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# PLANNING HEALTHY COMMUNITIES

## THE COMMONALITY BETWEEN PLANNERS AND PUBLIC HEALTH SERVICES.

Across the country, the work of District Health Board (DHB) Public Health Units is often relevant to planners, local authorities and developers. Local authorities and DHBs both have general legal requirements to improve, promote and protect the health of people and communities. Resource management and planning are major contributors to ensuring that people can live and work in a healthy and supportive environment. Some DHB staff (including Medical Officers of Health and Health Protection Officers) have legal responsibilities in environmental health, food safety and infectious disease control.

Common interest areas for planners and public health services include:

Water supply; Sewage treatment and disposal; Waste management; Subdivisions (rural and urban); Community development; Housing quality; Recreational and shellfish water quality; Hazardous substances; Contaminated land; Air quality; Emergency management; Radiation; Noise; Road safety; Injury prevention; Food preparation and safety; Offensive trades.

This article covers some current and continuing issues in land use and subdivision, particularly for rural development. People generally have the expectation that their residential environment will be safe from environmental health hazards, and may be

outraged if an environmental health hazard is identified subsequent to the establishment of a residential subdivision. For a residential community it must be assumed that exposure to environmental hazards is continuous (24 hours/day, seven days/week). A residential community is likely to contain vulnerable members of the population including children, the elderly and people with chronic illnesses or who are seriously ill.

### RURAL DEVELOPMENT

Urban expansion into rural areas and rural lifestyle developments have public health implications. Most commonly, these are the use of untreated roof and bore water and on-site sewage treatment and disposal. Contamination from previous land uses is an emerging issue for developers and councils that is not often considered in resource consent applications.

#### Drinking water

In many areas of New Zealand reticulated water is unavailable and communities rely on untreated roof water and bores for potable water. Roof water is commonly contaminated by bird, possum and cat faeces. Shallow bores can be contaminated by livestock, septic tank effluent and agricultural activities (either on-site or from neighbouring properties). Poorly constructed and maintained systems can be contaminated by lead or chemicals from treated timber. Some hazards from these water supplies are summarised in Figure 1.

Research conducted by Public Health Protection, Auckland District Health Board and the University of Auckland confirms that using roof water poses a greater risk of water borne disease than using reticulated town supplies. Salmonella and campylobacter bacteria are often detected in roof water supplies. Over the 6 month period July 2001 to January 2002, 7 cases of salmonellosis alone in the Auckland region were linked to private drinking water supplies. This is an underestimate as less than a quarter of the cases of gastroenteritis are notified to public health services who can then investigate. Current local research indicates a link between

rural water supplies and Giardia.

People may also be exposed to chemical hazards. A survey of roof water supplies in the Auckland region found copper and lead levels commonly exceeding the maximum acceptable values of the New Zealand Drinking water standards. Lead flashings and lead-based paint are the most common sources of elevated lead in these water supplies. Treated timber coming into contact with water can cause arsenic contamination. Agricultural spray drift can also contaminate roof water supplies.

The health risks from using roof water can be reduced by the installation of first flush diverters, regular maintenance and water treatment. Where the use of roof water as a source of drinking water is unavoidable, water treatment options include water filters, chlorination and ultraviolet dis-infection. Further details on water treatment options and maintenance are detailed in the Ministry of Health's *Public Health Risk Management Plan Guide: Roof Water Sources*. This document is available from the Ministry of Health's website [www.moh.govt.nz](http://www.moh.govt.nz).

All community drinking water supplies should comply with the New Zealand Drinking Water Standards 2000 and be monitored on a regular basis to ensure compliance. It is anticipated that community supplies will be expected to have taken all practicable steps to comply with the standards in amended legislation from later this year. The standards apply to anyone supplying water for 25 or more people for more than 60 days per year.

Many schools, maraes and early childhood facilities are registered as community supplies, as well as rural subdivisions. We recommend a reticulated community water supply for subdivisions catering for 25 or more people, and that an advice note should be attached to relevant land use consents recommending treatment of roof water used for domestic or commercial purposes.

#### On Site Sewage Treatment

On-site wastewater systems that are failing, poorly designed, built or maintained, or inadequate for the site topography, soil and water conditions are a common health hazard. Inadequate on-site wastewater systems can cause contamination of ground water, streams and ponds, shellfish beds and recreational water. People may also be exposed directly through contact with a malfunctioning disposal field when there may be surface contamination of

Hazards associated with untreated roofwater and ground water

Microbiological	Chemical
• Giardia	• Lead
• Cryptosporidium	• Arsenic
• Salmonella	• Copper
• Campylobacter	• Nitrates
• E. coli 0157	• Pesticides (spray drift)

Figure 1.

sewage. Some diseases associated with exposure to sewage are listed in Figure 2.

Figure 2.

