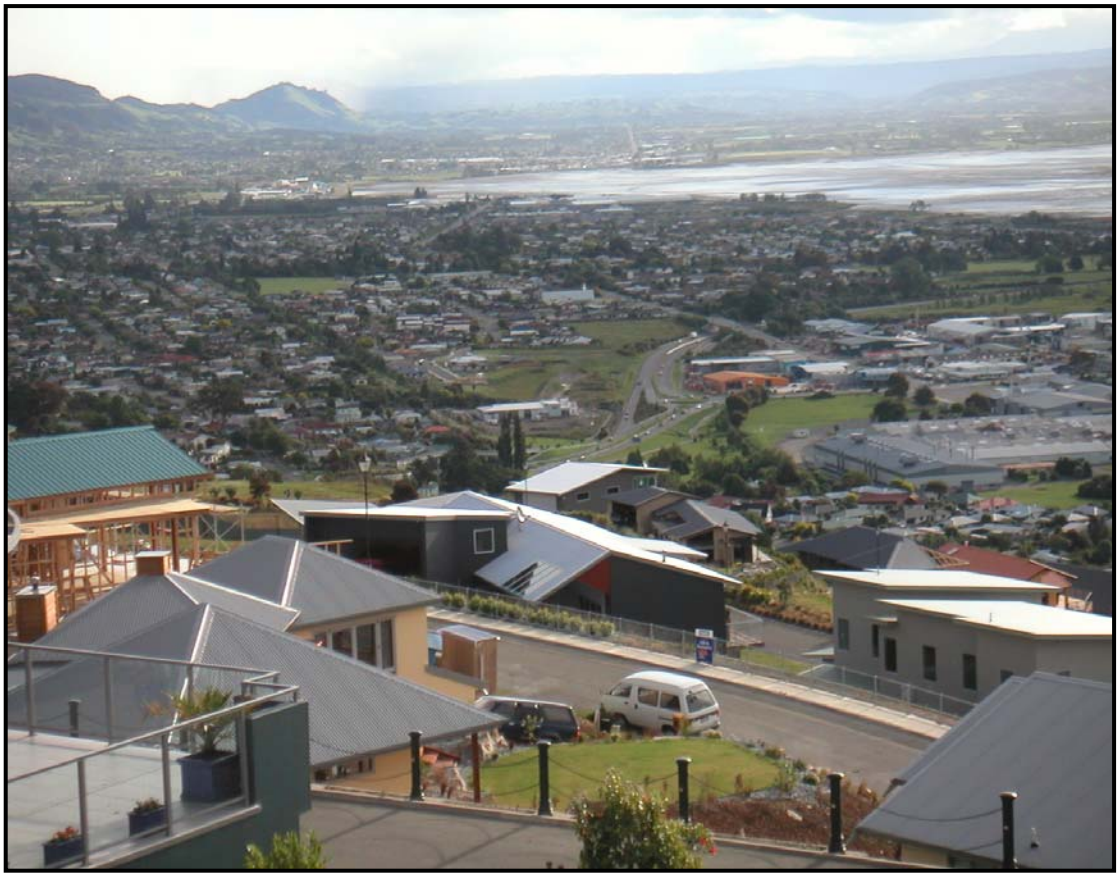
Nelson City

State of the Environment Review 1999 – 2004



Nelson City Council

NELSON CITY COUNCIL

Cover photo:
View southwards from Princes Drive

Nelson City Council

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Foreword

I am pleased to present Nelson City's sixth State of the Environment Report charting the overall state of Nelson's environment over the last five years. It begins with a Tangata Whenua perspective and looks at the environment in broad terms: the coast, fresh water, air, noise and land. The report finishes with an analysis of plan performance, looking at how effective the Nelson Resource Management Plan has been at achieving good environmental outcomes.

Reports such as this one are essential so the Nelson community gets a good idea of the work done to monitor environmental wellbeing. There is a high level of awareness and concern in Nelson that we protect the environment that surrounds us and that continues to attract residents and visitors.

At the Council we are aware of and share this interest in the environment and its protection. This report is a major step towards understanding the pressures on our environment, its current state and how the community needs to respond to protect the environment in the future. In order to have relevant and up to date planning documents we need to monitor the environment and respond quickly to any problems. We need to be able to see that those plans are working and, if not, to do something to fix the problem.

Highlights of this 2004 State of the Environment Report include:

- A section on the Nelson Urban Growth Strategy being prepared by the Council, and the significance of this long term planning for sustainable management of the environment. The increasing population of Nelson presents us with considerable challenges, the foremost of which will be managing to protect the environment from additional pressures; and
- Updated results on air quality, of particular relevance now we are finalising a new Air Quality Plan to further reduce the amount of air pollution.

Council's 2003 State of the Environment report completed the first cycle of such reports for Nelson. They started with a general report in 1999, followed by more specific reports on land (2000), air and noise (2001), freshwater (2002) and the coast in 2003. With the current report covering the previous five years to 2004 in overview, it is a good time to reconsider how results of the monitoring programmes are presented in a cost-effective way. Council will look at the best way to make the results of its monitoring available so information is up to date and of maximum use. Certainly, state of the environment reports will continue. They are an important part of the Council being accountable to the community for the sustainable management of the area's environment.

Councillor Eric Davy
Chair, Environment Committee
Nelson City Council

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Introduction

Why a state of the environment report?

In 1991 the Resource Management Act (the Act) brought in a new regime of managing New Zealand's natural and physical resources. It is now 14 years old. Under this Act, Council is required to promote the principle of sustainable management. It must prepare a regional coastal plan and a local management plan. These have been combined into one, known as the Nelson Resource Management Plan (NRMP). Council has also prepared a mandatory Regional Policy Statement (RPS).

The RPS identifies significant environmental issues in our region. It sets up specific objectives, and then determines policies and methods to achieve them. The NRMP does the same in a more detailed way.

It is vital to know whether the whole resource management structure is working; whether we are getting there. How far have we come in achieving the sustainable management of our resources? How are we measuring up?

This report attempts to answer these questions. It reviews what we know about the state of our environment in light of the environmental outcomes we anticipate in our planning documents.

Legal mandate

Council has gained two new reporting functions in recent years. The Local Government Act 2002 requires Council to monitor and report against community outcomes as set out in a Long Term Council Community Plan (LTCCP). Nelson's first LTCCP was published in 2004.

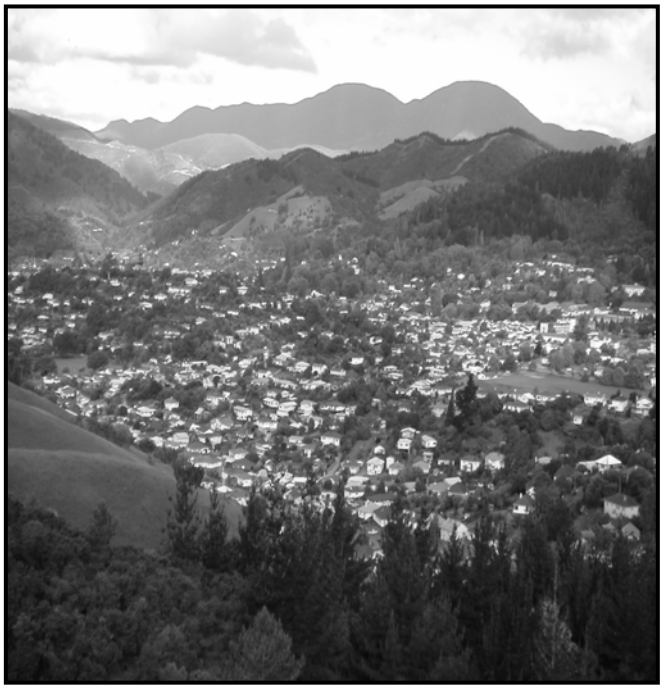
The Resource Management Amendment Act 2003 requires Council to compile and make available to the public, at a maximum of five yearly intervals, a review of the results of its monitoring under section 35(2)(b), which concerns the "*efficiency and effectiveness of policies, rules or other methods in its policy statement or its plan."*

Section 35 (2)(a) also requires Council to "*monitor the state of the whole or any part of the environment of its region or district to the extent that is appropriate to enable the local authority to effectively carry out its functions under this Act".*

The big picture

The Nelson City Council has been undertaking this sort of monitoring already. Since 1999, we have, at regular intervals, set out to discover what kind of shape our resources are in and why.

Council recognises there is little point in establishing planning controls and trying to increase general awareness about the environment without tracking what is happening on the ground against the directions Council is signalling in its policies. If the results tell us that something is amiss, changes to the policies might be needed. Any signals for changes that Council picks up can then be implemented before a serious problem occurs.



Tracking the environment also contributes to the annual planning process, long term strategic work and impacts on our business and financial environment. It also provides baseline data for the ongoing development of our resource management plans and feeds information into the national State of the Environment (SoE) reporting system. Further, information about the environment provides data against which to assess consents required under the plans.

Our first SoE report in 1999 aimed to identify, in a general way, what influence Council has on Nelson's environment through its planning documents. It also sought to identify ways to improve our environment over time.

SoE reports 1999-2003

Council recognised when it began SoE reporting that it would take a number of years to produce long term, region-wide, and high quality environmental data. A 10 year programme was therefore adopted for developing a comprehensive monitoring and reporting system.

The 1999 report started this process by providing the first set of baseline information on key priorities. This set the scene for the future reporting on key environmental trends.

The next four SoE reports (one produced each year between 2000 and 2003) were planned to address specific topics, providing detailed information on major environments. They were addressed in the following order: land, fresh water, coastal and air/general. The "general" category was to cover culture and society, transport, pest, weeds and diseases, waste and more detailed comment on hazards. As is often the case, the planned investigation programme ultimately had to be amended to reflect new priorities. Because of the need to compile data for the development of the air and water resource management plans, the SoE topics were juggled and produced as follows: 2000 - land; 2001 - air and noise; 2002 - fresh water; 2003 - coast.

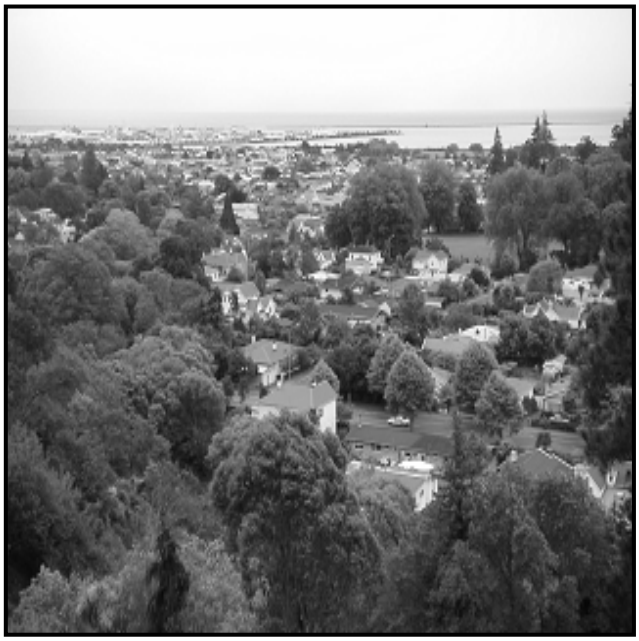
The 1999-2003 reports communicated what had been happening in each environment, the key threats and pressures on them, and what was being done to respond to those pressures and (except for the inaugural 1999 report) included a review of work planned for the future. The reports identified gaps in Council's knowledge, how our environment compared over time or against national standards (where applicable) and set priorities for future monitoring, reporting and work programmes.

Sources of information drawn on for compiling these reports included feedback from the resource consent and complaints systems and specific investigations. Updates to relevant legislation, standards, regulations and environmental guidelines were also evaluated.

Scope of this SoE report

This report represents a stocktake of the state of knowledge represented by the previous five SoE reports, plus additional update information available up until late 2004. It also highlights the performance of the NRMP and NNRPS in respect of those earlier reports. This is a summary document only. More detailed information can be found in the source SoE reports or other referenced documents.

All the key environments assessed in the previous SoE reports are considered in this report (under the dictates of section 35 of the Act). However, a small number of other issues which are covered in the RPS are not dealt with in any substantial way, including energy, waste management and infrastructure. This is because these issues are comprehensively addressed under other Council management regimes such as the solid waste asset management plan, parks and reserve asset management plan, water supply asset management plan, Nelson Regional Land Transport Strategy Annual Report and so on.



2005 onwards

The 10 year programme identified in the 1999 SoE report proposed that, after the 2004 stocktake, updated reports were planned for each of the key environments over the subsequent five years. The order of these reports might again be juggled. Another stocktake is planned for 2009 and this will also provide an opportunity to review this programme.

Guiding Documents

Nelson Regional Policy Statement (RPS)

The purpose of the Act is to *"promote the sustainable management of natural and physical resources"* and was passed in 1991. Under the Act, the RPS first prepared in March 1997 is still the operative version. It has to be reviewed by 2007 but it is likely this may be initiated earlier, possibly during 2005.

The RPS provides a vision for the environmental future of Nelson. It provides an overview of Nelson's resource management issues and sets a direction on how Council and the Nelson community can strive to achieve sustainable management. It also provides interim control until the proposed Air Quality Plan and Freshwater Plan Change become operative and longer term control for other issues.

Nelson Resource Management Plan (NRMP)

The NRMP was first notified in 1996 and then revised in 1999 to incorporate a wide range of Council's decisions on the Plan and variations to it. An updated version was recently made operative in 2004, with a few shorter sections still requiring resolution through the Environment Court. The NRMP is a detailed document setting rules for activities in each of the land use zones and coastal marine area.

