Appendix AQ10
criteria for assessing offensive or objectionable odour

AQ10.1 Nelson City Council enforcement officers, for the purposes of assessing compliance with permitted activity conditions, resource consent conditions, or sections 17(3)(a), 314(1)(a)(ii) or 322(1)(a)(ii) of the Resource Management Act, when determining whether or not a discharge of odour from an activity is likely to, or has caused "offensive or objectionable" effects beyond the property boundary, will consider:

a) the following matters 1 to 7, and
b) the Ministry for the Environment report Good Practice Guide for Assessing and Managing Odour in New Zealand (June 2003).

AQ10.1.1 FIDOL Factors

i) the **frequency** of odour nuisance events, and
ii) the **intensity** of events, as indicated by the degree of strength, but taking account of character or quality, and
iii) the **duration** of each odour nuisance event, and
iv) the **offensiveness** of the discharge, having regard to the character of the odour, and
v) the **location** of the odour nuisance, having regard to the sensitivity (including reverse sensitivity) of the receiving environment.

AQ10.1.2 The Sensitivity of the Receiving Environment

The sensitivity of the location, having regard to land use, and the times of day and why people are at the particular location, for example for work or recreation. Whether the sensitivity of the location is high, moderate or low, is guided by the table on the following page.

Reverse sensitivity refers to the effect of 'sensitive' activities potentially constraining 'normal' activities in a particular area, and has been defined in case law to mean "the effects of the existence of sensitive activities on other activities in their vicinity, particularly by leading to constraints on those activities."

It is important to note that any issues of reverse sensitivity associated with incompatible land-use activities should ideally be addressed during the land-use planning stage, such as re-zoning or subdivision consent. Such issues include the encroachment of residential housing on rural areas.

An example of where reverse sensitivity could arise as an enforcement issue is if a complaint was received from people visiting a rural area about odour from a nearby farm. In this example, the people visiting the area have moved to the problem, and provided the odour is what could reasonably be expected in such an environment, can be considered to have created a reverse sensitivity effect.

Table: Sensitivity of different land uses (from MfE guide)

Land use type	Sensitivity classification			Comments and reasons for classification
	High	Mod	Low	
Residential / living (high-density residential)	✓			People of high sensitivity to odours can be exposed. People can be present at all times of day and night, both indoors and outdoors. Visitors to the area who are unfamiliar with an odour are likely to raise awareness of a problem. In cases of mixed land uses, where the residences are present with industry, the use may be judged to have the same sensitivity as residential depending on the circumstances.
Rural residential (low-density residential, minimum property size around 1 ha)	✓		✓	Lower population density, therefore less opportunity for exposure to odour. People of high sensitivity can be exposed at all times of the day and night. Rural-type background odours may be present but are usually lower intensity than in a rural zone. Residents tend to work in cities and return home at night or weekends and may not be desensitised to rural-type odours. Can be sensitive to non-rural-type odours (e.g. rendering plant or landfill odours). Overall high or low sensitivity, depending on the circumstances of the particular area.
Rural	✓		✓	Low population density means low opportunity for exposure to odour. People living in and visiting rural areas generally have a high tolerance for rural-type odours. May be highly sensitive to non-rural type odours (e.g. rendering plant or landfill odours).
Heavy industrial			✓	A mix of odours is generally tolerated in industrial zones, as long as the intensity is not severe. People in these areas tend to be adults in good health and are more likely to tolerate some odour without finding it to be objectionable or offensive, particularly if the odour is associated with their employment (and source of income). Odours emitted from ground level sources tend to produce the greatest effects at night, when the occupancy of an industrial zone is low or nil, therefore the opportunity for exposure is low.

Table: Sensitivity of different land uses (continued)

Land use type	Sensitivity classification			Comments and reasons for classification
	High	Mod	Low	
Light industrial		✓		Characterised by a mix of small industrial premises and commercial/retail/food industry activities. The latter are often incompatible with industrial odour effects, hence the sensitivity is described as moderate even though occupation is likely to be low at night.
Light commercial / retail / business / education / institutional	✓			Similar in sensitivity to the high-density residential area, as it affects people of all ages and health status. Hospitals and schools tend to be land uses where people expect better-than-average air quality. Depending on the mix of development, human occupation may be low at night, which can moderate the sensitivity slightly, particularly if dispersion from the odour source is poorest at night.
Open space / recreational	✓			People tend to be more aware of air quality when undertaking outdoor activities and exercise, and sensitivity is heightened. People of all ages and health status can be present. People are more likely to be present during the day but events can also be held at night. People are often visitors from other parts of the city or country who are more likely to be sensitive to odours they are not used to. Sports fields may be moderately sensitive and need to be considered on a case-by-case basis.
Tourist / conservation / cultural / marae	✓			Generally have high environmental or spiritual value and a low tolerance to exposure to odours.
Public roads			✓	Generally low sensitivity because people using the roads are only present for a short period of time.

AQ10.1.3 Background Odour

i) The degree to which high levels of background odour may have de-sensitised people in the area to a specific odour, such that addition of other similar odours may not be noticed.

ii) Whether the cumulative effects from additional odour result in the odour becoming unacceptable.

iii) Whether the nature of the odour is different to the background odour, and the degree to which people's perception of odour from a new odour source may be affected.

AQ10.1.4 Perception and Cultural Issues

i) The source of an odour and any cultural or other factors that affect the acceptability or otherwise of the odour in the particular location. For example, odour associated with a natural source, such as mudflats or geothermal activity, may be accepted but a similar odour from an industrial activity may not be.

ii) Whether people's perception of the odour is influenced by the perception or actual occurrence of harmful chemicals within the odour discharge, even if the concentration of the chemical in the odour is too low to cause direct health effects.

iii) The degree to which the activity generating the odour is considered offensive in nature or is culturally offensive. Examples of such activities for some might include cremation and sewage treatment.

AQ10.1.5 Sensitisation

i) The degree to which sensitisation of a person or group of people might have occurred where an incident with significant adverse effects has changed the threshold of acceptability for an odour. (This is in addition to Background Odours (3 above)).

ii) Conversely, the degree to which repeated exposure to an odour might cause de-sensitisation or adaptation in the perceived odour intensity and/or effect. This can occur on a short-term basis from olfactory fatigue. Adaption is a long-term process that can occur when communities become increasingly tolerant of a particular source of odour, which is primarily a psychological response to the situation. For example, where odours are associated with a local industry that is considered to be important for the well being of the local community and the industry maintains a good relationship with community members, then adaption to the odour effects can occur over time.

AQ10.1.6 'Chronic' and 'Acute' Effects

Whether the odour effects are considered to be chronic and acute.

Chronic effects are low intensity, moderately unpleasant odours occurring frequently over a long period. Low-level odour may have an adverse effect even though no single odour event considered in isolation could reasonably be assessed as objectionable or offensive. For chronic odour effects, a longer-term assessment of the frequency and character of odour impacts may be required.

Acute effects can occur from high intensity, highly unpleasant odour occurring infrequently. Acute effects can be considered objectionable or offensive on a single occasion. They are usually from highly variable and/or uncontrolled discharges and are typically very difficult to quantify.

AQ10.1.7 New or existing activities

i) For new activities, the potential odour that may be released from both normal (controlled) and abnormal (uncontrolled) emission scenarios.

ii) For existing activities, the "chronic" or "acute" odour effects that may be arising from normal, controlled, or uncontrolled emissions to air, and therefore the appropriate odour assessment tool that may be used in the particular circumstance.