Annual Incident Report 1998-99

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Contents

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Executive Summary

This is the second Annual Incident Report for the Wellington Region.

The Wellington Regional Council provides a 24 hour, 7 day a week environmental incident response service for the Wellington Region. The purpose of this service is to provide an effective response to environmental incidents so that the Council can meet its obligations under the Resource Management Act (1991) (RMA). It also gives effect to methods in the Regional Policy Statement, and ensures compliance with the RMA, rules in regional plans, and resource consent conditions.

This report presents a summary and analysis of the complaints received by the Wellington Regional Council between 1 July 1998 and 30 June 1999. It also makes a comparison with complaints received during the 1997/98 year.

The objectives of this report are to:

- Provide an indication of the pressures placed on the Region's natural and physical resources;
- Identify the sites in the Region most frequently under pressure;
- Identify resource management issues that need to be addressed to ensure that we can achieve sustainable management of the Region's natural and physical resources;
- Provide a comparison with complaints received in previous years;
- Identify trends in the number of complaints received by the incident response service; and
- Determine the adequacy of the incident response services response to complaints and the environmental incidents which caused them.
- Provide an indication of public awareness about the incident response service.

There was a substantial increase in the number of complaints received during 1998/99 compared to the previous year. The increasing trend in the number of complaints received each year reflects increasing public awareness, and decreased tolerance of environmental incidents. The increasing trend in complaints received is expected to continue at least into the short to medium term.

During the past year 1145 complaints were received. The complaints were assessed according to the resource affected, i.e. air, water, and land. Air complaints were the most common, accounting for 51% of all complaints received in the past year. Of the air complaints, odour was the most common cause of complaints. Odour was responsible for 87% of air complaints, and 44% of all complaints. The suburbs of Happy Valley, Rangoon Heights, and Strathmore Park were the most frequently affected areas. This indicates that odour emissions should be a target issue to be addressed over the 1999/2000 year.

Water complaints were the second most common, resulting in 41% of all complaints received. The most frequently affected waterbodies in the Region were Ngauranga Stream, Porirua Stream, Wellington Harbour, and Porirua Harbour. Liquid waste and hydrocarbons were predominant causes of complaints relating to these waterbodies.

Complaints about incidents relating to land were the least common, accounting for only 7% of all complaints received. No areas were identified as being more frequently affected.

Analysis of complaints per capita revealed that people in the Wairarapa are just as likely to make a complaint as those in the western Wellington Region.

Three main resource management issues were identified, these were; inadequate buffer zones between potentially incompatible land uses, which contributes to many odour complaints received; inappropriate discharges into stormwater systems; and land contamination.

Most complaints were satisfactorily dealt with using education and warnings. Where education and warnings were not sufficient, appropriate enforcement action was taken. During the year this enforcement action included 14 abatement notices, 3 enforcement orders, and 3 prosecutions. The number of abatement notices issued was 1/3 that of last year, indicating that education and warnings were sufficient to deal with most incidents and/or that more people are complying with their resource consent conditions.

1. Introduction

The Wellington Regional Council provides a 24 hour, 7 day a week environmental incident response service for the Wellington Region (Figure 1).

Environmental incidents include pollution incidents and incidents of non-compliance. Pollution incidents generally involve the unauthorised discharge of contaminants into the environment, which by their nature can have adverse effects. Non-compliance incidents are where the requirements of the Resource Management Act 1991 (RMA), rules in regional plans, and conditions on resource consents are not adhered to. As these requirements are designed to promote sustainable management of natural and physical resources, non-compliance can threaten the achievement of this objective.

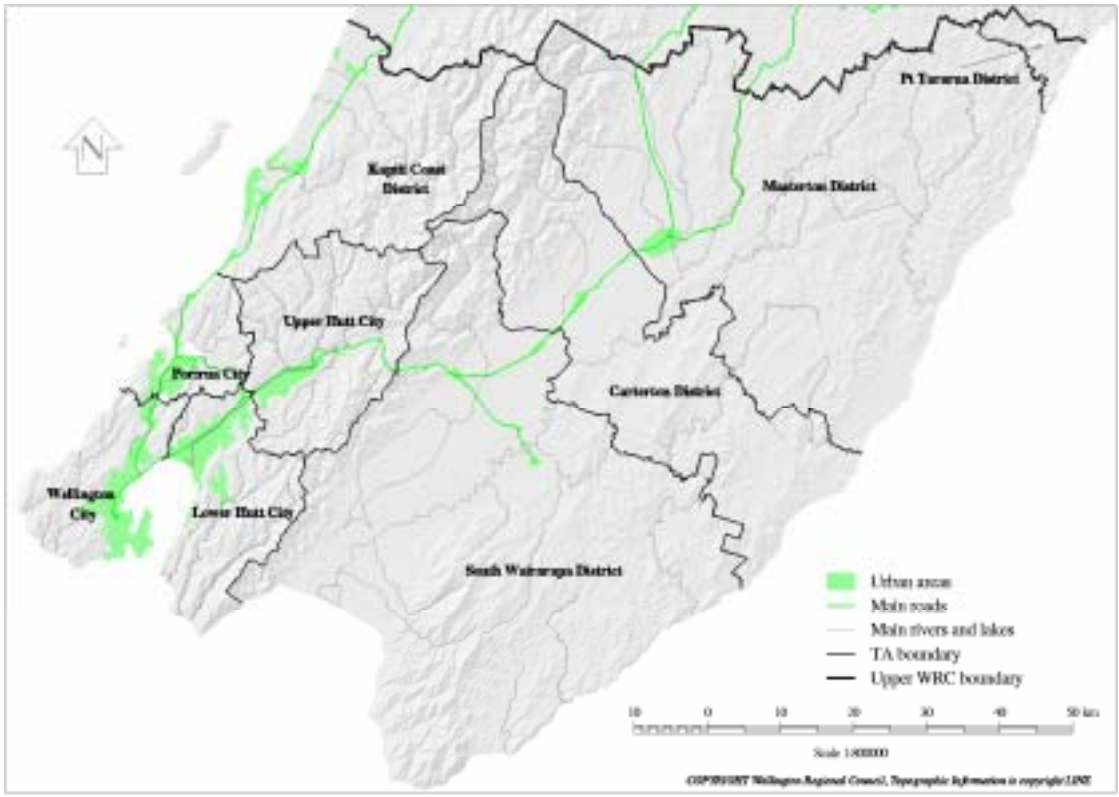


Figure 1: The Wellington Region.

The aim of the Regional Council's incident response service is to provide an effective response to environmental incidents allowing the Council to meet some of its obligations under the RMA. It also gives effect to methods in the Regional Policy Statement, and ensures compliance with the RMA, rules in regional plans, and resource consent conditions.

Complaints about environmental incidents are subject to bias as they sometimes arise from parties with an agenda other than an environmental one, such as disputes between or commercial interest. Some incidents can cause multiple complaints. Therefore the total number of complaints received does not absolutely correspond to

the number of environmental incidents that actually occur. Nevertheless, these complaints provide a simple indicator of pressures on the Region's natural and physical resources.

This report presents a summary and analysis of the environmental complaints for the Wellington Region, received between 1 July 1998 and 30 June 1999. The objectives of this report are to:

- Provide an indication of the pressures placed on the Region's natural and physical resources;
- Identify the sites in the Region most frequently under pressure;
- Identify resource management issues that need to be addressed to ensure that we can achieve sustainable management of the Region's natural and physical resources;
- Identify trends in the number of complaints received by the incident response service; and
- Determine the adequacy of the incident response services response to complaints and the environmental incidents which caused them.
- Provide an indication of public awareness about the incident response service.

2. Regional Overview of Complaints

During 1998/99 the Wellington Regional Council received 1145 complaints. These were dealt with by staff at the Wairarapa Division, Environment Division and Harbours Department. Almost 1000 of these complaints were responded to by staff from the Wellington Office.

The Regional Council holds complaint records on an Incident Database dating back to 1991/92. The number of complaints received each year is continuing to increase. Figure 2 illustrates the increasing trend in the number of complaints received annually by the Council. The number of complaints received almost doubled between 1995/96 and 1996/97. This result appeared to correspond with the greater emphasis placed on the provision of the incident response service following the Environment Division restructure at the Wellington Regional Council. Work to raise the profile of the Regional Council and the incident response service appears to have been an important factor in the increase in complaints. A trend of increasing public awareness of environmental incidents and decreased tolerance of polluting activities has continued, with 316 more complaints received over the1998/99 period than the previous year. 2/3 of the increase in complaints is due to greater numbers of odour complaints over the 1998/99 year.

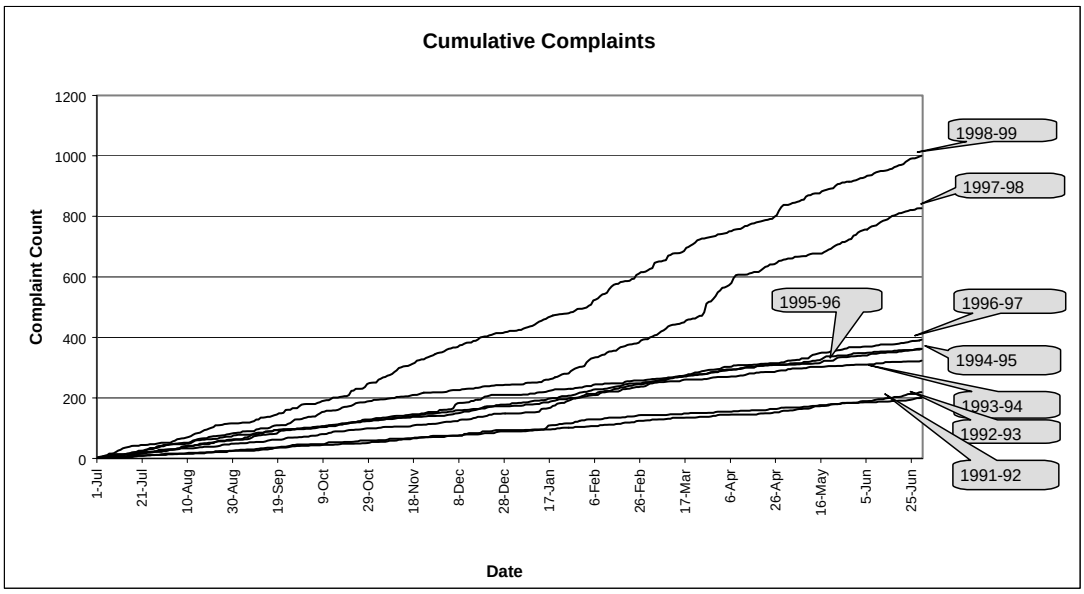
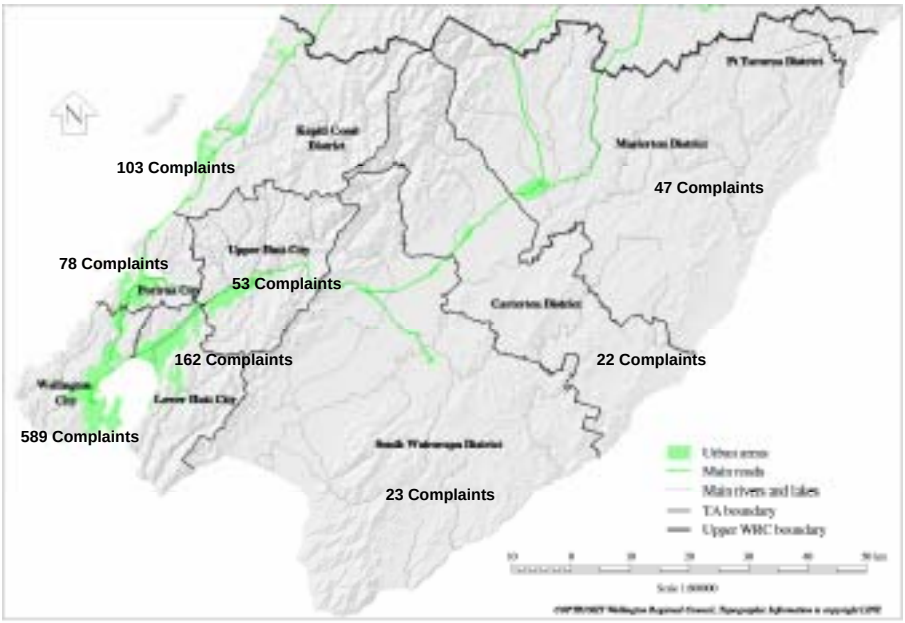
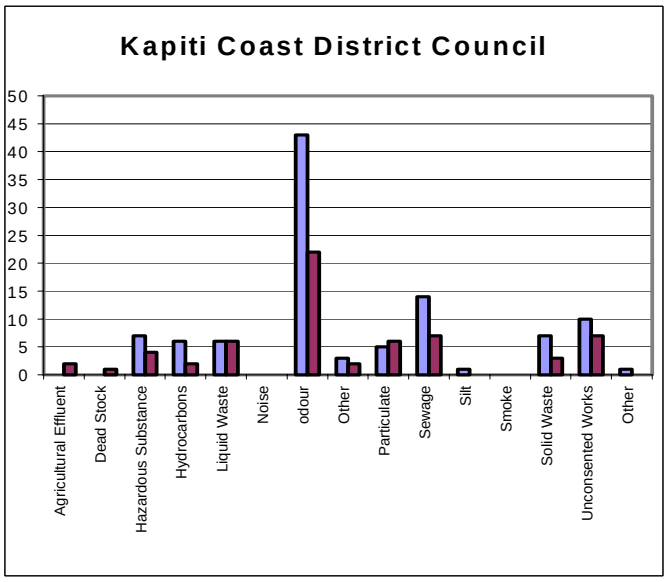
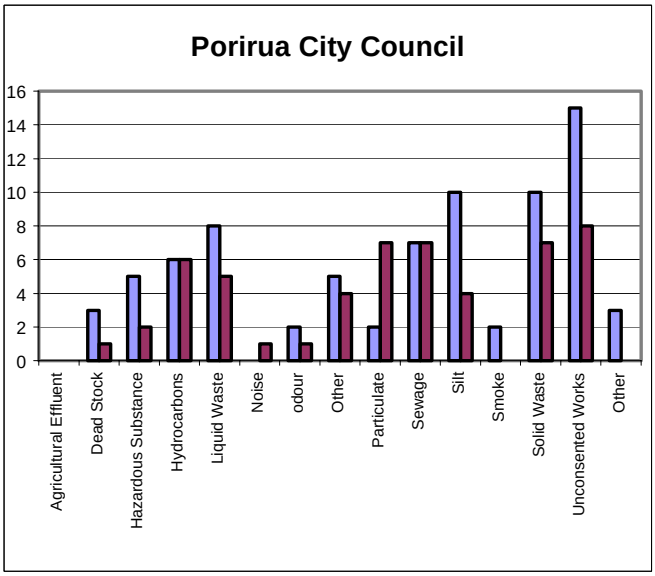