It is a combined plan which includes the district plan, regional coastal plan and soil erosion and sedimentation plan. The NRMP must be consistent with the provisions of the RPS, so the Regional Policy Statement sets the direction for the NRMP.

Proposed Air Quality Plan (AQP)

The Proposed AQP was publicly notified in August 2003. It is a resource management plan separate from the NRMP. However, it may be integrated into the NRMP at some stage in the future. It contains provisions seeking the sustainable management of Nelson's air resource. Nine variations were notified to it in October 2004. The Proposed AQP gives effect to the national environmental standard on air quality.

Proposed Freshwater Plan Change (FPC)

In October 2004 a plan change to the NRMP was also publicly notified. This plan change proposes new provisions relating to the management of freshwater within the city. It is fully integrated with the NRMP and is not a separate resource management plan in its own right. Submissions to the plan change close before the end of 2004, and submissions are currently programmed to be heard and considered later in 2005.

Monitoring

Council operates a monitoring system to bring together the information it gathers on the environment. This system will be expanded and refined over coming years. At present, information comes from the following sources:

- Baseline monitoring to identify the quality and quantity of resources, against which trends can become apparent. Baseline monitoring sites are located across the city to provide a good spread of data. These include stream flow monitoring sites.
- Specific investigations provide information and an increased understanding of a particular resource. For example, acknowledged substandard drinking water quality has led to the recent installation of a new water treatment station.
- Complaints made to Council may concern a particular incident, for example backyard burning, or a recurring pollution problem. In both instances the complaints are recorded and acted on as appropriate.

- Monitoring of compliance with resource consents will become an increasing source of information. Implementation of an upgraded compliance system will ensure consent holders comply with the conditions of their consent.
- The general surveillance of activities seeks to identify those instances where resource consents are required or enforcement action may be necessary.
- Other agencies provide very useful information to broaden our overall knowledge and understanding of the environment, e.g. Department of Conservation, Cawthron Institute, NZ Historic Places Trust and the Ministry of Health. Also, the Foundation for Research, Science and Technology (FRST) provides significant resources, including through public good funding, for environmental research.
- The Ministry for the Environment has an ongoing programme to develop environmental standards and guidelines. These help define the environmental bottom line of sustainable management and set targets for environmental quality, like the maximum permitted level of carbon dioxide in the air. These are adopted by Council where possible in its monitoring work. Some standards now have legal status and must be implemented by Council, including recent standards on air quality and gas emissions from landfills which became operative in October 2004.

Next Steps

This report documents Council's environmental protection efforts. It is published to make this information available to the public and to describe planned future endeavours with respect to Nelson's environment. Any feedback on its content is very welcome.

Please forward any comments on this report to Paul Sheldon, Monitoring Co-ordinator, Nelson City Council, PO Box 645, Nelson, phone (03) 546 0435, fax (03) 546 0239, email paul.sheldon@ncc.govt.nz. Also, please let us know if you wish to become involved in any future investigations. We look forward to working with you to ensure that our environment is healthy now and in the future.

Acknowledgements

This report has been the collaborative effort of a number of people. Council would like to acknowledge the following organisations and people for their contributions:

- Karen Warren, Principal, Warren Planning Consultancy for preparation of the draft report
- Jacqui Irwin Lawless for final editing of the draft report
- Kath Inwood for proof reading
- Members of the Nelson Iwi Resource Management Advisory Komiti for their input
- Debra Bradley for comments on early drafts.

Paul Sheldon
Monitoring Co-ordinator

Nelson Urban Growth Study

Scope

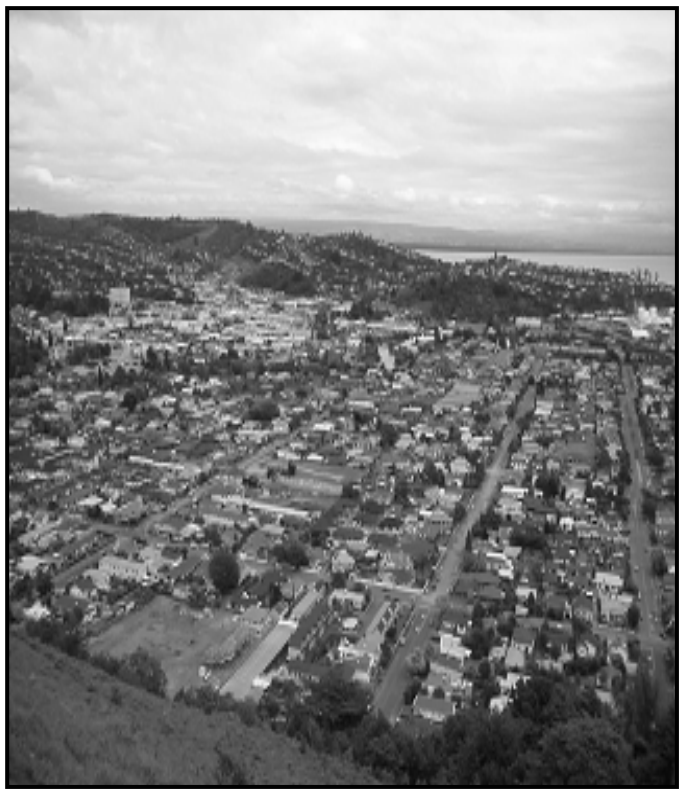
This year an extensive assessment has been carried out to update the 1977 and 1986 versions of the Nelson Urban Growth Study (NUGS). The new findings will provide the planning framework for future growth in Nelson (NUGS04).

The results of Stage One are now available, including the evaluation of growth trends, drivers and constraints, and updated population projections. Stage Two of the study was advertised for submissions in April 2005 and identified possible growth options and a strategy for managing growth.

Some of the findings of Stage One are briefly outlined below. They provide valuable information on trends over the last few decades and give very useful background data for the assessment of the key environments evaluated in subsequent sections of this report. Further information can be gained from the source document.

General Findings

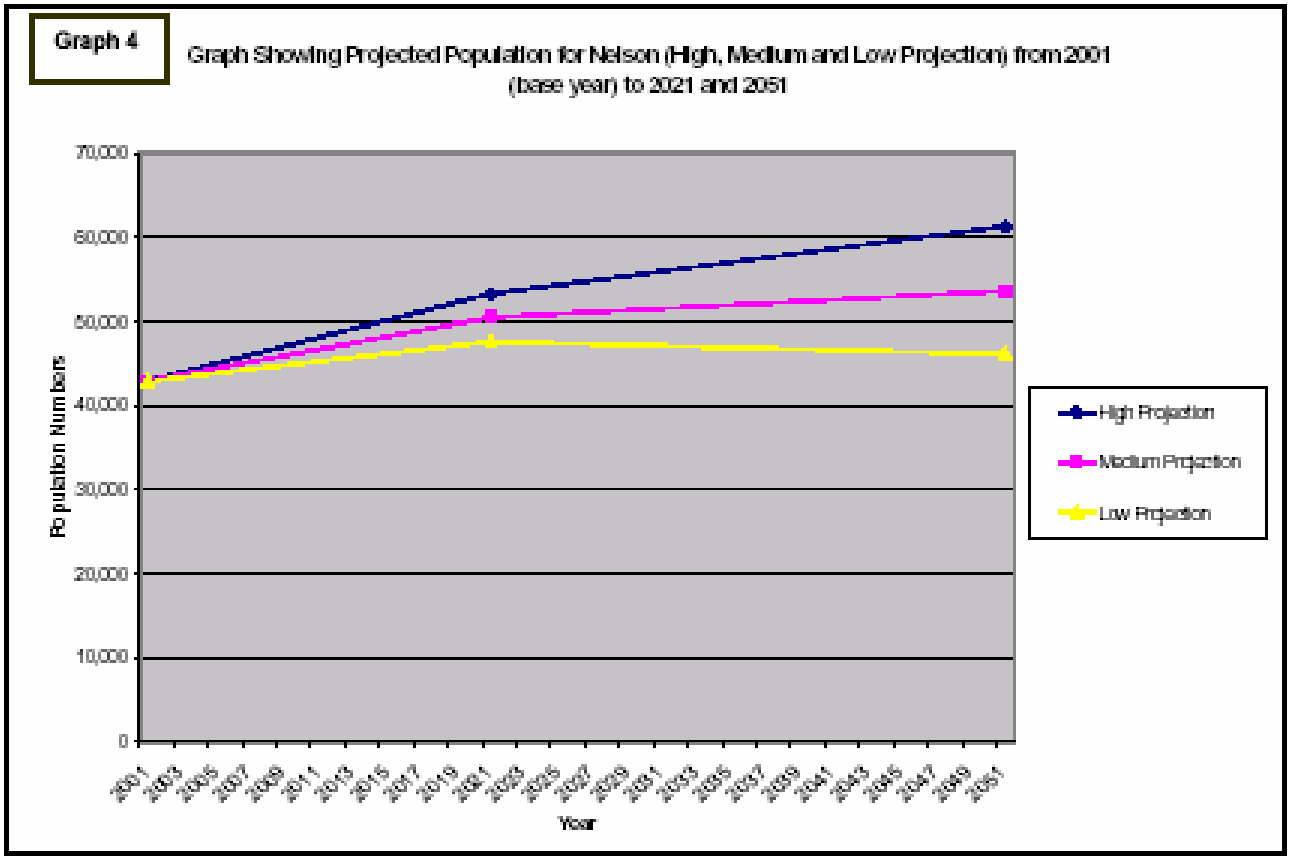
- The NUGS studies of 1977 and 1986 identified some issues that still occur today, including green belt separation between Nelson and Richmond, industrial land supply, social equity in respect of housing affordability, access to transport, and housing types. The studies also highlighted the potential to under plan for growth and the need for a monitoring system that allows growth planning to be updated regularly.



- The Coastal Tasman Area Strategic Development Review confirmed Nelson as the primary urban centre in the region, but highlighted the increasing interdependency between Nelson City and Tasman District.
- The Richmond Development Study sets out a series of options to plan for accommodating industrial and residential growth that will have implications for Nelson and the extent to which future growth is able to be accommodated in either urban area.
- There are national and regional influences in policy and planning for housing, transport, urban quality and the environment.
- Tangata whenua have a role as partners with Council in developing NUGS04. This will be determined in consultation with constituent iwi. The spiritual and physical importance of the environment and its quality is of key significance to tangata whenua.

Demographics

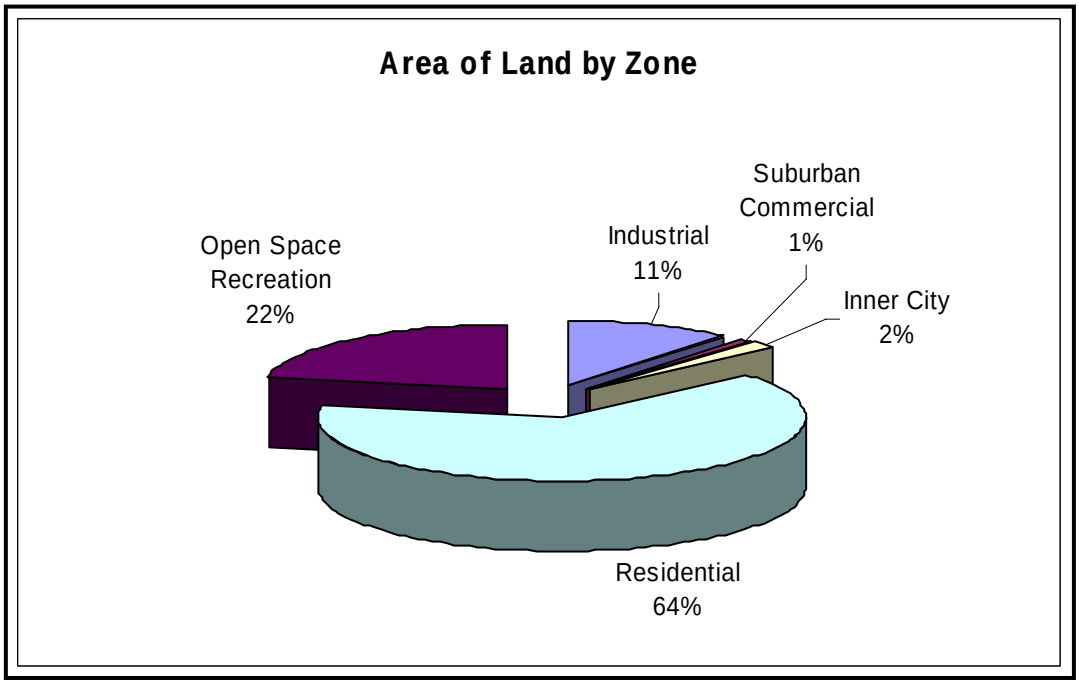
- Nelson is expected to be one of the top four regions in New Zealand (Auckland, BOP, Tasman, Nelson) experiencing higher than average growth over the next few decades.
- NUGS86 underestimated the population at 2001 by more than 7,500 (about 14%). The current population of Nelson of 44,400 (mid 2003 figure) is now projected to grow by the year 2021 to between 47,600 (low projection) and 53,300 (high projection). Current trends are favouring the high projection.

