm which are based on rainfall. The harvesting criteria enable shellfish to be harvested when the water quality is of a known bacteriological standard and the shellfish are safe to eat.

#### **9.5.8. Waste management and contaminated sites**

Population Health has a role to reduce or avoid adverse health effects and optimise the positive health effects of the local social and physical environment with respect to the management and control of liquid and solid waste, including effects arising from exposure to contaminated sites. It does so by:

- Undertaking surveillance and evaluation of the controlling authority's management of waste facilities and contaminated sites including the maintenance of community facility profiles.
- Identifying, investigating and following up incidents, complaints and notifications involving actual or potential public health risks and hazards and taking action to reduce those risks.
- Providing information and advice as necessary, for example in relation to resource consent applications.
- Ensuring waste management public health concerns are identified and addressed in local authority emergency management and contingency plans and district and annual plan strategies, objectives and policies.
- Encouraging the incorporation of health impact assessment into the assessment of environmental effects for contaminated and waste management sites and facilities through the resource management process.

## 9.6. Emergencies, biosecurity, quarantine and hazards

### 9.6.1. Emergency management



Population Health works alongside other stakeholders (e.g. emergency services) to undertake activities to meet public health service requirements to prepare for and respond to a public health incidents or events of potential public health consequence.

This event requires an emergency response from the health agencies and support from agencies involved in the civil defence emergency management environment.

Public health services contribute to emergency planning and maintain a preparedness to respond to emergencies of all kinds relevant to population health. This includes both declared emergencies and events of a more localised nature, in respect to size or impact, but often equally damaging to a community or group.

Often the role taken by Population Health is in support of other agencies such as fire or police. However, in the event of infectious disease such as Influenza, Population Health is expected to take a lead role.

### 9.6.2. Biosecurity and quarantine

Population Health undertakes activities to meet public health protection and regulatory service guidelines relevant to biosecurity, specifically relating to exotic mosquitoes of public health significance.

Quarantine and biosecurity procedures to prevent the entry and establishment of new diseases or disease vectors into New Zealand are supported by Population Health, which provides technical and professional advice on public health issues relating to biosecurity and quarantine purposes, including work undertaken in relation to:

- Imported risk goods disease vector surveillance and control preparation and testing of contingency plans for emergency response.
- Responding to reported sickness on board air/sea craft arriving in New Zealand.
- Ensuring airport and seaport environs are kept in a sanitary state and that rodent and vector control is practised.
- Ensuring water supplied to aircraft and international ships is potable and that sampling to ensure compliance with World Health Organisation standards is carried out.
- Ensuring adequate sewage and refuse disposal facilities for aircraft and the aircraft environs are provided.

Within the Waikato region there are two ports that are border control points: Hamilton International Airport and Taharoa seaport. The international airport located within the Waipa territorial authority services the Waikato region.

The aim is to intercept potentially hazardous vectors at both border control points. One current example of failure in this regard at both a national and regional level is the establishment of the southern salt marsh mosquito (*Ochlerotatus camptorhynchus*) in several areas of New Zealand, including eight sites in the Coromandel Peninsula (approximately 300ha)<sup>49</sup>.

Both the Ministry of Health and the Ministry of Agriculture and Forestry (MAF) take a keen interest in biosecurity issues, with other agencies such as territorial authorities responding to nuisance conditions that may arise.

Population Health has involvement in the exclusion, surveillance and response to interceptions and incursions of exotic mosquitoes of public health significance in collaboration with the Ministry of Agriculture and Forestry (MAF) and Biosecurity New Zealand.

Climatic and geographical attributes of the Waikato region and neighbouring regions would potentially support the proliferation of unwanted disease vectors should they become established. With a population located alongside many habitat areas and the movement of goods to and through the region, this issue is important to public health.

### **9.6.3. Hazardous substances**

Population Health works alongside other agencies to undertake activities to meet public health protection and regulatory service guidelines relevant to hazardous substances, including vertebrate toxic agents.

The proper management of hazardous substances is necessary to avoid adverse health effects either from direct or indirect exposure to hazardous substances or from environmental contamination.

Population Health's role in hazardous substance incidents is largely advisory given that in the majority of situations, other agencies will be involved and take the lead. The exception is vertebrate toxic agents where Hazardous Substances and New Organisms (HSNO) Act designated officers must approve the use of vertebrate toxic agents in water catchments and all areas where the public may be present.

## **9.7. Evidence-based interventions**

Reductions in environmental pollution not only benefit households, but fisheries, the food industry, physical environment, labour sector (fewer work days lost to illness) and

education sector (fewer school days lost to illness) as well as the health sector (reduced healthcare costs)<sup>50</sup>.