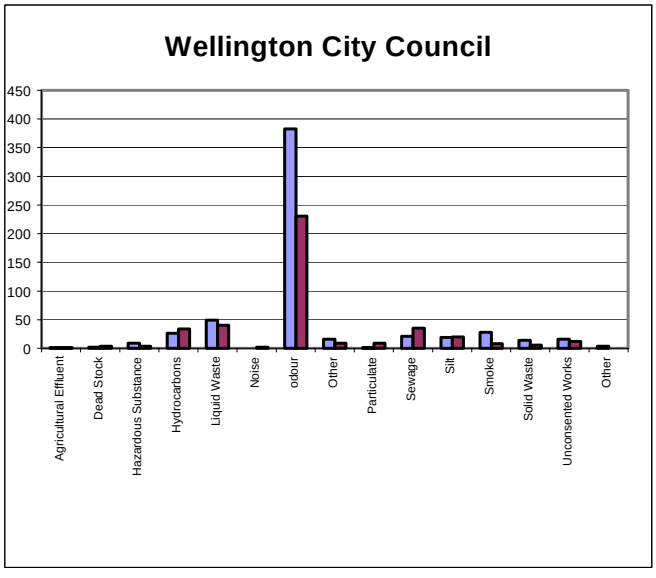
Figure 2: Comparison of cumulative number of complaints received since 1991/92.

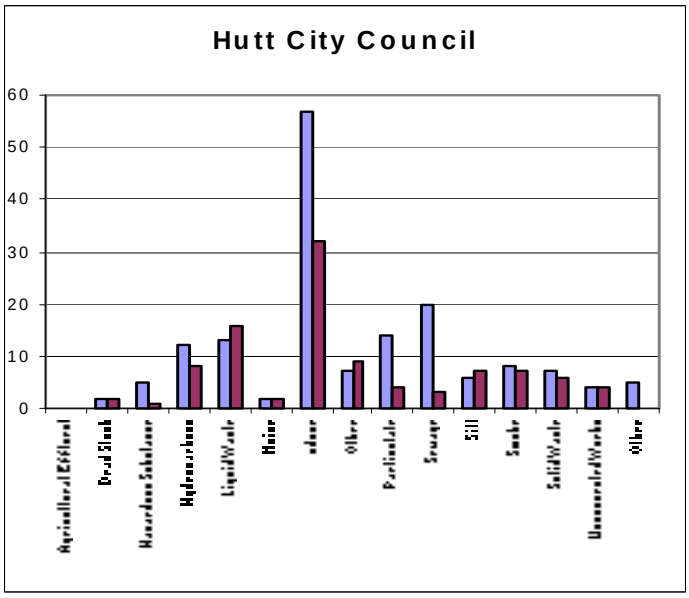
Figure 3 shows the regional distribution of complaints by territorial authority area. Most complaints came from urban areas with high population and population densities, such as the Wellington City area. Complaints from urban areas typically relate to industrial and commercial activities such as abattoirs and wastewater treatment plants. Complaints from rural areas, such as the South Wairarapa, typically related to agricultural activities.

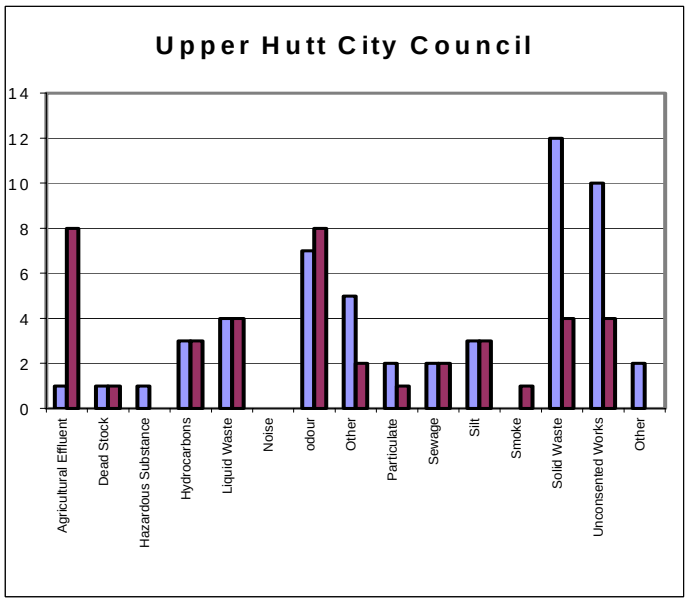

103 Complaints
47 Complaints
78 Complaints
53 Complaints
162 Complaints
22 Complaints
589 Complaints
23 Complaints
Urban areas
Main roads
Main rivers and lakes
TA boundary
Upper WRC boundary

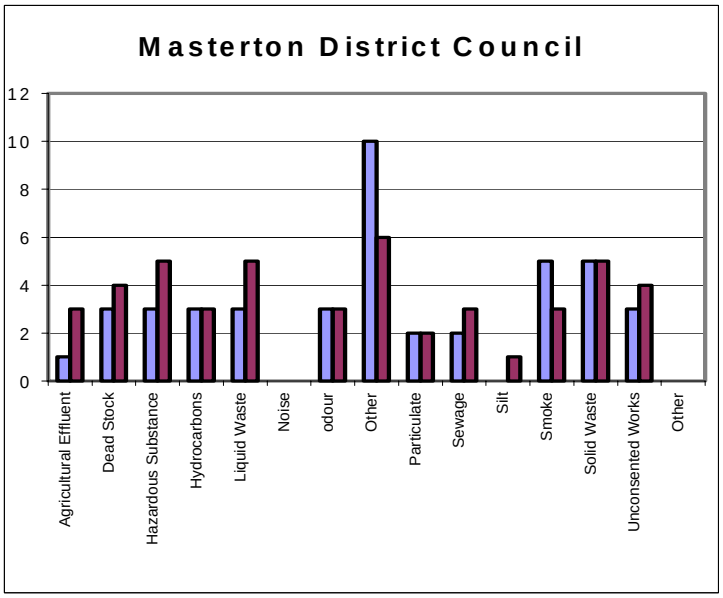

Kapiti Coast District Council
50
45
40
35
30
25
20
15
10
5
0
Agricultural Effluent
Dead Stock
Hazardous Substance
Hydrocarbons
Liquid Waste
Noise
odour
Other
Particulate
Sewage
Silt
Smoke
Solid Waste
Unconsented Works
Other

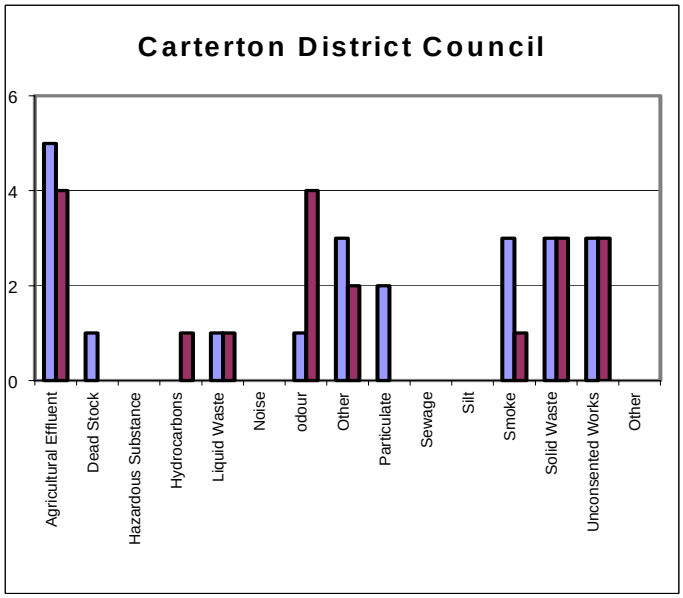

Porirua City Council
16
14
12
10
8
6
4
2
0
Agricultural Effluent
Dead Stock
Hazardous Substance
Hydrocarbons
Liquid Waste
Noise
odour
Other
Particulate
Sewage
Silt
Smoke
Solid Waste
Unconsented Works
Other


Wellington City Council
450
400
350
300
250
200
150
100
50
0
Agricultural Effluent
Dead Stock
Hazardous Substance
Hydrocarbons
Liquid Waste
Noise
odour
Other
Particulate
Sewage
Silt
Smoke
Solid Waste
Unconsented Works
Other









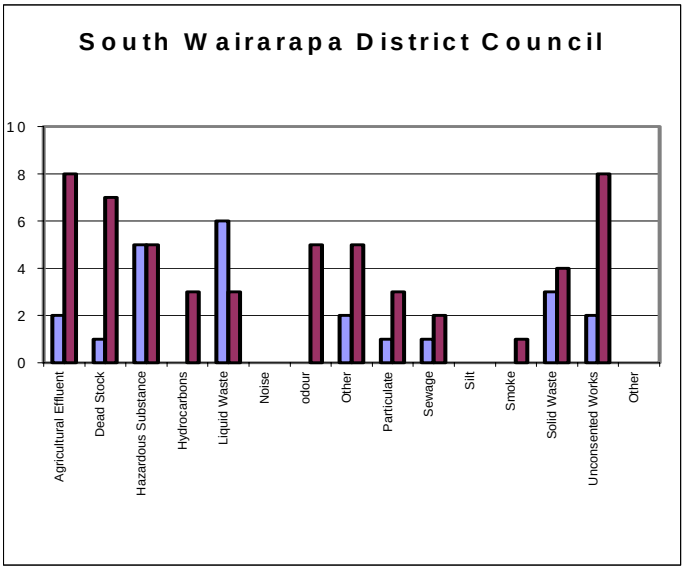


Figure 3: Regional distribution of complaints from 1 July 1998 to 30 June 1999.