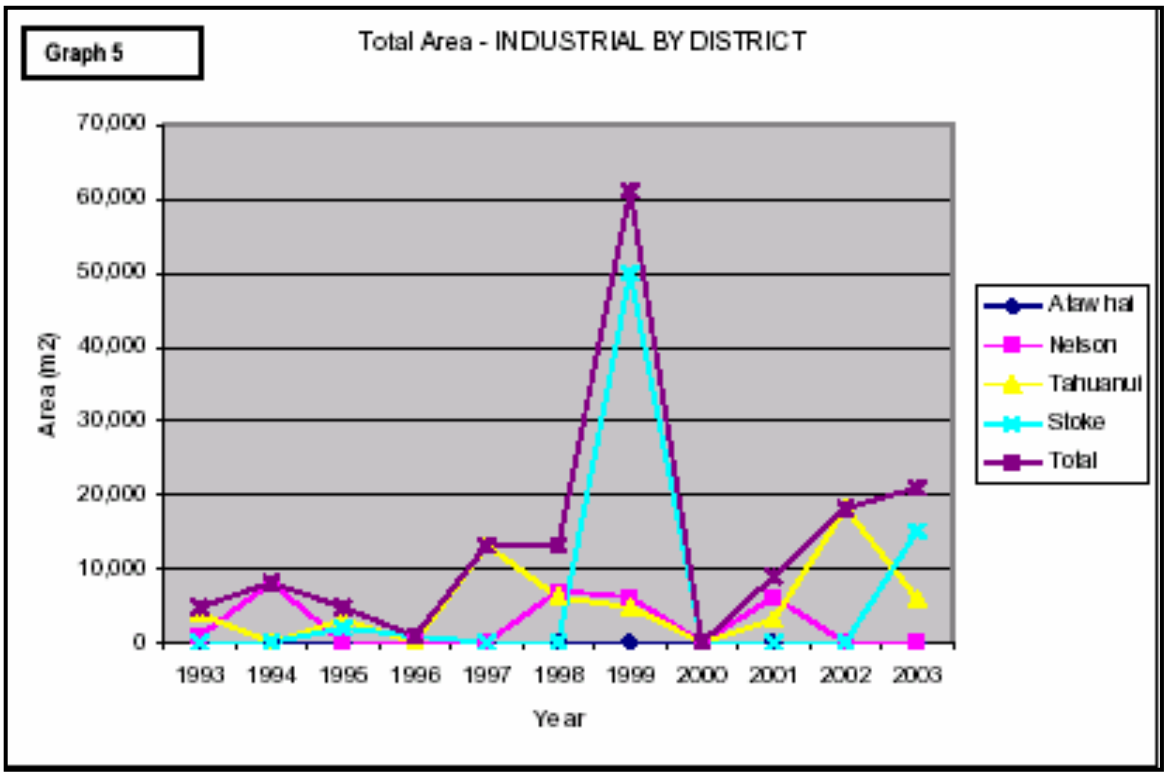


- The increased population by year 2021 will need up to an additional 5,100 dwellings. If the current trend continues to the year 2051, 8,600 more dwellings than present might be required.
- There is sufficient residential-zoned land to realistically supply an additional 2,250 dwellings, or 10 years supply based on an average development rate similar to the past three years. This is less than half that required by 2021 under high growth projections. The average household size of 2.5 people per house is also reducing, suggesting more small housing units are needed.
- The population of the future will be made up of a higher proportion of older people – 18% of the population will be 65+ years by 2021 and this will rise to 26% by 2051. It is currently 12%.
- Migration rates are high, but there seem to be as many people leaving as arriving. More research is needed to understand this phenomenon.
- There is a concern over high house prices and a gradual shift in the socio-economic status and employment characteristics of the population. This may lead to difficulties in retaining a complete range of skills in the working population. It is not clear whether this is a long-term trend or not.

Economy and land use

- The Nelson/Tasman economy is predominantly driven by the sectors of agriculture and horticulture, fishing, tourism, forestry and engineering and information technology.
- The strategy for growth of these sectors aims to increase the value from primary production processing, and to play to the natural qualities of the environment. In a similar fashion to Tauranga, the quality of the local environment is recognised as being an important drawcard to a mobile workforce.





Industrial

- Industrial land is in short supply and it is estimated that between 50 and 80 hectares of industrial land is required for Nelson City over the next 20 years.
- Prices for industrial land in Nelson in 2003 were substantially higher than comparable provincial cities in the North Island. However this can lead to efficiencies in land use and promote industrial redevelopment and renewal.

Commercial

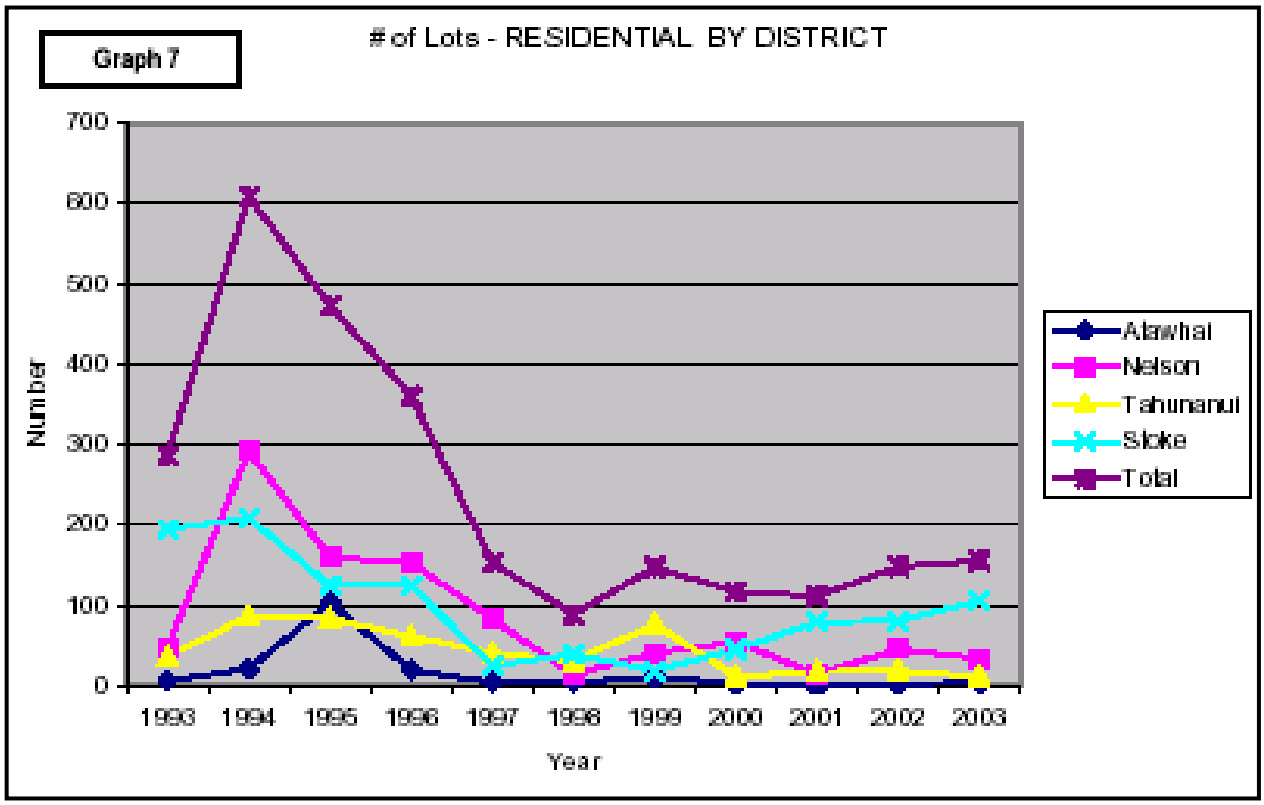
- Commercial land appears to be in sufficient supply in the central area for the next 10-20 years, but needs to be better distributed at suburban centres to provide greater levels of accessibility and as a focus for residential areas that lack a clear central focus.
- Council implements a strategy of encouraging large format retail to develop on the fringes of the central city. This strategy is considered appropriate but can be improved with respect to urban design and parking considerations.
- A study has examined the future development in Tahunanui in terms of higher density, design, public space and traffic management.

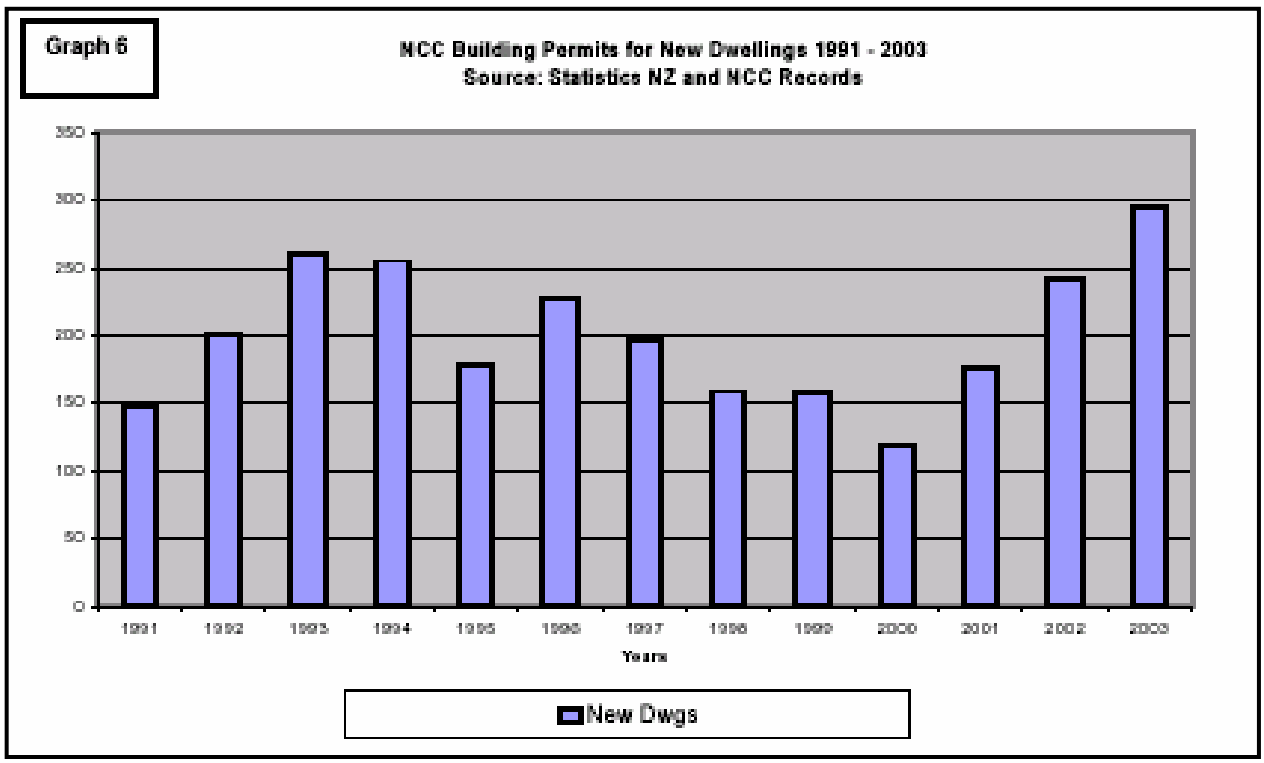
Figure 8: Development on lower Trafalgar Street

Residential

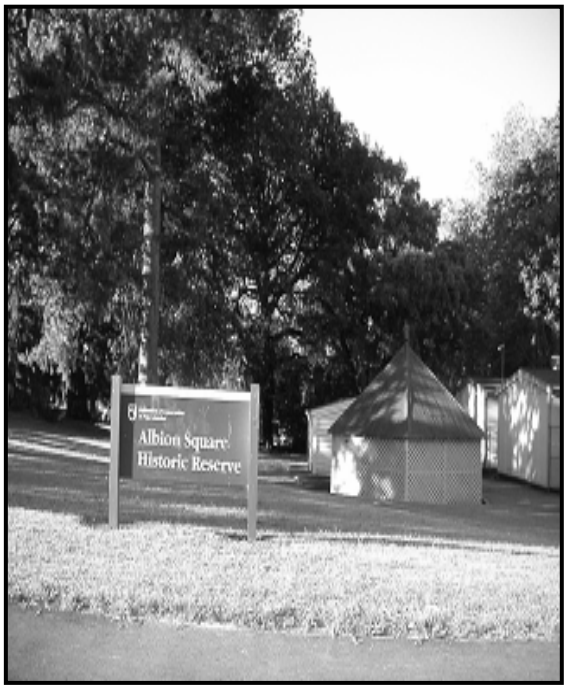
- The type of residential growth being provided for, as much as the extent of it, will be important for the future satisfaction of housing needs.
- The general pattern of settlement is one of low density. However some higher density living options are now being constructed.
- Recent apartment developments on Wakefield Quay are at much higher densities than Nelson has seen to date.
- Residential development on hills has recently seen the use of earthworks to create bench platforms for dwellings.
- The effects of these developments in the form of road cuts, removal of surface soil and skyline intrusion has been negative in some locations.
- There is little easily developed land remaining for development and average lot sizes are increasing, reflecting the steeper land now being developed.
- There is around 600ha of existing residentially zoned land that is currently undeveloped. However, large areas required for hillier sections and other constraints are likely to reduce this capacity by as much as 50%.
- This will supply enough residentially zoned land to satisfy the low growth projections but less than half the high growth projections to 2021. If the current rate of building continues (300 dwellings p.a.) the land is sufficient for only 7.5 years.