**Pathogens associated with exposure to sewage**

- Viruses Rotavirus, enteroviruses, Poliovirus, Hepatitis A
- Bacteria *E.coli*, *Salmonella*, *Shigella*, *Campylobacter*
- Protozoa *Giardia*, *Cryptosporidium*
- Helminths tape worms, flukes, nematodes, hook worms

Individual on-site sewage systems are often proposed for subdivisions on the peri-urban fringe. As further building and development takes place, there are likely to be cumulative effects on ground and surface water along with effects on neighbouring properties. When a number of on-site systems in a locality are not being maintained or cannot function adequately, the effectiveness of neighbouring systems can also be affected. Failing on-site sewage systems are problematic and expensive to remedy.

In many cases subdivision consent is granted to the developer who then on sells the land. Individual property owners are then responsible for developing their own wastewater system. Under some regional plans, wastewater systems may be a permitted activity. This process does not allow the assessment of cumulative effects of several wastewater systems within a residential subdivision. Household changes (such as enlarged family size) or house renovations may make cumulative effects worsen over time.

Wherever possible communities should be connected to reticulated wastewater systems or small community package plants. A single community plant and disposal system would allow a high quality effluent and single discharge, reducing the potential for adverse effects to both health and the environment. Consent conditions need to require good plant operation with routine monitoring and maintenance. A single community plant is more easily upgraded as further development takes place or more demand is placed on the wastewater system.

**Action Points**

1. Assess the wastewater treatment and disposal requirements for the whole subdivision and the potential for cumulative effects when considering the subdivision consent.

2. Consider package community plants instead of individual on-site sewage treatment and disposal systems.

**Land Contamination**

Previous rural land uses may have resulted in soil contamination, which may in turn make a property unsuitable for a residential subdivision without remediation. Likely problem land includes intensively sprayed cropping areas (including glasshouse sites), sheep dip sites, spray sheds and fuel storage areas. Asbestos and treated timber in cleanfill may also pose risks. A recent survey of horticultural land in the Auckland region funded by the Auckland Regional Council found elevated levels of arsenic, copper, lead and organochlorines in cropping area soils. The Ministry for the Environment is developing a Hazardous Activities and Industries List (HAIL) which will assist in identifying landuses that may have resulted in soil contamination. This list will be published as part of *Contaminated Site Management Guidelines No 4*.

People may be exposed to soil contamination through ingestion and inhalation of soil and dust, dermal absorption, and ingestion of meat, eggs, and fruit and vegetables produced on site. Young children are at greater risk than adults because they ingest more soil than adults through playing, and put objects in their mouths. Earthworks on a contaminated site can generate contaminated dust, so if the subdivision is developed in stages, contaminated dust could pose health risks to neighbours and contaminate roof water supplies.

**Action Points**

1. Require applicants to provide a full site history when applying for land subdivision consents.
2. Require applicants to undertake soil testing on properties where the site history indicates the potential for soil contamination.

**URBAN DEVELOPMENT**

Increased urban intensification has public health implications. Exposures to hazardous substances, environmental noise and adverse air quality are common concerns raised by public health units for urban areas.

**Mixed Land Use Zones**

Mixed land use zones are being promoted as a planning tool to minimise the need for extra infrastructure and create sustainable urban environments. However, the integration of residential dwellings with commercial and/or light

industrial activities may not always be appropriate. Potential public health issues include environmental noise, exposure to hazardous substances and poor air quality. Planners need to ensure that the creation of mixed-use communities does not expose residential communities to environmental hazards.

Discharge of contaminants or a hazardous substance emergency in a mixed land use zone may expose adjacent residents to hazardous chemicals. Children, the elderly and those with pre-existing health conditions such as chronic lung and heart disease, asthma, diabetes and renal disease are more vulnerable.

Environmental noise in mixed land use areas can be a serious nuisance and affect health. While noise-induced hearing loss is unlikely in a residential environment, intrusive noise interferes with communication, relaxation or passive recreation, and has cardiovascular and psychophysiological effects.

**Action Points:**

1. Implement noise standards that are protective of residential communities located within mixed landuse zones.
2. Establish hours of operation for industrial and commercial activities.

**Reverse Sensitivity**


Increased urban intensification is resulting in the encroachment of residential housing into or adjacent to industrial and rural areas. In most instances the previous users have been operating for many years, but will come under pressure to alter or stop operations because of possible health effects.

**Action Points:**

1. Avoid establishing residential communities within or adjacent to industrial areas
2. Include sufficient buffer zones between residential and other land users.

The contact details for your local public health unit are listed under the Hospitals section of the phone book.

**CONCLUSION**

Local authorities need to ensure that their plans and resource consent procedures provide adequate means for assessing environmental health risks. Co-operative relationships need to be maintained between Local Authorities and Public Health Units to ensure that the issues discussed in this article are addressed. 

References available from the authors on request.