Climatic conditions have an influence on the number of complaints received. During the warmer and dryer summer months, people are more likely to be involved in outdoor activities, and as a consequence are more likely to witness environmental incidents. The generally calm, cool weather conditions experienced during autumn (and spring) are conducive to odour incidents, because odour dispersion is reduced.

During 1997/98 the highest number of complaints were received in autumn. This was due to two things. The first was the mild weather conditions experienced during this period, the second was the commissioning of the new Moa Point Wastewater Treatment Plant and its sludge de-watering plant at Carey's Gully. In 1998/99 complaints were also highest in autumn, however unlike last year the number of complaints was not significantly greater than in summer. It is possible that the number of complaints received on a seasonal basis is reflecting more strongly the general increase in complaints brought about by increasing public awareness, rather than seasonal differences in pollution incidents.

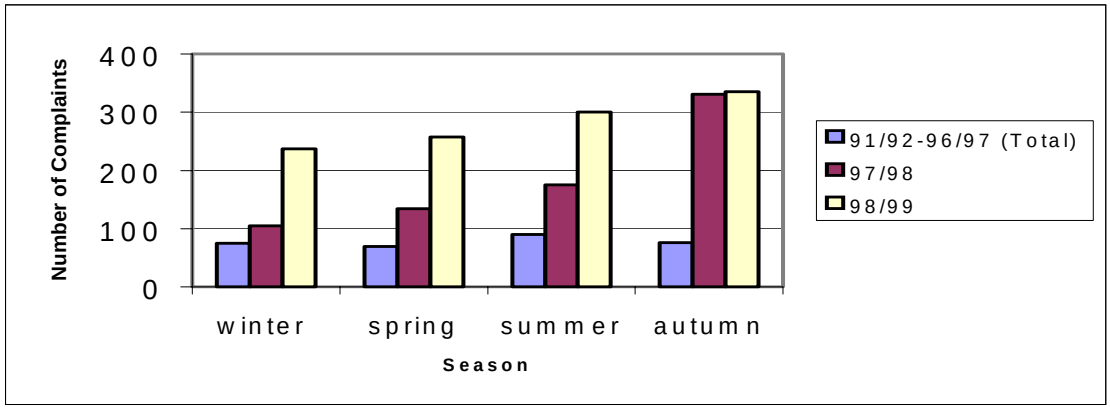


Figure 4: Seasonal Distribution of Complaints

Complaints about incidents affecting the air and freshwater resources were the most frequent, collectively accounting for 75% of all complaints received, as shown in Figure 5. The reasons for the predominance of complaints relating to these two resources will be discussed in following sections of this report. Of the complaints received, around 70% were related to non-consented activities, the remainder were associated with consented activities. This indicates a similar trend to last year where 75% of complaints were related to non-consented activities.

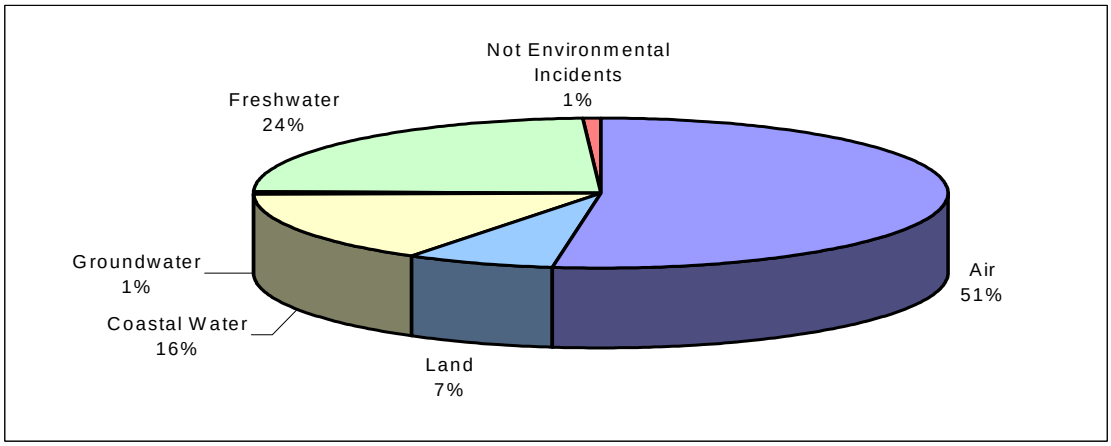


Figure 5: Complaints Related to Each Resource

Figure 6 shows the number of complaints received per 1000 people for each of the Territorial Authority areas. This shows that Wellington City had the highest number of complaints per capita. On a per capita basis, Carterton District and South Wairarapa District had comparatively high numbers of complaints. This also indicates that the 92 complaints received in the Wairarapa are proportional to the population of this area, and that people in the Wairarapa are just as likely to make a complaint regarding environmental pollution as those in the western Wellington Region.

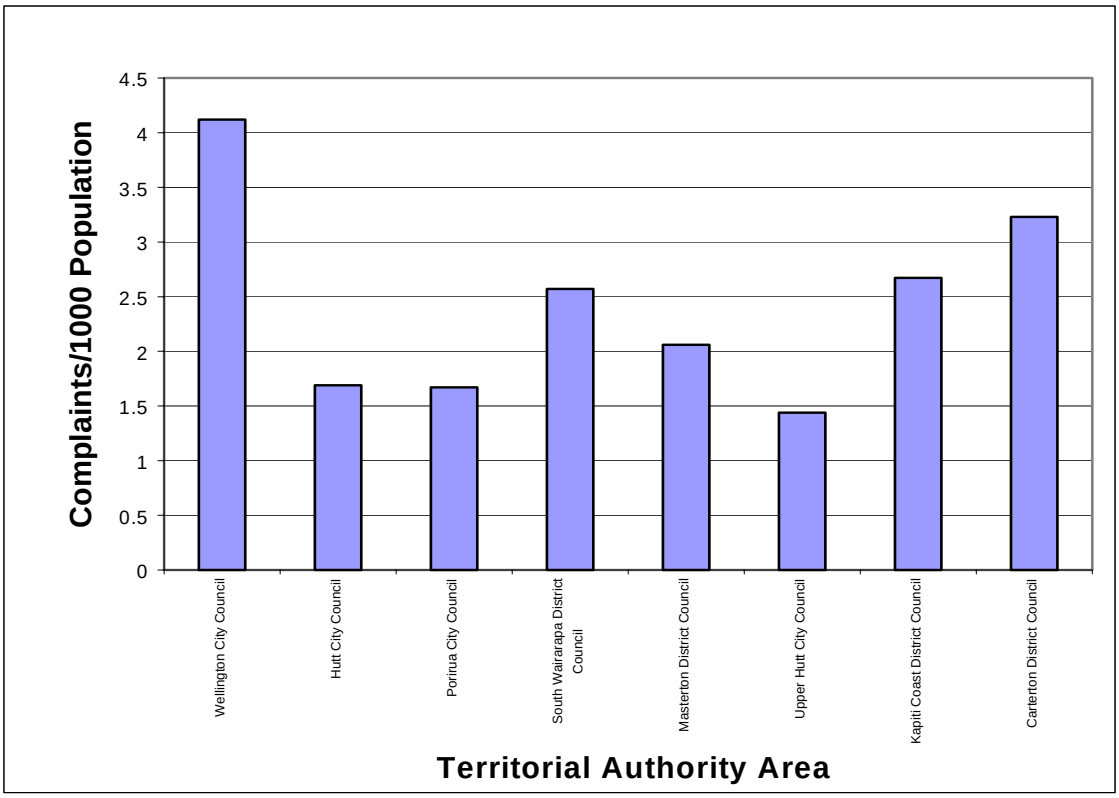


Figure 6: Complaints per 1000 population, 1998/99. Based on 1996 Census data.

3. Air Complaints

A total of 597 air complaints (51% of all complaints) were received by the Regional Council during the period under review, the most for any resource. The high number of air complaints received is indicative of the widespread effect that air incidents can have on the environment. For example one odour incident may affect an entire suburb, and therefore generate a large number of complaints. Table 1 shows air complaints as a percentage of total complaints for the last 2 years, and indicates that air complaints continue to make up approximately half of all complaints received in the Region.

Table 1: Air incidents as a percentage of total incidents 1997/98

Year	1997/98	1998/99
Total number of incidents	827	1145
Air incidents as % of all incidents	45%	51%

3.1 Types of Air Complaints

Figure 7 summarises the nature of the air complaints received during 1998/99. Odour, particulate matter and smoke were the three most common types of incident causing complaints, with the high number of odour complaints again indicative of the widespread effects of such events.

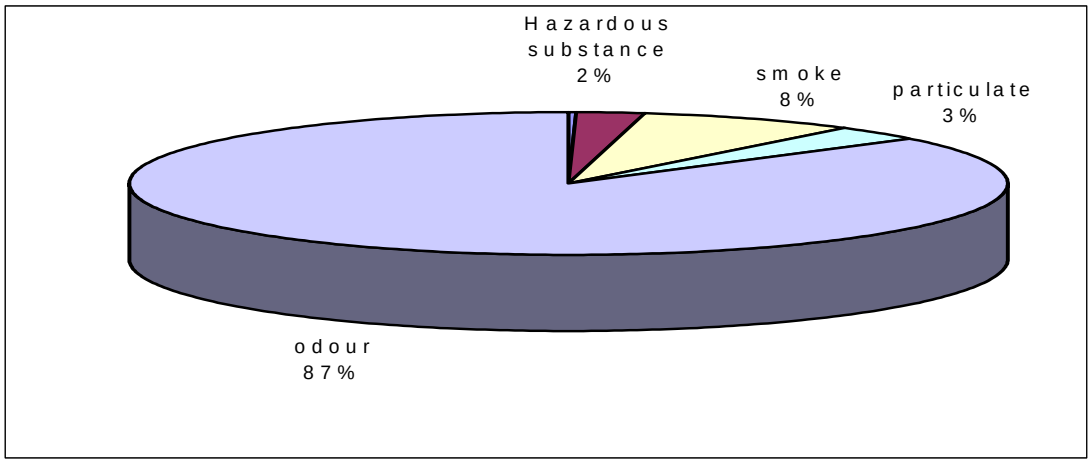


Figure 7: Types of air incidents.

Figure 8 compares the air complaints received in 1998/99 with those received in 1997/98. While the total number of complaints increased, the number of incidents related to particulate matter decreased over the year in review. An increase of nearly 200 odour complaints is significant, particularly as this is the approximate increase in total complaints received for this year. This result suggests that tolerance of odour is decreasing in the Region, and therefore control of odour emissions should become a key target area for the 1999/2000 year.

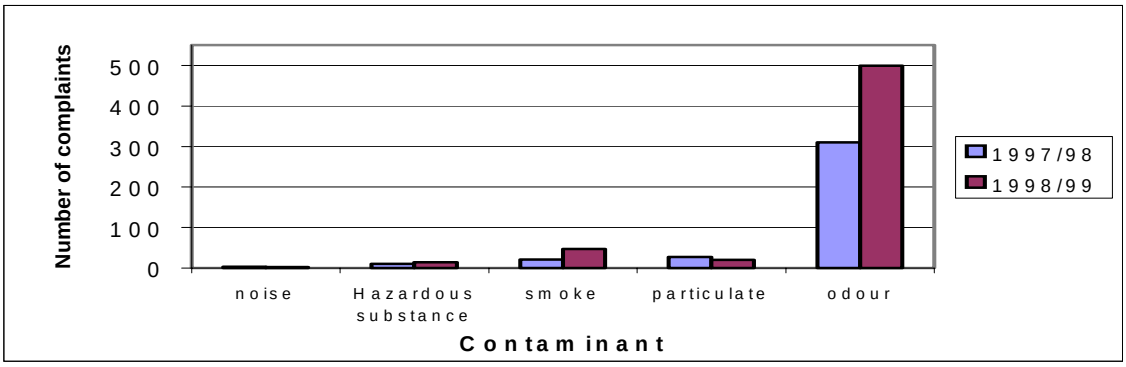


Figure 8: Comparison of air complaints for previous 2 years.

3.1.1 Odour

Odour is a generic term relating to the effect that a contaminant or group of contaminants has on the olfactory nerves (i.e. our sense of smell). Odour occurs when gases are released into the environment, and is often exacerbated by weather conditions. Warm temperatures can accelerate gas production, and calm wind conditions and cool temperatures can reduce the rate of dispersion.