- Rural-residential subdivision has been consistent over the last 10 years. There continues to be a demand for the attractive lifestyle this is perceived to allow. However, this demand may slow in response to the ageing population and increasing travel costs and the benefits and costs of this land use need to be considered.





Natural and cultural values



- The landscape setting of Nelson generates an environment that is attractive to the city's residents and visitors alike. This use and development of the city in the future needs to look after this asset. Recognising this, a comprehensive landscape assessment was part of NUGS04 Stage Two.
- The four estuaries and associated habitats of Nelson city's coastline are nationally or internationally significant.
- The ecology of Nelson is vulnerable to the effects of development given the coastal environment it sits against. The quality of this environment is important for the future of the city.
- The ecology of the city needs a more considered approach to the side effects of development, such as stormwater contamination and sedimentation.
- The air quality of the city is poor in places and planning for growth needs to recognise and address the risks in some areas and seek to improve air quality in those where it is currently poor.
- Cultural heritage is an important contributor to the identity of the city. It needs to be recognised that not all heritage places are identified in the current NRMP and acknowledgement of heritage issues was included in NUGS04 Stage Two.
- There are geological constraints and these have been further refined regarding their location and extent in NUGS04 Stage Two.

Infrastructure

- Infrastructure within the city seems to be well provided for overall. The most conspicuous issue is transport. Road traffic into the city from the south is limited by the capacity of the existing road network through the urban area with poorly serviced passenger transport that lacks regional coordination.
- There is limited diversity in modes of transport (no rail). Nelson has a relatively high level of commuters cycling and walking to work, though the number has remained generally static in recent years.

Tangata Whenua Perspective

Tangata whenua values

The relationship between Nelson City Council and tangata whenua is based on mutual respect, as expressed in the recently-developed memorandum of understanding. There are also legislative requirements supporting the relationship and Council's consultation with Māori generally. Council and Tangata Whenua ō Whakatū share common ground through their responsibility for looking after ngā taonga tuku iho (treasured resources) of Nelson for present and future generations.

There are six iwi affiliated with Whakatū Marae, represented by the following organisations:

- Ngati Rarua Iwi Trust
- Te Rūnanga ō Toa Rangatira
- Te Atiawa Manawhenua Ki Te Tau Ihu Trust
- Ngati Koata No Rangitoto Ki Te Tonga Trust
- Ngati Tama Manawhenua Ki Te Tau Ihu Trust
- Te Rūnanga ō Ngati Kuia Charitable Trust

The relationship of Māori with the land and other natural resources is both a spiritual and physical one. This relationship recognizes that everything in the natural environment has a wairua (spirit) as well as a physical body. Without both these components, natural resources would not exist.

Council commitments

- Council has made a number of commitments in the RPS and NRMP with respect to establishing ways to work together with iwi.
- However, in its 2003 SoE report Council recognised that plans it had prepared to date and monitoring work had not fully embraced traditional iwi values.
- This has subsequently been addressed with newly focussed commitments for future joint action. These are outlined below:

Nga Taonga Tuku Iho ki Whakatū Management Plan (Nelson iwi management plan)

As well as individual local iwi resource management plans, there is now a generic Ngā Taonga Tuku Iho Ki Whakatū (natural resources of Nelson) Management Plan. This was prepared after extensive consultation and was presented to Council in April 2004. It will provide a reference point for developing more specific monitoring programmes in the future. Under the Resource Management Act 1991, Council is required to take this iwi resource management plan into account when prepar-

ing its own resource management plans. An iwi world statement was prepared in 2003 with three objectives:

- to record iwi world views for the Nelson rohe(area);
- to develop a process by which Council and iwi could work towards developing agreed indicators for air quality, water quality and coastal and land-based management issues within Nelson; and
- to identify potential funding for the development of individual indicators.

The Nelson iwi management plan was prepared under a parallel process while the iwi world view statement was prepared. The two documents were subsequently combined.

The iwi management plan addresses:

- the world view statement;
- key environmental issues relating to Nelson's resources and impacts on tangata whenua values; and
- environmental outcomes tangata whenua seek for the Nelson *rohe* (area).

The management plan will be expanded to establish a system for reviewing progress towards the identified environmental outcomes. This may include provisions in relation to establishing a system for monitoring and relating to identified environmental indicators. As such, the plan will be continually evolving and reviewed.

Iwi environmental indicators:

A Cultural Health Index for Streams and Waterways (Indicators for Recognising and Expressing Maori Values) has recently been produced by the Ministry of the Environment. Council is now working with iwi through a staged project to develop these environmental performance indicators with respect to the Nelson environment, covering:

- stage two of the pilot Iwi World View Statement project, now included within the Ngā Taonga Iho Ki Whakatū Management Plan and
- indicators to complement the monitoring of scientific indicators already undertaken by Council.

The stages of the project are as follows:

- development of a project protocol between Council and iwi to determine, among other things, the *taonga* to be assessed, how the information will be used, responsibilities and commitments;
- development of a project outline for *wai* (water), with focus on the *Maitahi* (Maitai) River as a case study;
- gather information for the case study;
- undertake site visits;
- compare the "indicators" with the current monitoring programme;
- report the results of monitoring *wai*, including what indicators are recommended and how they will be measured and reported.

This project is planned for completion at the end of the 2004/05 financial year.

Memorandum of understanding

- Council is working with iwi to prepare a memorandum of understanding which is programmed for completion and sign off in mid 2005. An approach to resource consent processing has so far been determined acknowledging the work of the Nelson Iwi Resource Management Advisory Komiti (NIRMAK).

Involvement in plans and studies

- Iwi have been involved in preparing the RPS and NRMP. Provisions in the NRMP have been specifically included as a result of this, including:
  - provision for papakainga housing on community land; and
  - identification of archaeological sites and overlays identifying locations of cultural significance to protect them from adverse activities.
- Involvement continues with the development of the freshwater provisions (notified October 2004) and the Air Quality Plan (notified August 2003):
  - the proposed freshwater provisions contain specific reference to the Nelson iwi management plan with respect to the involvement of iwi in environmental monitoring and management programmes;
  - iwi have written and endorsed a section of the Air Quality Plan;
  - iwi representatives were also members of the working parties for each of these plans, and an iwi representative sat on the hearings committee for both these issues.

- The Nelson Urban Growth Strategy (NUGS04) recognises that tangata whenua values stated in the Ngā Taonga Tuku Iho ki Whakatū Management Plan form a basis for understanding the factors that NUGS04 needs to recognize and provide for. Māori in Nelson also have particular needs and social equity issues that are recognised as relevant considerations. Iwi will work with Council to determine the role they wish to have in the progression of this strategy.
- As with NUGS04, Council seeks to consult with iwi in many of its resource management investigations.
- Council is committed to seeking iwi input into the annual SoE reporting process, primarily through NIRMAK.

Consultation

- A process is in place for consulting with iwi on resource consent applications.
- Council works closely with the local Iwi Resource Management Advisory Komiti (NIRMAK), and the Komiti advises which local representative are the most appropriate as the first point of contact for Council on specific issues.
- A Council staff member has been appointed with a particular focus on iwi and Māori liaison.

Future Direction

- Council will continue its commitment to work closely with iwi to:
  - understand tangata whenua perspectives generally, and;
  - facilitate iwi input into the planning process with respect to specific resource issues to avoid misinterpretations.

Council also aims to monitor developments with respect to consultation with iwi, including best practice and case law, and legislation relating to the coastal marine area.

- The Kaimoana Survey Guidelines for Hapu and Iwi are now available from the Ministry for the Environment. These guidelines provide hapu and iwi with information and a suggested process for undertaking a survey of kai-moana (seafood) resources. These are being considered as a next step in the development of cultural indicators for the tangata whenua of Whakatu.
- Other relevant documents include the regional and local eel management plans.

Coastal Environment

The Coast

Council is responsible for the area of coastal water stretching 52km in a straight line from the eastern Waimea Inlet to Cape Soucis. The **coastal marine area** means the area between mean high water springs and the 12 nautical mile limit of the territorial sea.

The **coastal environment** generally means the sea plus any land that has a coastal flavour, sometimes extending well inland. In Nelson's case, it includes a diverse range of land forms and habitats such as estuaries, sandy beaches, boulder banks, spits, sand dunes, salt marshes, sea cliffs, coastal wetlands and coastal vegetation. This encompasses areas of high conservation, cultural, scenic, commercial, recreation and amenity value. Our coastal environment also contains the main upper South Island port (Nelson) which is also the busiest fishing port in the country, some roads such as Rocks Rd, and some urban areas adjoining the coast such as Monarco.

What do we monitor?

- Sea water samples are taken weekly throughout the summer bathing season, which runs from 1 November to 31 March, and tested for bacteria levels. Regular testing began in 1998/9. The results have in the past been assessed against the microbiological water quality guidelines.
- These guidelines were superseded by an upgraded approach in 2003 which adopt a significantly different way of assessing bathing beaches. These guidelines have since been implemented. This monitoring tells us whether or not the water is suitable for recreational activities.
- Water samples are also regularly taken from discharge outfalls into Tasman Bay and are independently analysed against the consent conditions with which these discharges must comply.
- A long-term monitoring programme for the port area was also initiated during the summer of 2003/04 jointly by Council and Port Nelson Ltd. This includes sampling for sediment quality/toxicity and shellfish contamination/toxicity and bioaccumulation. It augments the ongoing monitoring of sediment contaminants in the port area and the disposal of dredged spoil.

How clean are our coastal waters?

Recreation standards

- An assessment of water quality found that, between 1998 and 2002, all sites were safe most of the time.

- Old sampling records have been superseded by the new guidelines. The new guidelines adopt a different approach and it is not possible to compare the results of both methods.
- A new set of 20 samples must be taken in each of five years to provide a record of 100 samples before the results can be confirmed under the new guidelines. However, the first interim set of results has been gained from sampling during the winter of 2003. They can now be compared to the results of repeat sampling undertaken in the summer of 2004. Again, these results are interim, except for the Tahunanui site where enough results have been recorded over the years.
- These results show the main bathing areas have a moderate to high grading and are generally suitable for contact recreation. The main exception to this occurs following heavy rain when land sourced contaminants are washed into the sea and water quality temporarily deteriorates.

Recreational Water Quality Results 2003-04

Site	Microbiological Classification[1]		Sanitary Grade[2]		Primary Impact		Recreation Grade[3]	
	2003	2004	2003	2004	2003	2004	2003	2004
Monaco	B	B	Mod[5]	Mod	Urban stormwater	Urban stormwater	Good	Good
Tahunanui	B	B[4]	Mod	Mod	Urban stormwater	Urban stormwater	Good	Good
Atawhai	D	D	Mod	Mod	Urban stormwater	Urban stormwater	Poor	Good
Cable Bay	C	C	Very low	Very low	-	-	Fair	Very good

1 = ranges from A to D, D being the most contaminated

2 = risk of contamination, rated from "very low" (least risk) to "very high" (most risk)

3 = suitability for recreation, rated from "very good" to "very poor"

4 = this is the only result which is not interim

5 = mod means moderate

- The difference in the recreational grading over time for Atawhai and Cable Bay is due to the recording system, i.e. when re-sampling does not reveal any contamination, both the initial and second sample were included in the 2003 records. Application of the new guidelines no longer allows this, so in 2004 the first contamination spike is replaced by, not added to, the second reading. Therefore the system will record only where contamination is ongoing. Where high levels of contaminants are detected the guidelines require re-sampling to be carried out as soon as possible after the first sample and again the following day.
- Council has a response contingency for more frequent sampling and faster analysis and reporting where elevated levels are detected during the course of monitoring.

Tahunanui Beach

- The beach profile of Tahunanui Beach has been surveyed at intervals over the years and continues to change.

- Management options are driven by the need to slow the eastward migration of Blind Channel and slow the erosion of the eastern end of the front beach.
- Council has made a number of decisions concerning ongoing erosion, including adopting a Coast Care Programme and setting up the Tahunanui Beach Coast Care Committee in 2002.
- Coast Care activities have included erecting sand-trapping nets and barriers, planting pingao, erecting education signs, forming walkways, installing a sandbag wall adjacent to the carpark and sand replenishment.
- By 2003, Coast Care activities had been successful in stabilising the central section of the beach through planting and sand-trapping barriers. By contrast sand traps and revegetation trialled at the eastern end of the front beach were not effective in stabilising this area.
- In 2004 a resource consent was lodged and granted to allow significant structural improvements to be undertaken. These include installing a new stormwater collector to pick up the creek by the Lions playground and other nearby outfalls, laying a new pipeline, filling in the old creek bed, and renourishing the beach near the Lions Playground.
- Material for beach renourishment which derives from a separate consent is also used for other areas of the beach.

Waimea Inlet and Tasman Bay

Water quality and biodiversity

- Unexplained intermittent elevated levels of contamination in the Waimea Inlet have been investigated. Assessment between 1999 and 2003 included a field survey and sampling of sources/tributaries to the inlet between Parkers Cove and Richmond and also an investigation into pollution sources at Cable Bay. These found;
  - o pollution within the tributaries is consistent with the catchments they pass through;
  - o no obvious source was found for the occasional “rogue” pollution result found at Cable Bay.
- Since 2003, sanitation surveys have been undertaken to establish contamination of all streams into the Waimea Inlet and to ultimately cover the entire inlet.