Interventions with respect to environmental issues can be enhanced by two approaches. Firstly, by taking a comprehensive approach that includes health and wellbeing impact assessment, regulation, advocacy for public health and community action and education and secondly, by adopting a collaborative approach within the public health sector and externally between agencies to strengthen public health outcomes.

Where Population Health is operating under national legislation the evidence used and the regulatory interventions developed should be consistent with guidelines from appropriate ministries at a national level where such guidelines exist.

### **9.7.1. Health impact assessment**

Health impact assessment (HIA) is an internationally recognised assessment methodology developed and endorsed by the World Health Organisation<sup>51</sup>. Health impact assessment is defined as a number of procedures, methods and tools by which a draft policy (or project) may be assessed and judged for its potential effects (both positive and negative) on the health and wellbeing of a population, and the distribution of these effects within the population<sup>52</sup>. A health impact assessment highlights opportunities for a policy or programme to minimise health and wellbeing inequalities<sup>53</sup>.

The health and wellbeing assessment tool is intended for use by sectors (e.g. local and central government and/or community agencies) than have a role to play in influencing the wider determinants of health and wellbeing to support policy development<sup>53</sup>. It can also be used to help ensure adequate community involvement in the policy development and minimise the potential negative policy impact on their health and wellbeing.

### 9.7.2. Partnership and collaboration



Photo courtesy of South Waikato District Council

Local government's roles and responsibilities on matters that impact upon the health and wellbeing of the population are outlined in legislation (Local Government Act 2002 and other -e.g. Health Act 1956). This legislation also outlines councils' responsibilities with respect to representing and advocating for their respective communities.

In fulfilling their duties to protect, maintain public health and improve community wellbeing, public health is willing to work alongside local government to achieve these outcomes. Proactive planning is required to manage the wider issues that these legislative requirements control. Long Term Council Community Planning is one example of a process that supports this. Public health is willing to contribute to these processes and support sustainable planning and action to improve community health and wellbeing in response to legislation and associated emerging issues. These could include requirements with respect to improving drinking water quality, and alcohol related harm. Population demography changes within a territorial authority area are another opportunity for collaborative support and action.

Sustainable partnerships between national and local organisations and communities can add value to the health and wellbeing improvement work carried out by all parties and reduces the risk of duplicating functions for the same intended outcomes<sup>1</sup>.

Community development and action can be strengthened through local and national policy development to create social and physical environments that promote the health and wellbeing of communities<sup>56</sup>.

### 9.7.3. Drinking water quality

There are currently a number of unregistered water supplies within the Waikato that will require registration under the Health (Drinking Water) Amendment Act (2007). A work programme needs to be developed and aimed at identifying unregistered supplies.

For communities where safe drinking water cannot be assured, the Technical Assistance Programme facilitator supported by drinking water assessors will work with communities towards achieving the goal of safe drinking water.

The following areas provide a recommended framework for drinking water quality interventions<sup>54</sup>:

- health-based targets
- system assessment and design
- operational monitoring
- management plans, documentation and communication; and
- surveillance of drinking water quality.

The Waikato DHB also supports fluoridation of the water supply as a key strategy to assist in helping improve the oral health status of identified communities.

#### **9.7.4. Recreational water**

Information regarding high use/risk areas is provided by Environment Waikato. Upon identification of high use areas, water quality needs to be determined to quantify whether or not a public health risk exists.

If it does a combination of the following interventions is recommended to ensure effective management<sup>55</sup>:

- compliance and enforcement;
- control and abatement technology;
- public awareness and information (this includes support for informed choice, such as clear recreational water grading schemes); and
- public health advice and intervention (including prevention services).

#### **9.7.5. Integrating housing and air quality**

Current gaps in housing initiatives relate to the level of commitment to ensuring improved housing quality including the community's needs for warm and dry housing conditions.

In addition to looking at commitment, there is a need to potentially increase the degree of integration that occurs with housing and air quality issues. There is anecdotal evidence that suggests an increased degree of integration with a focus on community involvement can have beneficial community health and wellbeing outcomes<sup>56</sup>.

Balancing the need for effective heating with air quality issues will require agencies to work together in order to achieve mutually beneficial outcomes (warm housing and clean air) and ultimately help ensure outcomes achieve community wellbeing and reduced inequalities in health.

Population Health recommends funding agencies assess and rank relative need and develop plans that help ensure those in greatest need are targeted in the first instance.

This will assist housing and air quality working groups to prioritise work alongside these communities to ensure they can afford to choose home heating options that keep homes warm and contribute to a cleaner, healthier environment.

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