Unpleasant odours can cause annoyance and can have effects on human health. For example, ongoing exposure to an offensive odour can detrimentally affect the mental and social health of people subjected to it, and can be a predisposing factor for injury or physical illness.

Odour complaints accounted for 87% of the air complaints received during 1997/98. 16% of air complaints were related to odour emissions from the Taylor Preston Abattoir and a further 13% were associated with the Moa Point Waste Water Treatment Plant. The main activities which generate air complaints in the Region are sewage treatment and sewerage systems (17% of air complaints), meat processing/rendering (16%) and landfills (6%). It is worth noting that over the 1998-99 year, 4% of air complaints received related to emissions of odour and/or smoke to air from food premises, such as café's and restaurants. This appears to be becoming an increasing problem in the Wellington City area.

3.1.2 Particulate Matter

Particulate matter refers to numerous substances that exist as solids or aerosols in the atmosphere at ambient temperature and pressure. Particles range over several orders of magnitude in size.

The natural background levels of dust and other particulates vary throughout the urban and rural parts of the Region. Various human activities can increase the levels of suspended and deposited particulate. The Wellington Regional Council carries out regular monitoring of air quality in the region, including dust deposition monitoring and monitoring of ambient suspended particulate levels.

The effects of particulate matter can include: damage to machinery by getting into moving parts, adverse human health effects (particularly respiratory illness), reduced visibility (an important amenity value), and nuisance effects e.g. covering surfaces.

Typical sources of particulate matter include dry abrasive blasting, quarrying, land clearance, and the storage, transport, and application of bulk products such as bark, sand, and fertiliser. Particulate matter can be carried to areas surrounding the activity during unfavourable wind conditions.

There were 20 complaints received during the past year related to particulate matter. This equated to 3% of all air complaints. In comparison, over the 1997-98 period, 27 complaints regarding particulate were received, accounting for 7% of all air complaints.

3.1.3 Smoke

Smoke is the visible vapour and small particles generated from burning. Most smoke complaints occur when the smoke migrates into surrounding areas before adequately dispersing, or creates an unacceptably unpleasant sight. Like odour, smoke problems are often exacerbated by weather conditions which reduce dispersion.

Emissions of smoke can reduce visibility, cause nuisance, and cause adverse health effects (depending on the length of exposure and nature of the burning material). Typical sources of smoke include incinerators, industrial processes, domestic fires, and fires associated with land clearance.

Smoke complaints accounted for 47 (8%) air complaints received in the Wellington Region during 1998/99.

Figure 9: Smoke from the Medical Waste Ltd Incinerator, 12 February 1999.

3.2 Location of Air Complaints

Figure 10 summarises the number of air complaints received in each territorial authority area.

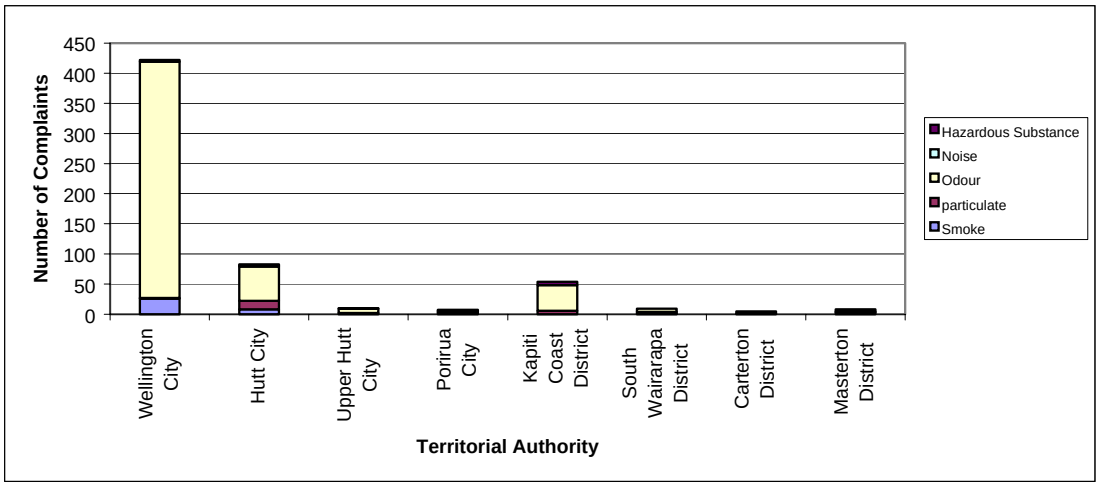


Figure 10: Air complaints for each territorial authority area.

Wellington City had the highest number of air complaints of any area during the past year. The majority of these were odour complaints arising from Anglian Water International (NZ) Ltd's (AWI) Moa Point Wastewater Treatment Plant and Carey's Gully Sludge De-watering Plant, and the Taylor Preston Ltd abattoir in Ngauranga Gorge.

There are a number of reasons why the Wellington City area generated the most complaints. Like many other areas in the Region, it has the potential sources such as industry, but what makes the Wellington City area different is its topography. Wellington's steep hilly character means that there is a limited amount of land suitable for development, so as the city has expanded incompatible land uses have been brought closer together. Buffer zones between residential and industrial activities are now often inadequate. The most notable examples are Ngauranga Gorge where residential areas encroach on industrial areas, or Moa Point where a sewage treatment plant has been developed near residential properties.

In the Wairarapa the territorial authorities pass most complaints about environmental incidents to the incident response service. In the western side of the Region Wellington City Council, Kapiti Coast District Council, and Upper Hutt City Council also pass most environmental incidents on. However, Hutt City Council and Porirua City Council tend to deal with most of these complaints themselves. This practice means that the complaint numbers in the Hutt City and Porirua City areas are likely to be an underestimate.

Figure 11 summarises the air complaints for each of the ten most commonly affected suburbs and towns. The three most commonly affected were Happy Valley, Rangoon Heights, and Strathmore Park, all of which are in the Wellington City area. It appears that many of the odour problems affecting residents in Owhiro Bay are being

resolved, with a significant decrease in complaints over 1998/99 when compared to last year.

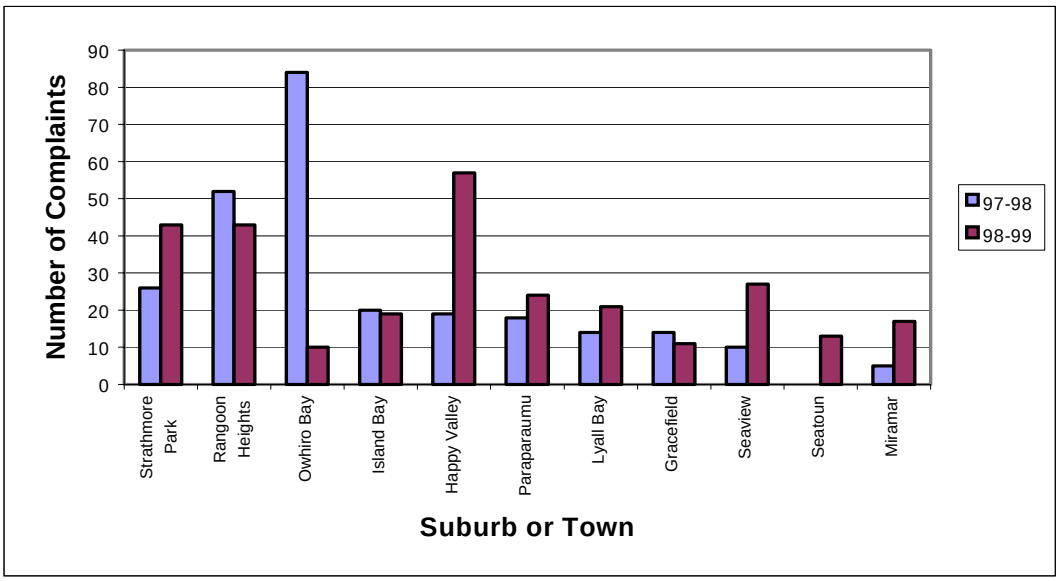


Figure 11: Air complaints in the ten most frequently affected suburbs and towns.

3.2.1 Owhiro Bay

The suburb of Owhiro Bay is located on the south coast of Wellington at the south-western end of the urban area. Owhiro Bay Quarry, Wellington City Council (WCC) Southern Landfill, several private landfills, and the AWI Carey's Gully Sludge De-watering Plant are all located near this suburb.

During 1997/98, Owhiro Bay, Happy Valley and part of Island Bay, were affected by a series of odour incidents that resulted in over 120 complaints, nearly a third of all air complaints received by the incident response service.

These odour incidents were due to discharges to the sewer system from the AWI sludge de-watering plant at Carey's Gully. This plant receives sewage sludge from the AWI Moa Point Wastewater Treatment Plant. The solid and liquid waste fractions of the sludge are separated in a centrifuge. During 1998/99, the solid fraction was disposed of in the Southern Landfill. This will be diverted to the Living Earth Joint Venture (LEJV) Co-composting plant in 1999/2000. The liquid fraction (centrate) is discharged into the sewer.

The sewer receiving the centrate runs down Landfill Road, through Happy Valley and Owhiro Bay to the Island Bay sewage pumping station.

Disposal of the centrate in this manner caused high levels of hydrogen sulphide and mercaptan gases to be produced. These gases are characterised by rotten egg and rotten cabbage odour respectively. These gases escaped from the sewer system via a number of pathways and affected local residents.

Complaints in this area have decreased significantly over the 1998-99 year, due to steps taken by WCC and AWI. A range of measures implemented in late 1997/98 have reduced the emissions of odour from the sewer system. These measures included placing carbon filters in toilet vents, installing Buchan traps (u-bends) in sewer lines between the primary sewer and residential properties, installing air extraction and odour scrubbers on the sewer line, chemically dosing the centrate prior to disposal, and flaring off of centrate gas. AWI are now installing a treatment system at the sludge de-watering plant which will reduce the odour potential of the centrate before it enters the sewerage system.

3.2.2 Rangoon Heights

Rangoon Heights is a Wellington City residential suburb located on the ridge south and west of Ngauranga Gorge. South of Rangoon Heights are the suburbs of Khandallah and Cashmere, and to the west is Khandallah and Broadmeadows.

Three industries operate in Ngauranga Gorge, immediately below Rangoon Heights. They are Bitumix Ltd's hotmix plant, the WCC Kiwi Point Quarry, and the Taylor Preston Ltd abattoir. All three industries discharge contaminants to air.

In 1998/99, 95 complaints were received alleging unpleasant odours from Taylor Preston, which comprised 16% of all air complaints received during 1998/99. Complaints about Taylor Preston's abattoir also comprised 16% of air complaints received in 1997-98.

At the abattoir, odour is generated from the stockyards, rendering process, and wastewater treatment plant. During certain meteorological conditions, residential properties in close proximity to the abattoir experienced odour problems. In periods of light northerly winds Rangoon Heights was affected, while during periods of light southerly winds parts of Khandallah, Broadmeadows, Raroa and Johnsonville were affected.

There is only a small buffer zone between the industrial and residential areas, and this has exacerbated the odour problem. Taylor Preston are reviewing their odour management programme to ensure that they comply with their resource consent conditions.

3.2.3 Strathmore Park

The Wellington City suburb of Strathmore Park is located at the southern end of the Miramar Peninsula. It is mainly located on the ridge line between the Miramar Golf Course to the west, Breaker Bay to the east, and Seatoun Heights to the north. Moa Point Wastewater Treatment Plant lies at the foot of this ridge adjacent to the coast.

Odour from the Moa Point plant caused 77 (13%) of all the recorded air complaints over the 1998/99 year, a significant increase on the number of complaints received during 1997/98. The plant generated odour during its start-up phase before the biological systems matured during the 1997/98 year, and due to a number of mechanical failures the plant did not reach steady state operations until mid 1998. There were problems of odour escaping from the site well into 1998/99.

The resource consent for the plant states that there shall be no discernible odour at or beyond the boundary of the plant. This strict condition has been difficult to comply with, particularly as the boundary of the plant borders residential areas and there is very little buffer zone. This small buffer zone was sometimes insufficient to allow adequate dispersion of odours generated at the site.