Waimea Inlet in 2004

Values	Threats	Comments
Water quality (except Bell Island wastewater outfall	o Faecal indicator bacteria o Chemical leachates from contaminated soils	o Suitable for contact recreational activities but unsuitable for shellfish gathering o Remedial action to be taken
Water quality (Bells Island)	o Effluent discharge	o Enrichment effects minimal
Biodiversity	o *Spartina* weed infestation o Pacific oysters	o Largely eradicated with minimal herbicide effects on native habitats. Affected areas returned to native character o Well established, localised pockets of sediment enrichment and changes to

Sewerage Facility Upgrades

- A study on tidal circulation by Cawthron has provided information regarding the mixing zone of the Wakapuaka Sewage Outfall.
- Council has made financial commitments to upgrade both the treatment plan at the Nelson North Oxidation Ponds facility (within the next five years). A resource consent was received for the latter in late 2004.

Understanding the marine area

- A comprehensive investigation of the Waimea Inlet has been carried out jointly with other authorities to improve the national understanding of inlets and their classification. The results of this study have been used by the Ministry of the Environment to develop a national protocol for the environmental assessment and monitoring of estuaries.
- A joint survey with Tasman District Council (TDC) and the National Institute of Water and Atmospheric Science (NIWA) was undertaken in 2000/01 to gain baseline information about sea levels, storm surge, wave action and tsunami effects in Tasman Bay. The results of these studies were due in late 2004.

Aquaculture

- The Resource Management (Aquaculture Moratorium) Amendment Act 2002 provided for a two year moratorium until March 2004 on the granting of resource consents for new developments. This date was later extended.
- The Aquaculture Reform Bill was considered in late 2004. The new legislation specified that aquaculture management areas are to be defined by Council within the NRMP and consent applications can only relate to and be granted within these areas. Council has yet to complete its investigation into potential aquaculture management areas.

When is swimming most risky?

- There is an increased health risk when swimming during or shortly after rain events and the heavier the rain event the higher the risk.
- The greatest health risk is immediately after the first flush of rain, even if rain continues the effect on coastal water is often greatest the day after the rain.

How do I know if it's safe to swim?

- Under the water quality guidelines, Council implements a surveillance and response system. This traffic light system works as follows:
  - o green – routine sampling indicates low health risk;
  - o amber – sampling indicates the health risk to swimmers is increasing but the contaminant level is relatively low;
  - o red - sampling indicates poor quality water. Council management staff and the Public Health Service (PHS) are alerted. New samples are taken. If the level of contaminant is still too high, the PHS will advise action like installing signs at the beach that state the risk;
  - o media such as Live Nelson and newspapers also advise the public if there are problems at any beaches.

Port Nelson

Water quality

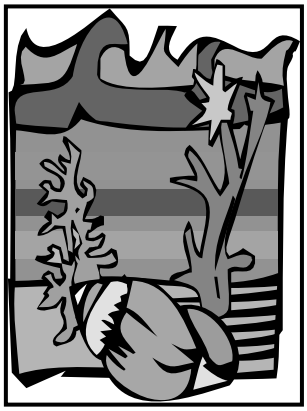
- Sediment sampling/analysis in Port Nelson has occurred since 1996. Activities over recent years show that, for those three sites which initially registered chemical contamination levels above the guideline level, satisfactory action has now been taken to remedy this.
- Contamination at the Old Boat Harbour has been remedied by dredging. A code of practice for operators of the slipway to minimise future contamination led to a formal resource consent process which includes provision for bunding, diversion and filtration of the discharge. Steps have also been taken to address sources of contamination of Saltwater Creek.

Biodiversity

- A baseline survey of Port Nelson has been undertaken so that newly arrived species can be readily identified and the effectiveness of marine biosecurity controls assessed.

- Nelson has been included in twice-yearly port surveys for the six marine invasive species of greatest concern.

Ecosystems



- Areas of coastal margins are starting to be restored with a more natural grade and vegetation cover, including beside Whakatu Drive. There were problems with the re-establishment of vegetation in some areas.
- Council wants to create a more natural margin in the Haven Holes area by creating a gently sloping beach and re-vegetating it with native species
- The Wakapuaka sandflats area is being considered (by Department of Conservation) for re-establishing coastal wetland vegetation.
- A marine reserve at North Nelson has received the concurrence of the Minister of Fisheries.
- The Delaware Bay Taiapure has been established. A taiapure is a local fishing area of special significance to hapu or iwi.

Undesirable plants

Spartina

- Council, TDC and DoC have undertaken long-term control of the invasive weed *Spartina* in Waimea Inlet. This has been generally successful.
- It has been largely eradicated with minimal herbicide effects on native habitats and affected areas have returned to their natural character.
- Follow-up action in line with Council's joint Regional Pest Management Strategy will ensure final eradication.

Undaria

- The extent of infestation by *Undaria* within Nelson Haven and Port Nelson has been assessed annually since 1999. This has included clearance efforts by voluntary divers in particular locations like the Nelson Marina.
- Native seaweeds appear to successfully coexist with *Undaria* in some areas and appear to dominate it in others.
- The extent and density of infestation has remained constant over the last few years. *Undaria* has not spread to the high-energy environments of the outer Boulder Bank or the seaward side of Haulashore Island.
- A holding pattern on any action was assumed until direction came from central government on a determined management regime. In 2002 central government released its "*Action Plan for Unwanted Species*" and indicated it will not fund *Undaria* control in Nelson.
- It is not practical to eradicate *Undaria* from Nelson Haven;
- *Undaria* has been included in the Nelson/Tasman Regional Pest Management Strategy as a regional surveillance pest.

What else is happening?

Regional Coastal Plan

- We have now processed the Regional Coastal Plan through to operative status (apart from a few small sections). It is fully integrated into the NRMP. This provides a comprehensive range of objectives, policies and rules to sustainably manage activities in the coastal environment.

Tools from the Ministry for the Environment

- Council now uses a recently developed software package *Bathewatch* in monitoring recreational waters.
- New criteria (performance indicators) have been confirmed for evaluating a range of coastal characteristics such as habitats. These are now available for all councils to use. Additional parameters are likely to appear by 2006.
- A new mapping tool, the Marine Environment Classification (MEC) system, is planned to come on stream by 2005. This will provide an advanced means of identifying areas of ecological similarity/difference and will help Council define management units, predict potential impacts and determine management priorities.

Future work programme

- Survey flora and fauna as well as pests and weeds along coastal margins.
- Identify structures within coastal margins in relation to public access.
- Collate seabed vegetation data, identify and fill gaps.
- Assess access to fisheries and catch data to establish distribution and abundance of marine animals within Nelson.
- Research and collate background data before preparing a variation to the NRMP dealing with aquaculture.
- Undertake a duneland project to control exotic species and replant with natives in particular coastal areas including Oananga Bay, Omakau Bay, the Whangamoa River mouth and Maori Pa Beach. This project was initiated some years ago and gained significant land owner support.
- Given the Waimea Inlet has a status of international significance, consider developing a holistic strategy for its environs like the Fiordland Marine Conservation Strategy.

Fresh Water

Fresh water

In Nelson we live close to streams and the sea. We expect these waters to be clean, not only for ourselves, but for the natural communities' sake and for visitors to our region.

Healthy waterways enhance the beauty of Nelson's landscape and are valued for recreation, their cultural and spiritual benefits and as a home for wildlife. The entire region benefits by having unpolluted swimming holes, good quality habitats for fish and other aquatic life and clean water for water supplies, irrigation and industrial use. Streams also serve an important purpose as drainage systems, particularly in urban areas where they receive runoff from our roads and buildings via the stormwater system.

The Nelson region has four major river systems: the Maitai, Wakapuaka, Whangamoa and Roding, as well as a host of smaller streams that drain into the Waimea Estuary and Tasman Bay.

What do we monitor?

- Water samples are taken weekly at our popular swimming holes throughout the summer bathing season, which runs from 1 November to 31 March. These samples are tested for bacteria levels. Regular testing began in 1998/9. The results have been tested against the microbiological water quality guidelines.
- These guidelines were superseded by an upgraded approach in 2003 and have since been implemented. This monitoring tells us whether or not the water is suitable for recreational activities.
- During 2000/01 stream health was comprehensively assessed at 38 sites in the Nelson region, spread over 23 waterways. This provided valuable background data. Regular flow monitoring is undertaken on a variety of waterways in the region and intermittent gauging on others.
- Sediment samples are also monitored for contamination and Council has initiated an investigation into contaminant loading of stormwater discharges.

How clean is our recreational fresh water?

- Historical assessment of water quality found that, between 1998 and 2002, all sites were safe most of the time.
- Old sampling records have been superseded by the new guidelines. The new guidelines adopt a different approach and it is not possible to compare the results of both methods.
- A new set of 20 samples must be taken each year for a period of five years to provide a record of 100 samples before the results can be confirmed under the new guidelines. However, the first set of interim results was derived from sampling during the winter of 2003. These can now be compared to the results of repeat sampling undertaken in the summer of 2004. Again, these results are interim, except for Sunday Hole where enough results were recorded over the years.

- In general our recreational fresh water is safe for recreation purposes most of the time.
- Council has a response contingency for more frequent sampling and faster analysis and reporting where elevated levels are detected during the course of monitoring.

Recreational Water Quality Results 2003-04

Site	Microbiological Classification[1]		Sanitary Grade[2]		Primary Impact		Recreation Grade[3]	
	2003	2004	2003	2004	2003	2004	2003	2004
Girlies Hole	**D**	**C**	**Mod[5]**	**Mod**	**Urban stormwater**	**Urban stormwater**	**Poor**	**Fair**
Sunday Hole	**D**	**D[4]**	**High**	**Low**	**Stock access upstream**	**Feral animals & low intensity farming**	**Very poor**	**Poor**
Smiths Ford	**B**	**B**	**Very low**	**Very low**	**Urban stormwater**		**Very good**	**Very good**
Maitai Camp	**-**	**D**	**-**	**low**	**-**	**Feral animals & low intensity farming**	**-**	**Poor**

1 = ranges from A to D, D being the most contaminated

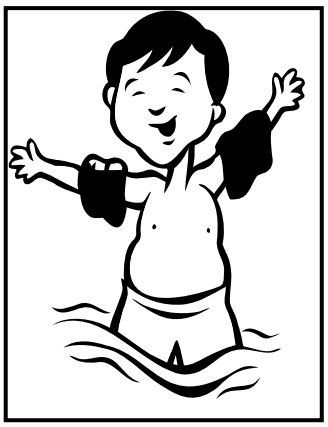
2 = risk of contamination, rated from "very low" (least risk) to "very high" (most risk)

3 = suitability for recreation, rated from "very good" to "very poor"

4 = this is the only result which is not interim

5 = "mod" means moderate

- The results show:
  - a lower level of microbiological contamination at Girlies Hole has led to an improved recreation grading;
  - agreements to exclude stock from much of the riparian margin in the Sunday Hole catchment during summer have significantly improved the sanitary grading and consequently also the recreation grade;
  - the 2003 gradings for Smiths Ford are repeated for 2004. This site could not be reassessed in 2004 due to insufficient samples;
  - the Maitai Camp was not assessed in 2003 due to inadequate sample numbers.

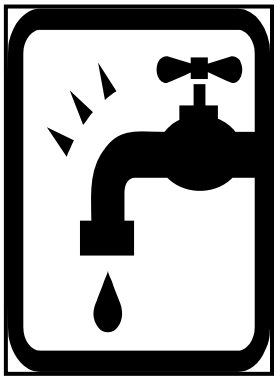


How do I know if it's safe to swim?

- In the same way as rain events impact on the safety of coastal waters, the same applies to the recreational use of rivers and streams.
- Therefore, in a similar way to monitoring coastal water quality, Council implements a surveillance and response system. The main differences relate to the stage at which the Public Health Service is alerted, which bacteria trigger a response and at what concentrations they occur.

Drinking water

- Up until recently the city's urban water supply came directly from the Maitai and Roding Rivers.
- With the completion of a new water treatment plant on Tantragee Saddle in the middle of 2004, water from both rivers now passes through the facility. This improves the quality of Nelson's water supply to a minimum grading level of B, where previously it was graded D or E.
- An information brochure about the facility was produced and Council ran a public open day in late 2004.
- The treatment plant also provides additional security of supply during periods of drought as it can treat water previously not suitable for drinking. The new system will ensure that Nelson will comply with any new national standard on drinking water.



- The Long Term Council Community Plan makes provision for a new water supply tank to be constructed in Stoke in 2005/6 in light of continuing residential development in Nelson.
- To promote water conservation, Council introduced universal water metering throughout its reticulated area and reviewed water charges.
- Council promotes a range of initiatives to encourage water conservation and enhanced water quality, including advocating the collection of rainwater on-site for use on the garden or in the toilet system as a way to reduce the volume of water drawn from the city supply.

Monitoring waterway health

Council's efforts

- The comprehensive assessments undertaken in 2000/01 provided baseline material on the health of individual waterways. Regular monitoring allows Council to assess the impact of activities, locations where stream health is deteriorating and assists in determining management changes of the river or surrounding land which might halt or reverse the problem.
- Physical, chemical and biological factors were measured including stream bank vegetation and stability, stock access, water temperature, nutrients, bacteria and aquatic animals.
- Sites were selected to represent the range of land uses in Nelson. Five of the sites were located in relatively pristine areas where water quality was unlikely to be affected by contaminants or modifications to the channel or river banks. These five sites provide a benchmark against which the quality of the more damaged sites can be compared.
- The Roding River was not included in this assessment since only the headwaters are within Nelson. Its downstream section is monitored by TDC.