In March 1999, AWI completed covering the clarifiers on the site, and all odours were being directed through the chemical scrubber. Odour complaints have reduced since this time, however occasional complaints regarding the odour emitted from the scrubber unit are received, particularly from the area of the Miramar Golf Course.

3.2.4 Lyall Bay

Lyall Bay is a Wellington City suburb located west of Wellington airport on the Southern Coast of Wellington. Complaints in this area have increased during 1998/99. This is due to a combination of increased public awareness, and decreased tolerance regarding odour emissions from Flight Group Limited, which manufactures plastic goods and Spartan Engineering Co. Limited, a small foundry. The two industries are located in the Rongotai industrial area, which is bordered by residential housing. 22 complaints were received from this area over the year in review, which is significant given that the majority of these were received in the months of May and June 1999.

The Wellington Regional Council is currently working with both industries to ensure that odour abatement technology is installed.

3.2.5 Happy Valley

Happy Valley is the area surrounding Ohiro Road, which leads to Wellingtons South Coast. The Wellington City Council (WCC) Southern Landfill, several private landfills and the AWI Carey's Gully Sludge De-watering Plant are all located near this suburb, and the sewer line carrying centrate runs down the centre of the valley. Odour complaints received from the Happy Valley area more than doubled over 1998/99 in comparison to 1997/98.

This increase is largely attributable to a variety of problems at the WCC Southern Landfill. The disposal of abattoir waste from Taylor Preston was posing a problem at the landfill, as was the sludge from the AWI de-watering plant. Discussions regarding steps to remedy this problem began in May 1999, and it is anticipated that this will result in fewer complaints received over the 1999/2000 period.

An odour counteractant system has been installed at the WCC landfill to neutralise odours from the landfill face, and is applying extra cover material over the fill. Dewatered sludge is now being utilised by LEJV's co-composting plant instead of being landfilled, and this is expected to reduce the potential for odour to be emitted from the landfill face.

4. Water Complaints

The Regional Council received 457 complaints (41% of all complaints) related to water during the 1998/99 year. Generally only 1 or 2 complaints were received for each incident which makes water the most commonly affected resource in the Region.

4.1 Freshwater

Freshwater includes rivers, streams, creeks, lakes, ponds, and wetlands. Of the water complaints received 272 (31%) concerned freshwater bodies.

4.1.1 Types of Freshwater Complaints

Figure 12 summarises the nature of the freshwater complaints received during the past year. Discharges of liquid waste, sewage, and unconsented works were the three most common reasons for complaint.

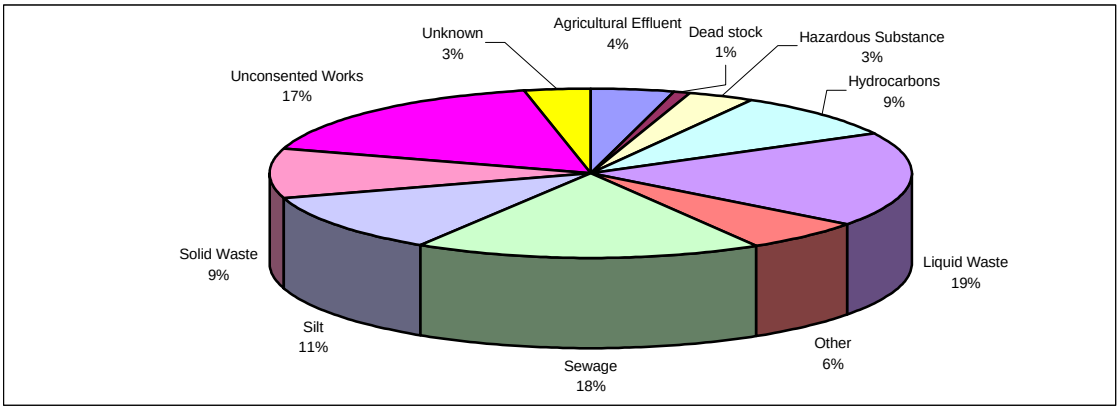


Figure 12: Types of freshwater complaints.

4.1.1.1 Liquid Waste

Complaints about liquid waste accounted for 19% of the freshwater complaints received during the year.

Liquid waste is a general term referring to a number of contaminants in liquid form, such as paint, dye and detergent. Most liquid waste is generated from domestic activities such as house painting, and washing the car. Other sources include accidental spills from industrial and trade premises, which find their way into the stormwater system. The main effects of liquid waste discharged into freshwater are discolouration, reduction of dissolved oxygen, and reduced light penetration, which can all adversely affect aquatic plants and animals.
Inappropriate disposal of liquid waste to stormwater systems was the most frequent cause of this type of complaint during the year. When liquid waste enters the stormwater system it is merely transported to the nearest water body. Stormwater does not go into the sewer, and is not treated. This issue will be targeted by an educational programme in the coming year.

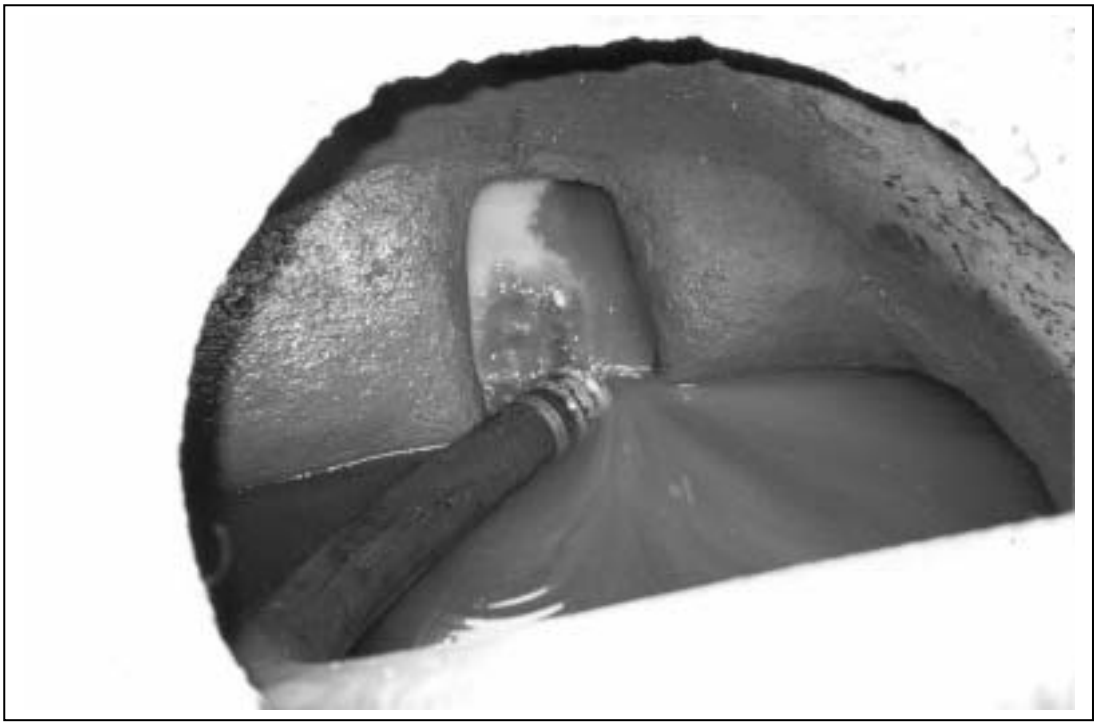


Figure 13: Liquid coolant from cutting machinery discharging into the stormwater system on the 17 March 1999. The coolant eventually entered the Hutt River.

4.1.1.2 Sewage

The term sewage refers to substances discharged into the sewer system. This mainly consists of human waste products such as faeces and urine, but can also include trade waste. Sewage contains pathogens, such as bacteria, viruses, and diseases. It also contains high levels of organic matter, nutrients such as nitrogen and phosphate, and toxic substances. These contaminants can be a risk to human health, and can adversely affect environmental health. The environmental effects include reducing dissolved oxygen, reducing light penetration and visibility, clogging fish gills, causing excessive plant growth, and harm or death to aquatic plants and animals.

Where sewage is collected, it is usually transported via a system of pipes and pumping stations to a treatment plant. Excessive loads on this system can cause overflows, while breaks can cause leakages. The sheer size of sewage systems make continued monitoring of all areas nearly impossible. Often stormwater from properties is mistakenly connected to or allowed to enter the sewer system. This inappropriate discharge of stormwater to the sewer system causes the excessive loads experienced during heavy rainfall events. When sewers overflow or leak the sewage generally enters a waterbody, either directly or via the stormwater system.

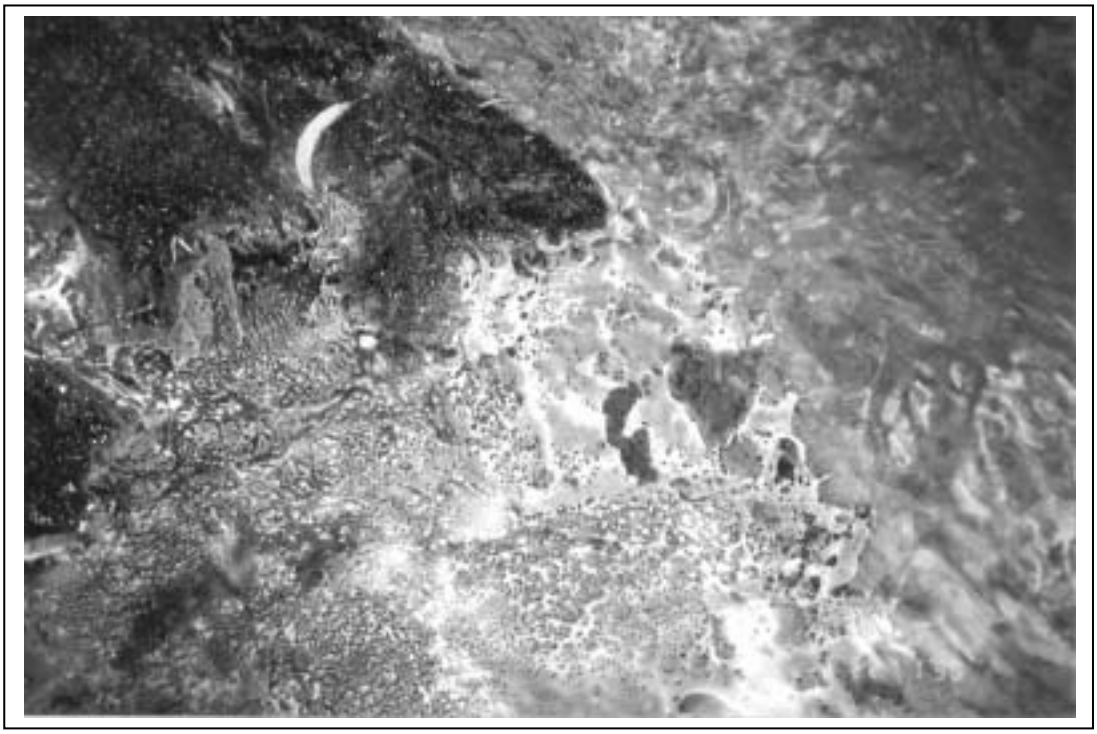


Figure 14: Sewage fungus growing in the Kenepuru Stream as a result of a sewage discharge, 22 January 1999.

4.1.1.3 Unconsented Works

Unconsented works is a broad category which encompasses activities which required resource consents under the RMA or a regional plan, but did not have them. For example culverting of a stream requires a consent because if the culvert is too small it may block and cause flooding upstream, then blow out causing a tidal wave effect and damage downstream.

Works are often undertaken without the necessary resource consents because of a lack of awareness of the requirement, or a reluctance to go through the consent process.

Failure to go through the resource consent process and obtain a consent can result in avoidable damage to the environment, adverse affects on neighbours, and substandard or inappropriate works being undertaken. The exact adverse effects vary in scale and nature depending on the scale and nature of the works.

17% of complaints received over the 1998/99 period were related to unconsented works affecting rivers and streams.

Figure 15: Unconsented works in the Kaiwharawhara Stream on 5 March 1999. Sediment from this work had effects over 2 kilometres downstream.

4.1.2 Location of Freshwater Complaints

Figure 16 summarises the number and type of freshwater complaints received in each territorial authority area.