Overall Waterway Quality (2000/01)

Stoke Fan & York Stream		Maitai Catchment		Atawhai & Glen Streams		Wakapuaka Catchment		Whangamoa Catchment	
Saxtons	**x**	**Brook upper**	**√**	**Oldham upper**	**x**	**Whaka. upper**	**√**	**Whang. upper**	**√**
Orphanage	**x**	**Brook mid**	**▪**	**Oldham lower**	**x**	**Whaka. mid**	**√**	**Whang. mid**	**√**
Orchard	**x**	**Brook lower**	**▪**	**Todds upper**	**▪**	**Whaka. lower**	**▪**	**Whang. lower**	**▪**
Poorman upper	**√**	**Maitai upper**	**√**	**Todds lower**	**x**	**Teal upper**	**√**	**Graham**	**√**
Poorman lower	**▪**	**Maitai upper/mid**	**▪**	**Waihi**	**x**	**Teal lower**	**√**	**Collins**	**▪**
Jenkins upper	**▪**	**Maitai mid**	**√**	**Hillwood**	**x**	**Lud upper**	**▪**	**Dencker**	**▪**
Jenkins lower	**x**	**Maitai lower**	**▪**			**Lud lower**	**▪**		
York	**x**	**Sharland**	**▪**			**Pritchards**	**√**		
Arapiki	**x**	**Groom**	**▪**						

- The sampling results were also tested against guideline values that specify acceptable and unacceptable levels of contaminants for the various values/uses that we have for our waterways.
- The results show the most modified waterways in our region are small streams in urban and rural Stoke, Bishopdale, Atawhai and The Glen.
- Water quality deteriorates, to varying extents, with distance downstream in all the major rivers:
  - the Maitai River has the greatest decline in water quality, followed by the Wakapuaka River;
  - all three sites on the Whangamoa River had good water and habitat quality and healthy groups of aquatic animals throughout;
  - the Roding River has good water quality, similar to that in the Whangamoa River;
  - poorer quality aquatic animals are found at those sites receiving urban and agricultural runoff than at sites with native bush and pine forestry catchments.

River specific investigations

Sanitary surveys of the Maitai River and Sharlands Creek

- A full environmental survey was undertaken in 1999 to identify potential pollution sources. Survey findings include:
  - no link was proven between defective septic tanks or effluent disposal systems and pollution levels in the river, even though some systems were obviously defective;

- one of the sources of pollution was likely to be from stock and animal waste run-off from the surrounding land and also sediment from logging operations;
- the level of E. coli pollution was consistent with other rivers flowing through similar areas in Nelson and Tasman;
- Sharlands Creek is a possible source of contamination. This was later confirmed in 2000/01 sampling.

River habitat/flow study and recreational use of the Maitai River

- A 2002 study sought to determine minimum low flows for the river which were required to ensure habitat health for invertebrates and fish.
- The results determined that, for periods of the year, flows are sub-optimal for many fish species but this is likely to be a natural rather than abstraction-induced effect.
- The recreational use of the Maitai River and valley was specifically surveyed 2003/04.

Maitai River - total review

- A comprehensive report on the outcome of all investigations into the Maitai River was presented to the Environment Committee in December 2004. This report provided the following:
  - an inventory of ecological data analysed with respect to the current state of the river;
  - possible reasons for a decline in the river's ecology;
  - initial indications were that the main sources of contamination of the river system were natural, resulting from geology and feral animals;
  - recommendations covering a range of future work options and monitoring which can be carried out by Council and/or other research organisations. The research relates to trout, native fish, macro-invertebrates, periphytons, sediment, water chemistry, and hydrology.

- Some of the report's recommendations have already been accepted and implemented. These include:
  - removing stock from riverbanks in some locations along the Maitai River during the summer period;
  - an enhancement project which has seen the river margin between the golf course and Maitai Motor Camp permanently fenced off and planted. Council's Rural Liaison Officer is working with rural owners to fence and plant their riparian margins. Funding is being made available to subsidise this work;

- o the temporary installation of portaloos during summer close to popular swimming holes;
- o temperature loggers have been established on the river system, both above and below its confluences and on side streams;
- o sampling of nutrients and contamination on the Sharlands and Packers branches was completed in early 2005, and;
- o a new river flow recorder has been installed below the Brook Stream confluence to give a good indication of water flow levels in the urban system.

Tributaries flowing into the Waimea Estuary

- A 2000/01 field survey identified sources and tributaries discharging into the Waimea Estuary between Parkers Cove and Saxtons Road.
- Samples taken from these tributaries showed medium to high pollution loadings, consistent with the nature of their catchments and low water flows.

Monitoring of sediment contamination

- Contaminants can attach to sediments and become trapped in stream beds and influence water quality, or affect plants and animals living in the sediments or feeding off others.
- Stormwater is one of the main ways contaminants enter waterways. Council implements the national guidelines for water quality which identify contaminant threshold levels.

- Council recognises that the best time to consider methods to reduce stormwater contamination is at the time of new development through good initial design, rather than treating the water before discharge.
- In 2001 Council participated in a project to prepare design guides for the sustainable management of drains, including their establishment and maintenance. This Drains for Rain stormwater project aims to persuade people not to put chemicals or other waste into stormwater drains, rivers or streams.
- Most sediment monitoring before 2001 focused on the Maitai River, Jenkins Creek/Arapiki Stream and York Stream because they flow through the main industrial areas of the city and are more likely to have contaminants. These waterways have been thoroughly sampled over the years and their contaminants and sources are well understood.
- A more comprehensive study of sediment contamination was undertaken by Cawthron Institute on behalf of Council in 2001. This provided baseline environmental data for eight main waterways and their catchments.

- The results showed:
  - contamination from metals, oils and the like was not an issue at the mouth of Saxton Creek, in the Haven along QEII Drive, at Brunt-McGlashen Quay, in the Maitai River or at Orphanage Creek at Saxton Field;
  - a small number of contaminants exceeding acceptable levels by a low margin were found in the Tahunanui Beach drain, Jenkins Creek, York Stream and near Golf Rd, Tahunanui;
  - a wide range of low level contaminants were found in Poorman Valley Stream, Arapiki Stream, Brook Stream and Orchard Stream; and
  - contaminants which exceeded acceptable levels by a high degree were found in two locations: near Golf Rd, Tahuna (lower Jenkins Creek) and in Orchard Stream.
- Where high levels of contaminants have been found Council has undertaken additional work to identify and rectify the sources where possible.
- The 2001 study was updated in 2003 when 18 sites around Nelson were assessed involving all eight waterways. This confirmed:
  - the level of zinc in lower Jenkins Creek exceeds the guideline by a considerable amount and deserves a high priority for ongoing monitoring;
  - contaminant loads in the lower Maitai River should not be permitted to increase substantially;
  - winter sampling of the mid-Brook Stream and upper Jenkins Creek suggests fluctuations in contamination consistent with discharges from home heating. Ongoing monitoring might see a relationship between these levels and Council's new controls to reduce emissions into the air.

- With this comprehensive base data when addressing any new contamination, Council will be able to take more samples and be in a good position to identify the source and seek its elimination or mitigation.
- Contaminated sediment has been removed from Arapiki Stream during a waterway upgrade, with assistance from central government's contaminated site remediations fund. Further removal was considered during 2005.
- In mid-2004 a study identified a complete programme for stormwater monitoring in Nelson's four major catchments, including:
  - sampling undertaken to assess stormwater in representative residential, light industrial and undeveloped areas in the city;
  - testing the quality and contaminant load of first flush waters after a storm event, and average stormwaters. The results were evaluated in relation to land use of the catchment and land surfaces;
  - the quality of the stormwater for each of the catchments was found to be generally in the typical range for other similar NZ sites;
  - commercial areas, including car parks and roads are budgeted to be assessed in the 2005/06 financial year;
  - heavy industrial sites will be assessed at a later date.

Flow Monitoring

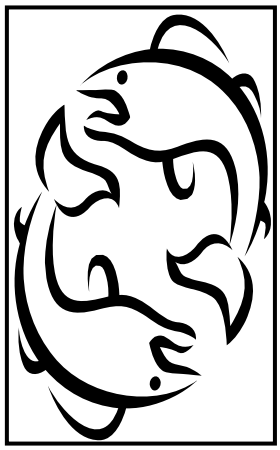
- Council maintains a flow (hydrology) monitoring network. This includes a combination of continuous flow recorders on the major waterways and periodic stream gauging, predominantly on smaller urban streams.
- Two new gauging stations have recently been established at Orphanage Creek and on the Maitai River below its confluence with the Brook River.

- Data from the monitoring stations is telemetered to Council's website so that information on flow rates is readily accessible by the public. Council also provides real-time flow data over the telephone via TDC's flowphone. River flow rates can dictate whether people should be abstracting water or not, for example under resource consents.
- Known data, correlations and flow distribution analyses have been used to calculate artificial flow records for those catchments without continuous recorders.
- To augment this, a specific project in 2000/01 regularly gauged smaller streams every three months. This information filled the gaps in Council's records on flow variations in minor streams, particularly during periods of low flow.
- Over time, with longer continuous records and further spot gauging, our records will improve and the data will become more refined.
- Council has in the past contributed to national projects dealing with freshwater, including those relating to drainage design.

Groundwater levels and flows

- There is little available information on the limited groundwater resources within the Nelson city area. This information has been collected where possible. There are a few springs and private wells with abstraction records.
- Analysis suggests the biggest resource is contained within unconfined aquifers, particularly in The Wood. These are hydraulically linked to the Maitai River, so over-abstraction in one will affect the other.
- Point discharges which can contribute contaminants include septic tank effluent, stormwater, swimming pool water, landfills, excavation, chemicals and many other sources.
- Non-point or diffuse discharges include fertilisers, pesticides, run-off from intensive farming and vehicle tyre residues on streets.
- In the absence of detailed information on the relationship between groundwater and surface water in Nelson, Council tends to be cautious when considering management options, so the priority for groundwater contamination is ideally on avoidance rather than mitigation.

Fish passage



- Most fish are migratory and spend part of their lifecycle in the sea, returning to rivers as fry like whitebait.
- The Ministry for the Environment and several councils, including ours, sponsored production of a Cawthron Institute brochure describing best practice designs of culverts, bridges and fords to aid fish passage.
- The brochure targets rural landowners and considers ways to ensure structures in waterways do not prevent migratory fish from reaching their preferred habitats.
- Obstructions to fish passage within the Maitai River such as weirs and fords have been modified to reduce their impacts and assist migratory fish passage upstream.

Council supporting others

- Council supports the Department of Conservation programme which aims to create community support for the clean up, monitoring, protection and regeneration of streams. The programme fosters a continuing relationship with schools and community groups. Schools monitor water quality by using Stream Health Monitoring and Assessment Kits for example at the Wakapuaka River.
- The Brook Stream upgrade involves:
  - subdivisions between the motor camp and the existing residential areas will have a 30m wide esplanade reserve along the stream planted with native species. The long term goal is to establish a walkway beside the Brook;
  - structures along the Brook (and all other urban streams) were surveyed in November 2003, and will be mapped. Priorities regarding fish barriers will be developed, including cascades below culvert drop offs, improving culverts and shade;
  - pipes and artificial houses for eels will be considered for development and vegetation is important in the life cycle of invertebrates.

What else is happening

Freshwater Plan Change

- Council has prepared and publicly notified a change to the NRMP dealing with freshwater issues. It introduces controls over activities in the beds of rivers and lakes and in wetlands, freshwater abstraction and instream flows, discharges to freshwater and freshwater quality and integrated freshwater management. The plan change provides a comprehensive range of objectives, policies, rules and methods of implementation.
- This plan change is going through the consultation process and hearings to consider submissions are currently programmed for 2005.

Tools from the Ministry for the Environment

- The Ministry is currently working towards developing a freshwater strategy to guide freshwater quality and allocation programmes. This will produce national measures of water quality and water quantity covering surface and groundwater. Over the next two years the focus will be on selecting the final set of measures, or indicators. In the interim, Council has already adopted

the Stage 1 performance indicators which are likely to be included in the likely national measures.

- Council uses a recently developed software package *Bathewatch* in assessing and monitoring recreational waters.
- A proposed national environmental standard for raw drinking-water sources is being considered.
- A new river environment classification system (REC) has been developed, where recognised similarities between rivers allow data from some sites to be used to characterise the conditions of other locations which lack data.

Future Work Programme

- Information now held on stream health will be used as a yardstick against which future data will be compared. Focussing on the major waterways, ecology will be monitored four times a year at a reduced number of sites (27) and the Macroinvertebrate Community Index applied once a year.
- Fewer sites will be monitored, but further monitoring can be resumed at any time to help determine if a specific activity is affecting stream health, like logging.

- The Maitai River swimming holes are the most marginal in terms of fresh water quality of all sites tested. These have high recreational use over summer. Council will continue to recognise this in its vigilant monitoring and in initiating changes in the management of the Maitai valley.
- Updated monitoring for sediment contamination will target the waterways recently identified as having highest priority: upper and lower York Stream, the two Oldham Creek sites, lower Saxton Creek and the two uppermost Maitai River sites.
- Council will consider a wider search for information to augment data on groundwater reserves and abstraction.
- The Nelson City Council website might be expanded to include more information like the results of recreational water sampling.
- The information gathered by the Council on the health of each waterway might be used in other ways, including:
    - the findings of the NUGS04 report will show where urbanisation is likely to intensify, which can be compared with any problems already identified around those waterways;
    - evaluation can determine the past and likely future impacts associated with land uses or practices and urbanisation, including sedimentation from earthworks, and water supply to hillside subdivisions.

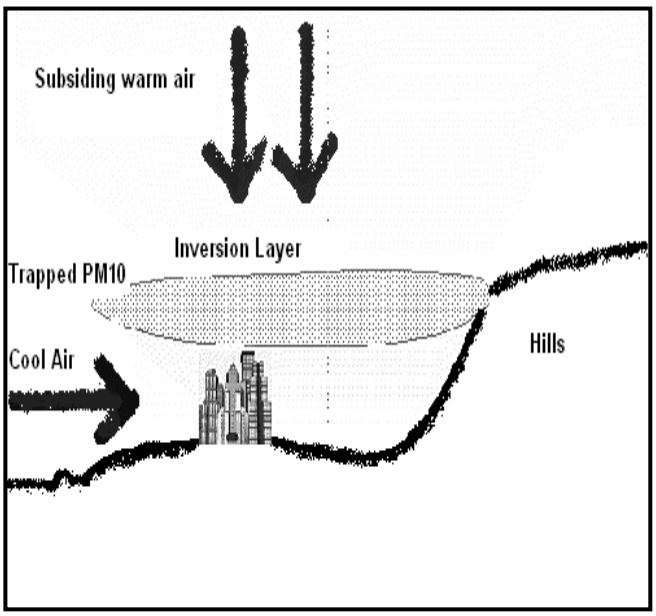
- Council has set aside money in the Long Term Council Community Plan to trial methods of reducing stormwater contamination which enters the stream network. This work follows on from the current investigations into stormwater loadings and aims to ensure compliance with the water quality standards imposed by the new FMP.

Air & Noise

Air Resource

Air quality

Air pollution can degrade our environment, human health and amenity value. The principal types of air pollution are smoke, gas, odour and dust. Naturally occurring sources also occur, including pollen and sea salt.



The combination of Nelson's topography and calm, frosty winters can lead to temperature inversions, where cold air, along with air emissions, becomes trapped under a layer of warm air, producing air pollution.

Smoke contains a range of particle sizes including particles with a diameter of 10 microns (PM_{10}) or smaller. Some types of small particles are more hazardous to health than others. Particles smaller than PM_{10} are not filtered out in the nose, penetrate the lungs and are associated with lung and respiratory problems and impair people's ability to resist infection.

Recommended Maximum Levels

- The Ministry for the Environment has produced guidelines for air pollutants which specify maximum acceptable concentrations for different types of contaminants related to adverse health.
- The 1994 Ambient Air Quality Guidelines determined that PM_{10} levels of 120 micrograms per cubic metre (120µgm/m^3) should not be exceeded for a period averaged over 24 hours.
- This maximum recommended level was reduced to 50ugm/m^3 in 2002.
- The 2002 guidelines have since been converted into national standards which came into effect across the country in October 2004. They include standards for PM_{10}, sulphur dioxide (SO), carbon monoxide (CO), nitrogen dioxide (NO_2) and ozone and also a standard for the design of new home wood burners in urban areas.
- The Ministry for the Environment has also developed a set of Environmental Performance Indicators (EPIs) that are used as a warning device of possible air pollution problems. This system operates in a similar fashion to the traffic light surveillance system for contaminated recreational waters, so certain concentrations dictate states of no action, alert or action.

What has been monitored over the years?

1983 - 2000

- Council has monitored particulate matter (smoke) levels since 1983 but no other air pollutants were tested until 1989 when a basic survey was carried out on domestic fuel sources.

- In a 1999 study Council recognised it had undertaken little monitoring of air quality other than total particulates. The study indicated that, since 1983, there had been a steady decline in winter smoke levels in Nelson. Despite this decline, the smoke levels recorded in the winter of 1999 at the Vanguard and Quarantine sites were moderate to high in terms of the World Health Organisation (WHO) guidelines. Note that these guidelines and the sampling technology have both since been replaced.
- In 2000 the monitoring programme was revised and Council began to collect information using new technology on the levels of smaller sized particles (PM_{10}) and also gathered indicative $PM_{2.5}$ results at the St Vincent St site. We were then able to assess their relationship to our historical records of total particulates. That monitoring showed regular breaches of the guideline level for PM_{10}.

2001 - Air quality

- An extensive ambient air quality monitoring programme in 2001 determined the level of airborne contaminants, identified the most significant sources and assessed potential health effects.
- A permanent monitor was set up in the St Vincent St area in 2001. This location was considered to represent the worst case scenario. Tahunanui and Stoke were also monitored.
- The evaluation included nitrous oxides (NO and NO_2), nitrogen dioxide, carbon monoxide and benzene. The study included sites along the potential Southern Link route and monitored different pollutants at different locations, including Swift Suzuki, Victory School, and the fire station, which are all in St Vincent St, and at the hospital on Waimea Rd.
- CO, NO_2, PM_{10} and benzene were considered the pollutants most likely to cause adverse effects in Nelson.

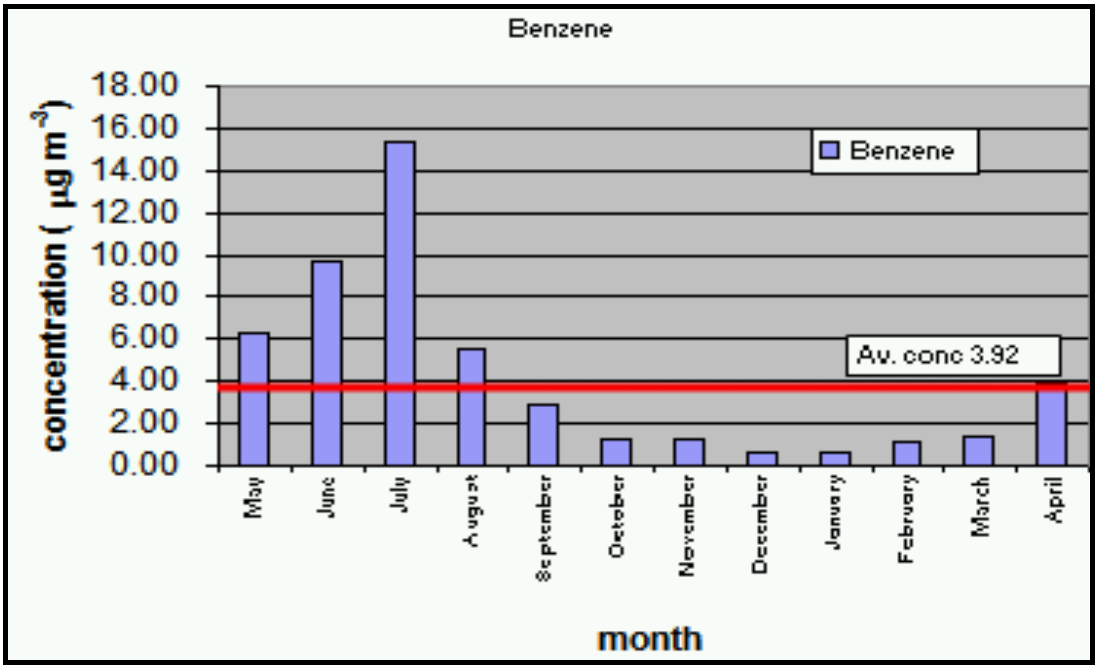
Concentrations Measured 01/04/2001 – 31/08/2001

Pollutant	Averaging period	Site	Max. conc.	Mean Conc.	MfE guideline	No. of times exceeded
CO	1-hour	Victory school	8.7 (mg m^{-3})	1.4 (mg m^{-3})	30 (mg m^{-3})	0
	8-hour	Hospital	5.1 (mg m^{-3})	1.4 (mg m^{-3})	10 (mg m^{-3})	0
NO_2	1-hour	Fire station	138 (µg m^{-3})	29 (µg m^{-3})	200 (µg m-3)	0
	24-hour	Fire station	51 (µg m^{-3})	24.5 (µg m^{-3})	100 (µg m-3)	0
PM_{10}	24-hour	Swift Suzuki	165 (µg m^{-3})	64 (µg m^{-3})	50 (µg m-3)	81
Benzene	Annual	Fire station	NA	6.8* (µg m^{-3})	10 (µg m^{-3})	NA

* Average benzene concentration over the five months

- The air quality investigation confirmed:
  - current concentrations of CO and NO_2 were unlikely to cause adverse health effects unless significant new contaminant sources were introduced;

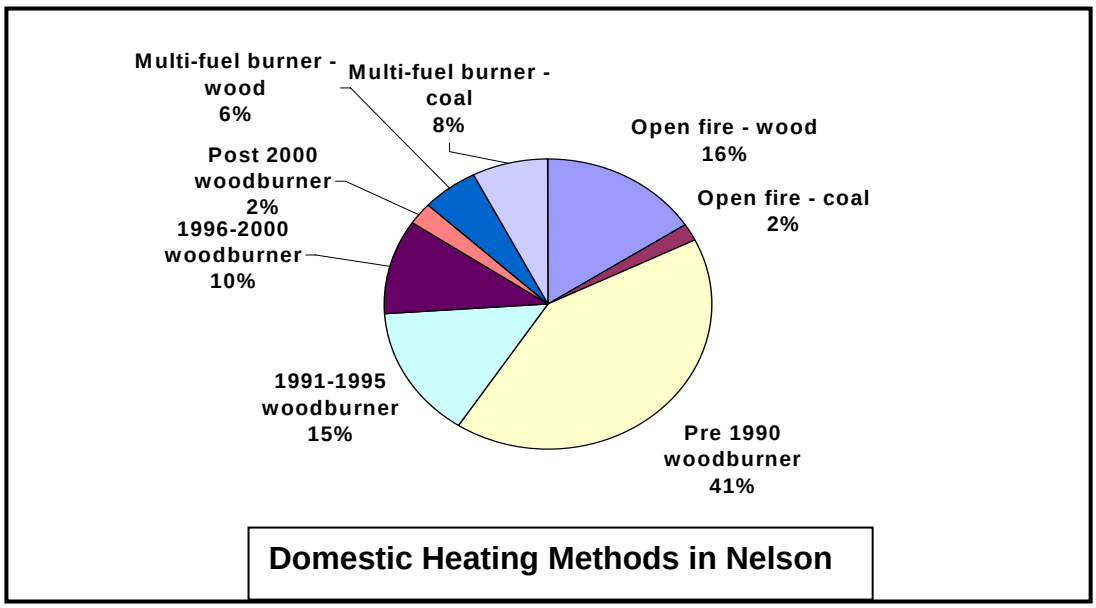
- PM_{10} guideline levels were exceeded on 81 occasions, or 51% of the days monitored;
- PM_{10} was frequently above levels that have been demonstrated to cause adverse health effects;
- when the benzene concentration was averaged over a year it was likely to comply with the acceptable level, however this guideline level may be reduced to 3.6m^{-3}µg by 2010 in which case it may become a concern.



- Regular monitoring has been carried out since 2000, with recordings from 2001 using new technology and data from a Nelson-specific Meteorological Data Set.

2001 - Air emissions inventory

- An inventory of air emissions assessed the types and volumes of pollutants discharged. This study confirmed:
  - the most likely source of PM_{10} and $PM_{2.5}$ is domestic fires;
  - domestic heating is also the main contributor of benzene, NO_2, CO and volatile organic compounds. Note that these proportions vary across different areas, known as airsheds, of Nelson.



- It also determined that almost two tonnes of PM_{10} was produced in Nelson per day. Of the 78% of PM_{10} contributed by domestic hearing, 18% of this was coming from open fires, 41% from burners installed before 1990 and the rest from other wood and multi-fuel burners.

2001 - Health study

- The health study in 2001 concluded that total health costs associated with Nelson's air pollution is in the order of $10.5 - $16.5 million per year, including approximately eight premature deaths and 14 hospitalisations a year.

2002-2004 findings

- For the winter of 2004 another monitoring site was established at Nayland Pool and a new site is now also located in Tahunanui.
- An analysis of air quality management options, incorporating up-to-date monitoring results, was assessed under section 32 of the RMA prior to drafting and notifying the Proposed Air Quality Plan in 2003.

PM_{10}

- PM_{10} guideline values have been regularly exceeded on peak winter days and when daily values are averaged over a year.
- During winter, concentrations more than three times the guideline level have been recorded.
- Although sampling has not been taken daily at Stoke and Tahunanui, trends show that Tahunanui levels are around 83% of those at the St Vincent St site, and Stoke levels are around 67% of the St Vincent St site.
- Particles of less than $PM_{2.5}$ are of concern because they can lodge deeper into the lungs. Due to the high use of wood in Nelson, approximately 90% of our PM_{10} is within the $PM_{2.5}$ category.
- The adverse health statistics predicted in 2001, the 8 premature deaths and 14 hospitalisations a year, may be under-estimated by a factor of four or five given the results of more recent research.