During the past year the greatest number of complaints affecting freshwater occurred in Wellington City. There was, however, no single major source that caused these complaints. This result is believed to reflect the relatively higher population in Wellington City and the greater awareness of the Regional Council's incident response service in the community. Complaints regarding discharges of agricultural effluent were greater in the Wairarapa, with only one complaint about agricultural effluent affecting freshwater in the Wellington area.

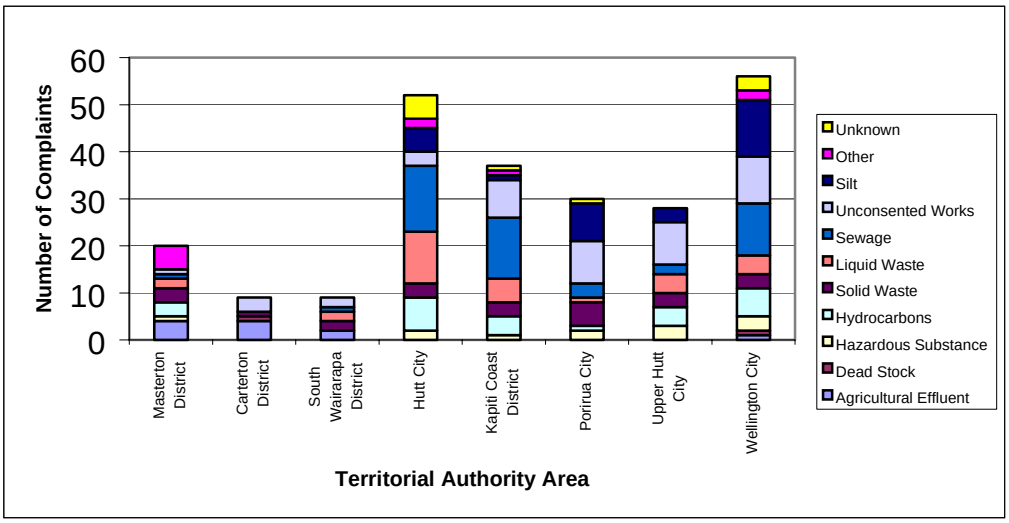


Figure 16: Freshwater complaints for each territorial authority area.

Figure 17 summarises the freshwater complaints for the nine most commonly affected waterbodies. During 1998/99 complaints regarding the Porirua Stream, Hutt River and Waiwhetu Stream were the most common. Complaints from 1997/98 are included for a comparison.

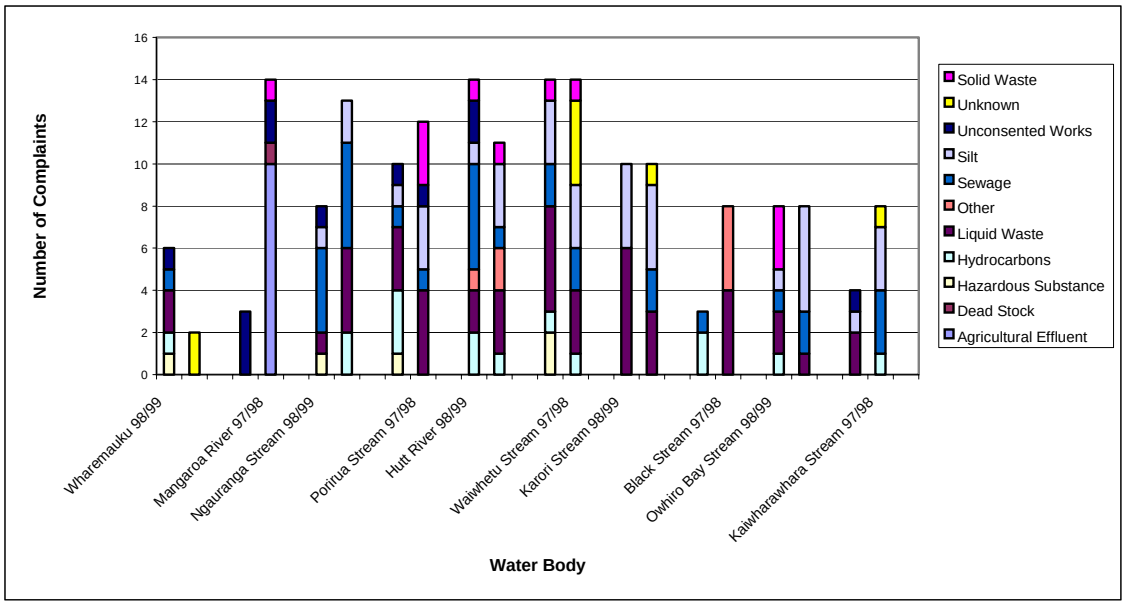


Figure 17: Freshwater complaints for the ten most frequently affected waterbodies.

4.1.2.1 Mangaroa River

Mangaroa River is located in the Upper Hutt City area. Its catchment includes Whitemans Valley and Maymorn. It flows into the Hutt River at Te Marua. The landuse within the catchment is predominantly agricultural, with dairy farming a common activity. Agricultural discharges into the river and its tributaries are the main pressure on this resource.

The majority of complaints over the 1997/98 period were the result of one dairy discharge. This discharge was improved over the 1998/99 period due to actions taken by the Wellington Regional Council, and for this reason complaints reduced significantly.

The three complaints received over 1998/99 were regarding unconsented works.

4.1.2.2 Porirua Stream

Porirua Stream originates in Wellington City, and then flows through Porirua City until it discharges into Porirua Harbour. The catchment is mainly urban, but has some agricultural areas. This extensive catchment includes the suburbs of Johnsonville, Paparangi, Churton Park, Grenada, Grenada North, Redwood, Westhaven, Tawa, Greenacres, Ranui Heights, Lindenvale, Linden, Porirua East and Porirua central.

Complaints relating to Porirua Stream accounted for 10 of the freshwater complaints received during 1998/99, a similar amount to the previous year. The majority of these complaints were caused by inappropriate disposal of liquid waste, which entered the stream via stormwater systems. Porirua Stream was the water body most affected by hydrocarbon discharges in the Region.

Complaints relating to Porirua Stream generally arose from relatively minor, one-off incidents. The responsible parties were warned and required to remedy and/or mitigate the effects where possible.

Figure 18: Clean up of an oil spill in the Porirua Stream on 16 February 1999. This spill occurred due to vandals overturning unsecured drums on a construction site.

4.1.2.3 Ngauranga Stream

Ngauranga Stream is located in the Wellington City area. The catchment includes parts of Johnsonville, Newlands, Khandallah, and Ngauranga. The stream discharges into Wellington Harbour at the bottom of Ngauranga Gorge. Land uses in the catchment are mainly residential, industrial and commercial.

Nine of the freshwater complaints received related to Ngauranga Stream during the past year. 4 of these related to sewer discharges to the stream.

WCC have upgraded part of the sewer system which runs down Ngauranga Gorge, and the Regional Council are conducting regular surveillance in the catchment. It is anticipated that this will reduce incidents involving sewage discharges to the stream.

4.2 Marine Water

Marine water refers to saline water bodies such as harbours and the open sea. During the past year 178 of the 457 (39%) water complaints received related to marine water. It is noted that 60 of these complaints were responded to by the Wellington Regional Council's Harbours Department.

4.2.1 Types of Marine Water Complaints

Figure 19 summarises the causes of marine water complaints received during the 1998/99 year. Hydrocarbons, liquid waste, and other were the three most common causes.

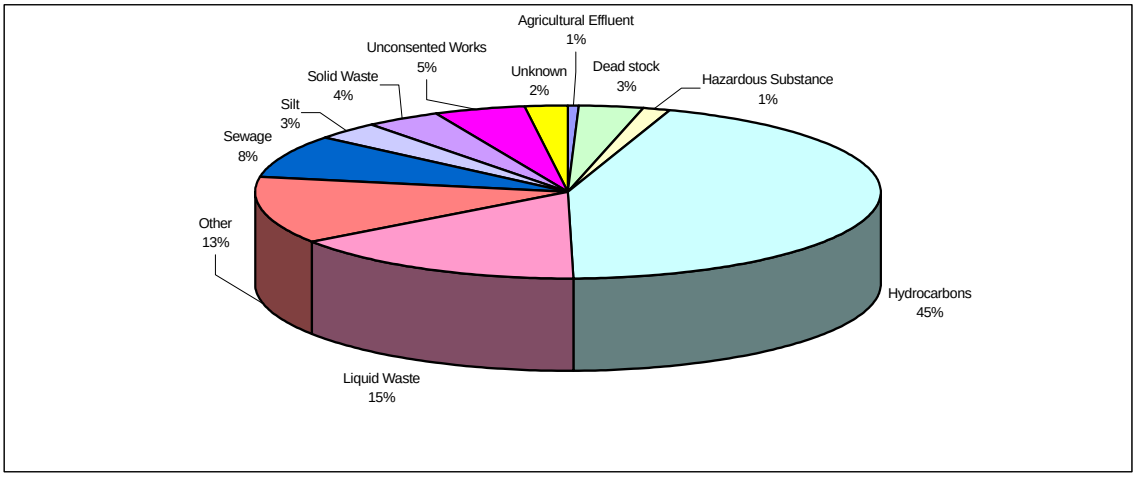


Figure 19: Causes of marine water complaints.

4.2.1.1 Hydrocarbons

Hydrocarbons is a general name given to a group of substances that include petrol, diesel, oil, and some solvents. They are used extensively for fuels, lubricants, chemical cleaners, heat generation, and the production of many synthetic chemicals such as plastics, polypropylene and styrofoam. They are regularly transferred between storage and usage locations, such as from petrol station bowsers to vehicles.

The frequency and widespread use of hydrocarbons results in a high risk of incidents which is why complaints about them are so common.

Hydrocarbons can affect marine water through discolouration, coating of aquatic plants and animals, odour, rendering of the water unsuitable for various uses, and having adverse effects on aquatic plants and animals.

When hydrocarbons are spilled or inappropriately disposed of they easily find their way into the stormwater system, and from there into the nearest waterbody.

Hydrocarbon complaints comprised 45% of the 178 marine water complaints received during 1998/99.

4.2.1.2 Liquid Waste

The term liquid waste refers to a number of contaminants in liquid form. Examples of liquid waste include detergent, paint, and dye. The main adverse effects of liquid waste in marine water are discolouration, and reduced light penetration, which can cause harm to aquatic plants and animals.

Inappropriate disposal of liquid waste to stormwater systems was the most frequent cause for these complaints. Most liquid waste is generated from domestic activities such as house painting, and washing the car. Other sources include accidental spills from industrial and trade premises, which find their way into the stormwater system. Liquid waste complaints accounted for 15% of all marine water complaints received during the past year.

4.2.1.3 Other

The general term "other" is used for complaints about natural incidents, and incidents which do not fit into any of the other categories. Natural incidents are frequently mistaken for pollution incidents. Some common natural incidents are algal blooms, pine pollen deposits, and natural foam. Algal blooms, such as some red tides, can discolour marine water and kill aquatic life. Accumulations of bright yellow pine pollen during August often result in complaints about suspected paint spills. Reports of foam around the coastlines near major freshwater inputs often result in calls about possible sewage discharges.

The adverse effects from these natural incidents are generally very minor, being mostly aesthetic. However, some natural incidents, such as toxic algal blooms, can have significant effects on human health and aquatic life. Complaints classified as "other" accounted for 13% of all reported marine water complaints over the year in review.

Figure 20: Natural foam, often mistaken for pollution, in Lyall Bay on 12 February 1999.

4.2.2 Location of Marine Water Complaints

Figure 21 summarises the number of marine water complaints received in each territorial authority area.

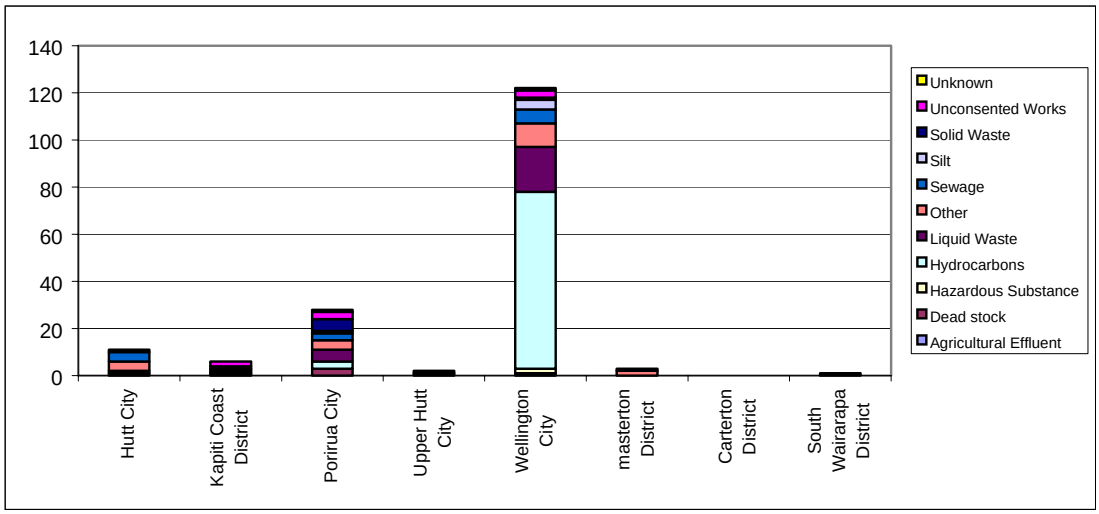


Figure 21: Marine water complaints for each territorial authority area.

The Wellington City area again had the highest number of complaints, but no single major source could be identified.

A combination of population density, the high number of pathways between contaminant sources and waterbodies, and the extent and proximity of coastline, were likely to be the reasons for this result. 59 of the 60 complaints responded to by the Harbours Department were located in Wellington Harbour. Again the tendency for some territorial authorities, such as Porirua and Hutt City Councils, to handle environmental incidents themselves results in an underestimate of the total number of complaints for these areas.

4.2.2.1 Wellington Harbour

Wellington Harbour was the area most affected by marine water complaints. It is bounded by Wellington City and Hutt City. The catchment is predominantly urban and contains a range of residential, industrial, commercial and recreational land uses. The main environmental pressures on the harbour arise from it being the receiving environment for run-off from these urban areas.

The most common cause of complaint involved the discharge of hydrocarbons. Contrary to what could be expected with the intensity of commercial shipping in the harbour, most hydrocarbon incidents were not caused by spills from ships or the port. Most of these incidents were caused by people discharging fuels and lubricants into the stormwater system, which subsequently discharged them into the harbour.

The Regional Council and territorial authorities continue to work on reducing inappropriate discharges into stormwater systems. For example, the Drains to Streams/Sea programme was aimed at raising awareness of where stormwater goes.

123 of the 178 complaints (70%) received referred to the Wellington Harbour.

4.2.2.2 Porirua Harbour

Porirua Harbour was the second most affected area. It is located on the east coast, and lies within Porirua City. It has two arms, the Pauatahanui Inlet arm and the Onepoto arm. Land use in the catchment of Pauatahanui Inlet is approximately half residential and half agricultural. The catchment of the Onepoto arm is mainly urban, and includes industrial, commercial, residential and recreational land uses. The majority of complaints received about Porirua Harbour involved liquid waste and silt.

Complaints about Porirua Harbour accounted for 14 (8%) marine water complaints recorded during the year. These complaints arose from a variety of sources, with discharges to the stormwater system frequently resulting in contaminants entering Porirua Harbour.

Porirua Harbour is monitored by the Regional Council and Porirua City Council for environmental issues. The Guardians of Pauatahanui Inlet also keep a watchful eye on the inlet, and have recently undertaken a Drains to Streams/Sea education

programme. The Guardians also have a yearly cockle count programme to help assess the health of the inlet.

4.3 Groundwater

Seven groundwater complaints were received during the year. This represents just over 1% of all water complaints. The land is a common receiving environment for a wide range of wastes from consented, unconsented, or accidental discharges. The low number of groundwater complaints received probably reflects the fact that contamination of groundwater is often difficult to detect unless it directly affects a ground water user. Similarly, unauthorised groundwater abstraction is difficult to detect unless it directly affects the availability of the resource or causes more noticeable effects such as a reduction in spring flow.

4.3.1 Types of Groundwater Complaints

Of the groundwater complaints received, 3 involved hydrocarbons, 1 was associated with liquid waste and the remaining two were categorised as “other”.

The overall effect of the incidents mentioned above, was a potential reduction in the availability of groundwater for use. There is also the potential in coastal aquifers for overuse to result in movement of marine water into the aquifer which reduces the quality of this water for stock watering and human consumption purposes.

4.3.2 Location of Groundwater Complaints

The hydrocarbon complaints came from urban areas in Wellington City. The remaining complaints came from the Wairarapa. Due to the small number of complaints it is impossible to draw any conclusions from this information.

No particular area or aquifer was more commonly affected. Where groundwater is suspected to be contaminated, tests are done by the Regional Council to check for the suspected contaminant/s. If over abstraction is discovered then those responsible are required to cease taking water immediately, and may be subject to enforcement action.

5. Land Complaints

Eighty complaints linked to land (7% of all complaints) were received 1998/99. Like water complaints, there were generally only 1 or 2 complaints received for each incident. The relatively small number of land complaints may reflect the limited role that the Regional Council has in land management, and a relatively small number of incidents.

5.1 Types of Land Complaints

Figure 22 summarises the nature of land complaints received during the year. Discharge of hydrocarbons, unconsented works, and discharge (for example dumping) of solid waste were the three most common types of complaint.

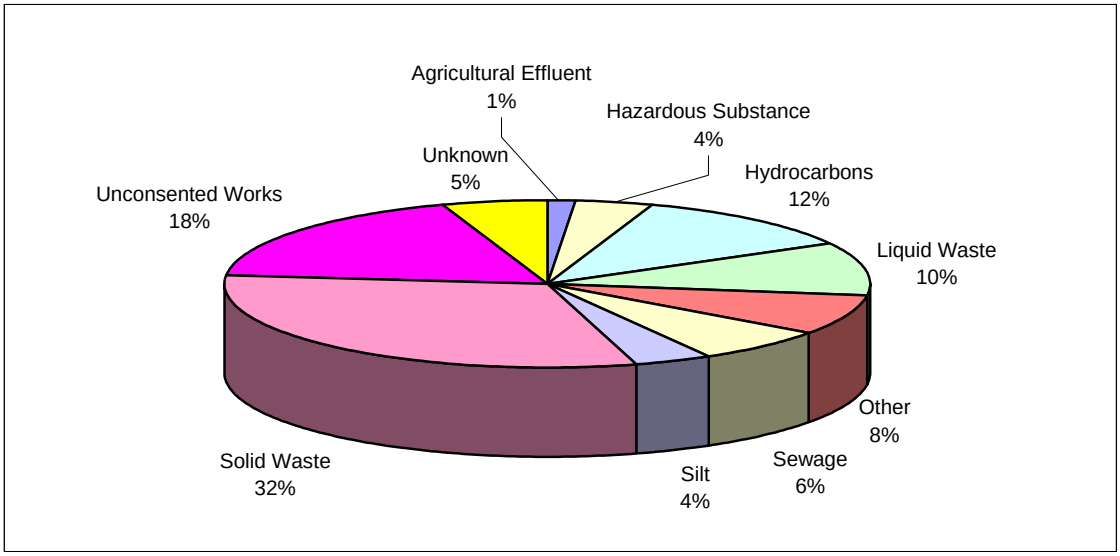


Figure 22: Types of land complaints.

5.1.1 Hydrocarbons

Hydrocarbons is a general name given to a group of substances that include petrol, diesel, oil, and some solvents. They are extensively used for fuels, lubricants, chemical cleaners, heat generation, and the production of many synthetic chemicals such as plastics, polypropylene and styrofoam. The frequency and widespread use of hydrocarbons results in a high risk of incidents which is why complaints about them are so common.

Hydrocarbons affect land by making it unsuitable for certain purposes due to increased health risk or when ground or surface water is subsequently contaminated.

Hydrocarbon complaints accounted for 9 (12%) of all recorded land complaints in the Wellington Region over the 1998/99 year.

5.1.2 Unconsented Works

Unconsented works includes activities that should have resource consents under the RMA or a regional plan, but did not have them. For example, the disturbance of soil on erosion prone land requires a consent because it can result in erosion and siltation in nearby waterbodies.

Works were often undertaken without the necessary resource consents because people were either reluctant to go through the consent process or were not aware of the requirement to get a consent from the Regional Council.

Works undertaken without a resource consent can cause unnecessary damage to the environment. This damage may include siltation of nearby waterbodies, increased flood risk, and increased soil erosion.

15 complaints about unconsented works affecting land were received during 1998/99. This was 18% of all land complaints.

5.1.3 Solid Waste

Solid waste refers to materials such as demolition concrete, metal, wood (and other organic material), soil, and rock. The deposition of solid waste which is not clean fill can cause leachate, which may affect nearby waterbodies. It can also form gases which may be toxic and/or explosive. Non-clean fill includes metal, rubber, organic material, and hazardous substances.

Non-clean fill may be acceptable for land filling provided that the potential for adverse environmental effects are minimised. This can be done by siting landfills away from sensitive environments such as waterbodies, collecting and treating leachate, and collecting landfill gas.

Contractors are usually responsible for the deposition of non-clean fill in areas which are not suitable or where there are not adequate measures to minimise adverse environmental effects. The reasons for doing this are mainly financial as it is considered expensive to dispose of this waste at an appropriate site. Some rural landowners also see the potential to earn or save money and get areas filled in. Unfortunately non-clean fill can contaminate the land, and reduce its value.

Solid waste complaints accounted for 24 (32%) of all land complaints received during 1998/99.

Figure 23: Non-cleanfill disposed of illegally in the Mangaroa Valley, 21 April 1999.

5.2 Location of Land Complaints

Figure 24 summarises the number of land complaints for each territorial authority area.

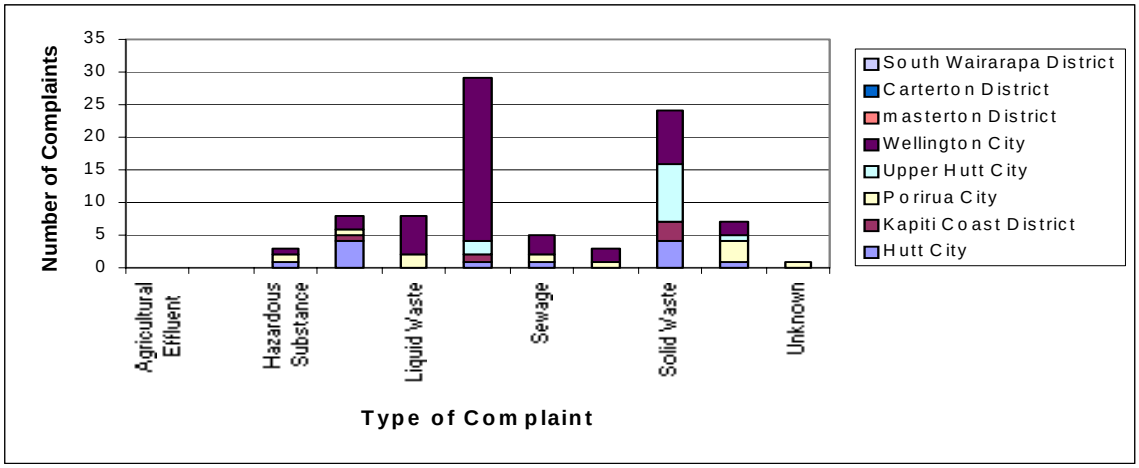


Figure 24: Land complaints for each territorial authority area.

The Wellington City area again had the highest number of land complaints, but no single major cause was identified.

A combination of population size and density were the likely reasons for this result. Again the tendency of some territorial authorities, such as Porirua and Hutt City Councils, to handle environmental incidents themselves results in an underestimate of the total number of complaints for these areas.

6. Response

The Regional Council has set itself performance levels for responding to complaints about environmental incidents within specified time frames, and to complete the response to a satisfactory standard.

When received, each complaint is given a priority of red, yellow, or blue, based on the nature of the complaint. For example, odour complaints are typically priority red because they are extremely transient. These priority categories are defined in the Councils Incident Response Manual. The response time set for priority red complaints is within 1 hour, for priority yellow within 1 day (24 hours), and for priority blue within 1 month (31 days).

Figure 25 shows our performance in meeting these targets during 1998/99. On some occasions it is difficult to meet these performance levels because of travelling distance, traffic conditions, or the number of other complaints being responded too. Where there are more complaints than the primary officer can attend to in an appropriate time-frame, a secondary officer may be called out. During 1998/99 only 6% of red responses were not made within the one hour time-frame. Many of these were for complaints in areas such as Te Horo and Forest Lakes which take longer than one hour to travel to.

Figure 25: Percentage of complaints responded to within required time frame.

All details of the complaint and the Council's response are recorded on the Incident Database. This enables them to be easily reported to the Council's Committees. These details are also used for assisting the Council with its work, such as checking on an offenders environmental record, and for determining pressures on the Region's natural and physical resources.

6.1 Enforcement

When an environmental incident is verified, a negotiation approach involving education and warnings is used in the first instance to try and remedy the problem. This is generally successful, however enforcement options are available. Enforcement is usually used as a last resort or if the incident is particularly harmful to the environment or occurs as a result of negligence.

During 1998/99 all of these forms of enforcement action were successfully employed in appropriate situations.

6.1.1 Abatement Notices

Table 1 lists the 14 abatement notices served by the Regional Council over the past year. Of these abatement notices 12 successfully achieved the required result. Two abatement notices, related to the same incident, were not complied with and this case is currently in court. Seven abatement notices were issued for air discharges in the Region, while 6 were issued for illegal stream/river works. One abatement notice was served for inappropriate storage of sewage. 10 of the abatement notices issued were for non-consented activities.

The number of abatement notices issued over this period was one third the number issued in 1997/98. This may be because more cases were resolved by other methods such as negotiation, education and written warnings. It may also indicate that more people are complying with their resource consents and the rules in the regional plans.

Table 2: Abatement notices served during 1998/99.

Aim of the Notice	Date of Service	Complied With	Consented (Y/N)
To cease emissions of odour from DAF plant.	20/7/98	Yes	N
To cease works in a river bed	09/11/98	No	N
To cease works in a river bed	09/11/98	No	N
To cease the discharge of odour from the sewerage system carrying centrate.	01/12/98	Yes	N
To cease the use of leaking vessels for sewage containment	22/12/98	Yes	N
To cease offensive odour emissions	10/02/99	Yes	Y
To cease offensive air discharge	12/02/99	Yes	Y
To removes demolition fill left in a flood way	15/04/99	Yes	N
To cease discharge of contaminants from spray painting and powder coating activities.	20/04/99	Yes	N
To cease the illegal construction of a stop bank	05/05/99	Yes	N
To cease the discharge of odour beyond the boundary of the Southern Landfill Site	08/05/99	Yes	Y
To cease odorous emissions from the Southern Landfill	18/05/99	Yes	Y
To obtain a consent for realigning stream	26/5/99	Yes	N
To remove a large quantity of spoil dumped in a river bed	01/06/99	Yes	N

6.1.2 Enforcement Orders

Three enforcement orders were applied for and obtained over the year in review. All were complied with.

An Enforcement Order, combined with a legal agreement, was also obtained on 14 August 1998 against the Wyndamere Family Trust and Mr Graeme Alexander. This Enforcement Order followed an Interim Enforcement Order which was obtained in the 1997/98 year. The Enforcement Order was partially complied with under the guidance of the Wellington Regional Council.

Table 3: Enforcement Orders obtained during 1998/99.

Perpertrator	Outcome	Process	Consented (Y/N)
Anglian Water International (NZ) Agent	**Appealed and a Stay Sought** Comply with consent by 13 July 1998. No discernible odour at the boundary. Issued 29/5/98. EO heard and adjourned until 15/3/99.	Abatement/Enforcement Order	Y
Wellington City Council Consent holder	**Appealed and a Stay Sought** Comply with consent and Act by 13 July 1998. No discernible odour at the boundary. Issued 29/5/98. EO heard and adjourned until 15/3/99.	Abatement/Enforcement Order	Y
Burrell Demolition Ltd/Alex Burrell	Issued 4/3/98. Pay bond, and provide monitoring report **Not complied with. Enforcement order applied for.** Following a call over Mr Burrell complied with the consent conditions and paid WRC costs.	Abatement/Enforcement Order	Y

6.1.3 Prosecutions

Table 4 below outlines the prosecutions which were active over the 1998/99 year.

Table 4: Prosecutions active during the 1998/99 year.

Offence	Date of Offence	Date of Conviction	Fine	Consented (Y/N)
Discharge of paint flakes to the Coastal Marine Area	04/04/1998 – 28/07/98	19/04/1999	$500 + costs	Y
Discharge of paint flakes to the Coastal Marine Area	04/04/1998 – 28/07/98	19/04/1999	$3,000 + costs	Y
Illegal river works, Wairarapa	09/11/98	Case still in court		N

6.1.4 Costs of Providing the Incident Response Service

The cost of providing the incident response service for the Wellington Region in 1998/99 was $172,000. This cost was $47,000 above the budgeted cost. This additional cost was mainly due to the increased demand for Pollution Response Services.

7. Summary and Recommendations

A total of 1145 complaints were received by the Pollution Response Service during 1998/99. Odour was the most common cause for complaint in the Region during 1998/99 a continuation of the pattern set in the previous year. Odour caused 503 complaints which accounted for 44% of all complaints received during the year. There were 200 more odour complaints received in 1998/99 than in the previous year. Given that there was a total increase of 316 complaints over the period under review, this indicates that odour is becoming an increasingly significant issue in the Wellington Region. This is an area identified for action over the 1999/2000 year.

Complaints relating to air were the most common, accounting for 51% of all complaints received during the year. The suburbs of Happy Valley, Rangoon Heights, and Strathmore were the most frequently affected areas. It appears that the odour problems experienced in Owhiro Bay due to the Anglian Water International (NZ) Ltd sewage sludge de-watering plant at Carey's Gully have been resolved. Rangoon Heights was subject to odour from the Taylor Preston Ltd abattoir in Ngauranga Gorge, and Strathmore Park was affected by odour from the Anglian Water International (NZ) Ltd wastewater treatment plant at Moa Point.

Water complaints were the second most common, resulting in 43% of all complaints received. The most frequently affected waterbodies in the Region were Mangaroa River, Ngauranga Stream, Porirua Stream, Wellington Harbour, and Porirua Harbour. Discharges of liquid waste and hydrocarbons were the predominant reason for complaints relating to these waterbodies. The sources of these complaints were highly varied, with most offenders only being responsible for a single incident.

Complaints about incidents relating to land were the least common, accounting for only 9% of all received complaints. No particular area was most commonly affected, and causes of incidents varied.

Three main resource management issues were identified after analysing the complaints received during 1998/99. These were inadequate buffer zones between potentially incompatible neighbouring land uses, which is a key contributor to odour complaints; inappropriate discharges into stormwater systems; and land contamination.

Inadequate buffer zones between odour sources, such as wastewater treatment plants and animal processing operations, and residential areas resulted in incidents which affected the amenity values of people living there. Even with controls provided by resource consent conditions the effect of the odour on amenity values in residential areas was considered unacceptable by the residents.

Inappropriate discharges into stormwater systems highlighted two problems. The first problem was a general lack of awareness that stormwater systems discharge untreated into surface waterbodies. The second problem was the inadequacy or lack of spill prevention measures in place throughout the community. This issue is to be addressed in an education programme commencing in the 1999/2000 year.

Land contamination resulted from accidental and intentional deposition of contaminants. This illustrates the need for continuing regular surveillance of sites where non-clean fill may be dumped.

There was a substantial increase in the number of complaints received during 1998/99 compared with previous years. This increase dramatically increased the workload of the incident response service. This increasing trend in the number of complaints received each year reflects the greater emphasis placed on the provision of the service since 1995/96, and is anticipated to continue at least into the short to medium term. This highlights the need to promote the pollution prevention message.

The incident response service generally met its response time performance levels, only seldom failing to meet them due to travel distance or traffic conditions. The majority of complaints were satisfactorily dealt with using education and warnings. Where education and warnings were not sufficient, or appropriate, enforcement action was taken. This enforcement action included 14 abatement notices, 3 enforcement orders, and 3 prosecutions. There has been a significant drop in the number of abatement notices issued, which may indicate that education and warnings are achieving greater results, or that the public is becoming more aware of its responsibilities under the RMA.

7.1 Recommendations from 1997/98

The Annual Incident Report 1998 made the following recommendations;

1. Encourage the maintenance of adequate buffer zones between different land uses by liaising with the territorial authorities;
2. Reduce discharges to stormwater systems by raising public awareness of the function of stormwater systems;
3. Closely monitor cleanfills to ensure that they do not receive non-clean fill which could cause the site to become contaminated;
4. Target surveillance monitoring at the sites and areas listed in this report as being under the most frequent pressure;
5. Recruit an additional Resource Quality Officer to help manage the increased workload;
6. Institute a secondary response system to assist the primary officer during peak complaint periods; and
7. Timetable project work for autumn, spring and winter seasons where possible to avoid conflicting with the peak complaint period.

Actions taken in reponse to these recommendations discussed below.

Liaison with Territorial Authorities was undertaken regarding this problem outlined in Recommendation 1. A number of new cases emerged in Wellington City during1998/99, particularly with the growing popularity of inner city apartments. Examples of this include odour emissions from industries in the Rongotai industrial area affecting residents, and emissions from food premises affecting apartment dwellers in the CBD. Regular meetings of the Enforcers Group, which comprises of all resource management enforcement officers from Hutt City Council, Upper Hutt

City Council, Porirua City Council, Kapiti Coast District Council, Wellington City Council and Wellington Regional Council, help to facilitate this.

During 1998/99, two pamphlets were produced by the Wellington Regional Council addressing discharges to stormwater. The first was aimed at households, and provided information about the stormwater system, the 24 Hour Incident Response Service, and what to do with household wastes other than pour them down the stormwater. The second pamphlet was entitled "Stormwater Management" and contained information for small businesses. This pamphlet is part of a pollution prevention series, and outlines the rules included in the Regional Plans, various stormwater management options, and ways to avoid pollution.

Monitoring of some cleanfills was undertaken, however this is a difficult problem to target given the often isolated location of the fills. The enforcement action against Mr Graeme Alexander has set a precedent for dealing with illegal landfill operators, and it is anticipated that this has raised awareness of the issue. Liaison with territorial authorities and the Consents Management Department at the Wellington Regional Council helped in identifying potential non-cleanfill sites.

Due to time constraints brought about by increased numbers of complaints, less surveillance was undertaken than was desirable, however surveillance of some areas was undertaken during the 1998/99 year. Particular target areas included Lyall Bay and Seatoun. Both areas have been the source of continued odour complaints. The odour problems in Lyall Bay are currently being resolved. The sewage odour issue in Seatoun is still unresolved despite regular surveillance and response to complaints. Extensive surveillance of lakes in the Otaki area was undertaken following an outbreak of blue-green algae, which can cause odour problems.

A fifth Resource Quality Officer was appointed in February 1999.

In April 1999 the on-call roster was altered slightly so that one person provided Incident Response during the day, and another covered calls after hours. This appears to have spread the burden of call duties.

This was achieved to some extent, however due to the structure of the financial year this is not always possible. A number of on-going and high profile incidents during the year in review also meant that officer time was often dedicated to these tasks rather than project work.

7.2 Recommendations for 1999/2000

As a result of issues identified in the 1998/99 Annual Incident Report, the following recommendations are made;

1. That surveillance monitoring be carried out at the sites and areas listed in this report as being under the most frequent pressure;
2. That noxious, dangerous, offensive and objectionable emissions to air, in particular odour emissions, be reduced through raising the awareness of potential polluters via a targeted education programme.

3. That the Wellington Regional Council Incident Response Service continue to closely monitor cleanfill operations to ensure no non-cleanfill is received.
4. That the Wellington Regional Council Incident Response Service continue to encourage the maintenance of adequate buffer zones between non-compatible land uses.
5. That the Wellington Regional Council Incident Response Service, in conjunction with other areas of the Council, generally undertake education programmes to increase public awareness of environmental pollution.

References

All data was derived from the Wellington Regional Council Incident Database.

Annual Incident Report 1998, Prepared by Nik Aitken, Resource Investigations Department, Wellington Regional Council, Publication No. WRC/RINV-T-98/48