Localised and synergistic effects

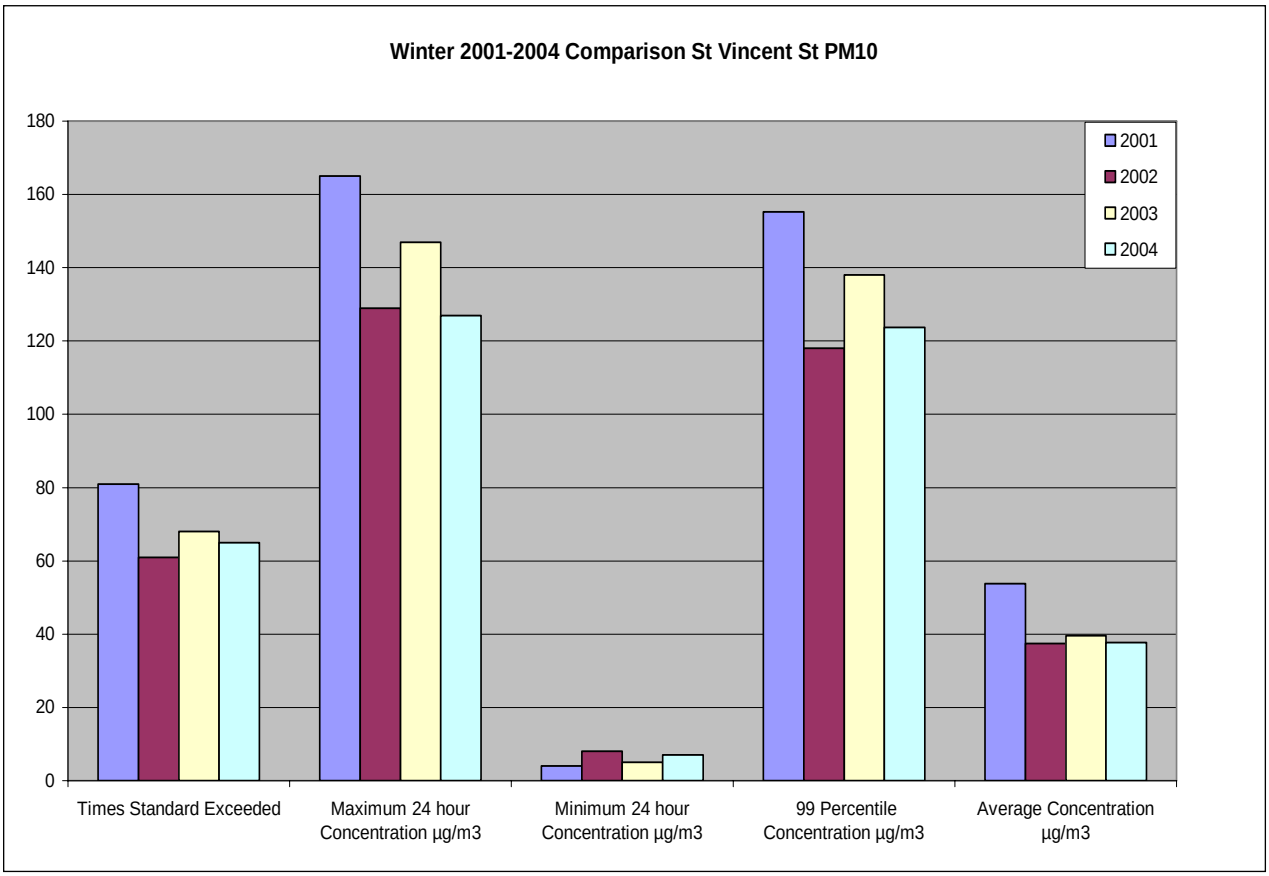
- Localised pollution occurs where there are areas of high traffic volumes or where congestion might have increased levels of NO_2 and CO. Any synergy between pollutants is likely to be minor. This includes any enhanced effect when two or more pollutants combine.

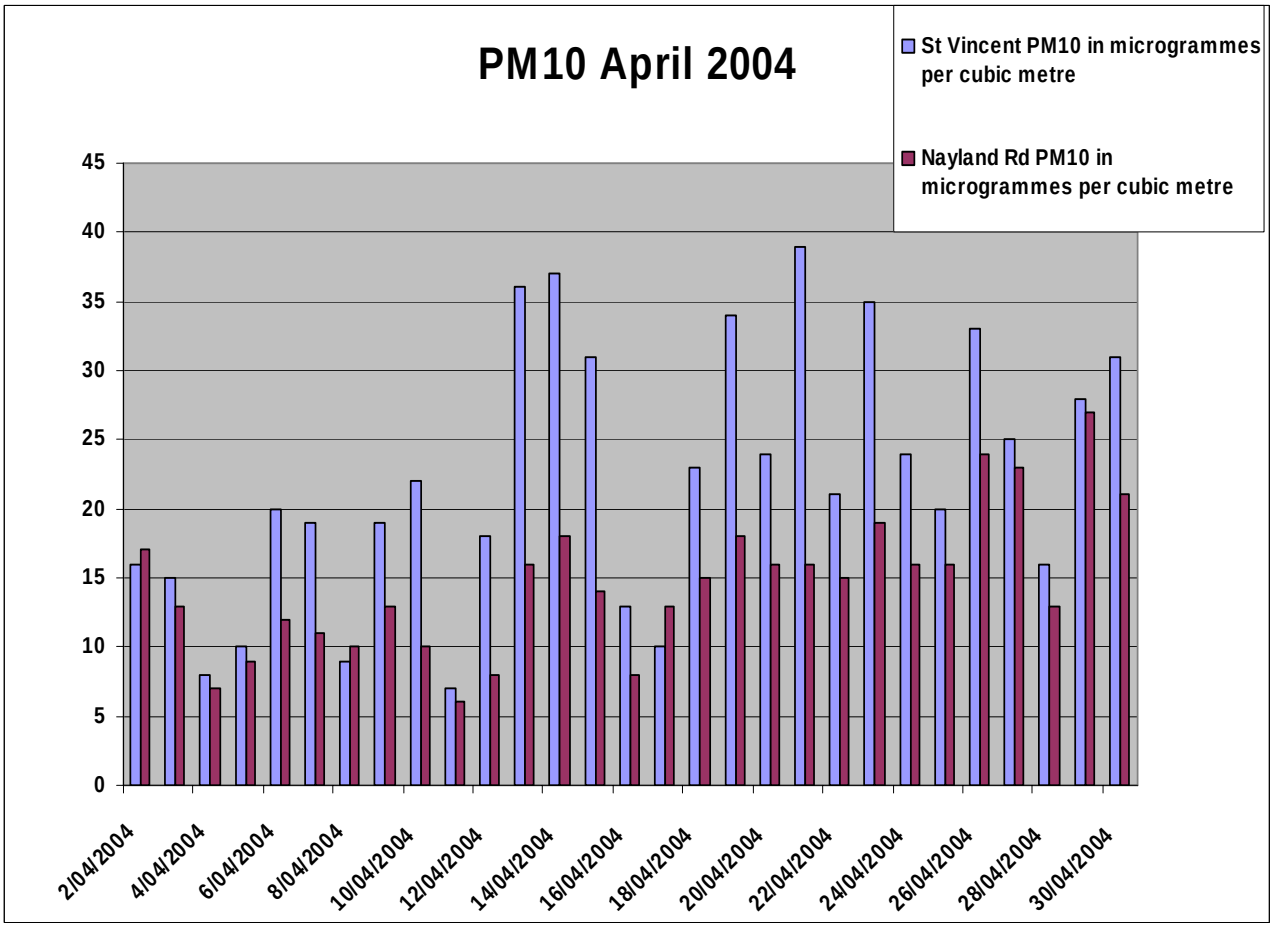
Odour and dust

- Odour can be detected at a level too low to affect health but may still be felt to be objectionable. Individual reactions to odour vary greatly.
- Dust particles larger than 20 microns are typically a nuisance through soiling surfaces, but are not a health concern.

Visual effects and ecosystems

- Visual impacts can be localised, including from backyard burning, or wider where there is an inversion layer trapping smoke, or impose on distant views such as outlying mountains. These effects can alter people's perception of Nelson's attractiveness.
- Ecosystems can be harmed by air pollutants. Currently, it is believed that, apart from abrasive blasting near water bodies, there are no processes of a scale large enough to cause concern to ecosystems in Nelson.


Winter 2001-2004 Comparison St Vincent St PM10
180
160
140
120
100
80
60
40
20
0
2001
2002
2003
2004
Times Standard Exceeded
Maximum 24 hour Concentration µg/m3
Minimum 24 hour Concentration µg/m3
99 Percentile Concentration µg/m3
Average Concentration µg/m3


PM10 April 2004
St Vincent PM10 in microgrammes per cubic metre
Nayland Rd PM10 in microgrammes per cubic metre
45
40
35
30
25
20
15
10
5
0
2/04/2004
4/04/2004
6/04/2004
8/04/2004
10/04/2004
12/04/2004
14/04/2004
16/04/2004
18/04/2004
20/04/2004
22/04/2004
24/04/2004
26/04/2004
28/04/2004
30/04/2004

Past actions other than monitoring

- During the winter of 1999, when pollution levels were high, Council published weekly results in the Mail, gave results over the radio and distributed leaflets describing how to best operate solid fuel heaters to minimise smoke production. Similar actions have continued.
- Council conducted a public opinion survey in 2000 which revealed strong support for greater control over fires used to heat homes and for backyard burning.
- In 2001, with respect to the revised maximum level for $PM_{10,}$ Council resolved that:
  - where air quality was worse than the acceptable level, Council would aim to enhance air quality;
  - where air quality was acceptable or better, Council would aim to maintain the existing air quality.
- Council recognised that major improvements in air quality would require, among other things, the removal or upgrade of many domestic hearing installations, including some that are quite new.
- In 2003 Council set the PM_{10} level of 50 µg m^3 as a medium term goal to be achieved by 2020, with a longer term target of 33 µg m^3. Note that the national standard now requires 50 µg m^3 to be achieved by 2013.

Action status in 2003/04

- In response to Council's awareness of air pollution in Nelson, and in addition to continuing its current air monitoring regime and preparing the draft Air Quality Plan, we have adopted a package of measures. This assessment had to take into account a wide range of issues, including Council's long term strategies and the large number of public submissions received to its public discussion document.
- The package finally adopted includes the following:
  - introduction of emission and efficiency standards for new burners, but not requiring compulsory change of old burners by a certain date;

- phasing out the use of open fires by July 2008, with a financial assistance programme to address the social impacts in both owner-occupied dwellings and in rental accommodation;
- preventing the installation of new burners or fires in homes except where they are replacing an existing legally established burner. This restriction will be reviewed in the future if suitable advances in burner technology are demonstrated;
- education and promotion programmes;
- banning outdoor burning in the urban area and in the Higher Density Small Holdings Area, with minor exemptions;
- introducing rules to regulate large scale fuel burning appliances;
- using advocacy to central government and Council actions to reduce net transport emissions;

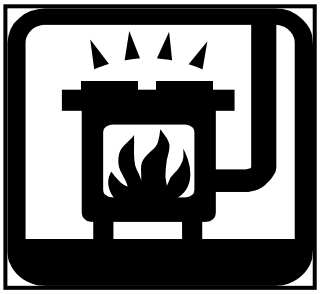
- While this strategy is aimed at reducing PM_{10}, it will have the added benefits of reducing other emissions as well. Further details include:

Proposed Air Quality Plan (AQP)

- The Air Quality Management Plan was initially drafted in 1999. Once more comprehensive assessment of pollution levels and outcomes had been determined, the draft plan was rewritten and publicly notified in August 2003.
- Preparation of the plan incorporated an analysis of air management options and the costs and benefits of all of them.
- It seeks to promote the sustainable management of the air resource and contains objectives, policies and rules dealing with the significant air quality issues affecting Nelson.

- The AQP contains significant controls on domestic fires and burners and outdoor burning in urban areas and covers a range of pollution types, including odour, dust, toxic emissions, industrial processes, abrasive blasting, other contaminants like NO_2 and CO, discharges of pesticides and other agrichemicals, and rural burning.
- The AQP has interim effect even though it is not yet operative. It will go through the planning process, with the aim of becoming operative by the end of 2005. Once its provisions are confirmed it might be integrated into the combined NRMP rather than remaining a separate document.
- For now, Council has notified nine variations to which submissions closed in November 2004 with hearings being held in May 2005.

Clean Heat – Warm Home Programme



- Council funds an open fire replacement scheme for residents who have a Community Services card and use an open fire in the main living area as their main source of heat.
- An information brochure is available to the public about the scheme and who qualifies.
- The Long Term Council Community Plan includes $1.3million for this programme between 2004 and 2007.

Approved Burners

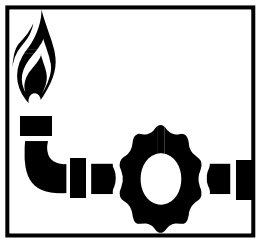
- Council approves the installation of only those wood burners that have an emission rating below 1.5gms of total suspended particulates per kilogram of fuel burned and a heating efficiency of at least 65%.

Good Wood Suppliers Scheme

- Council has established this scheme which promotes firewood suppliers who agree to support Council's clean air policies.

Other initiatives

- Council also encourages associated initiatives such as conserving energy, using clean heat to heat homes, recycling and cycling or walking.



Future work programme

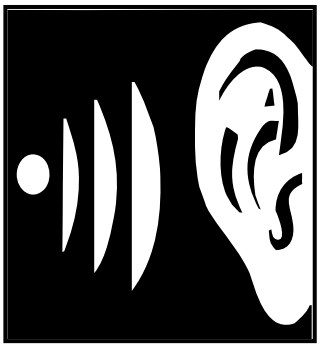
- As research continues, guideline values might change, new standards be introduced and some pollutants and standards might be identified as having greater or lesser health effects than previously thought. We will respond to these changes as appropriate and monitoring will continue to fill the gaps in our knowledge.
- All new air quality monitoring will continue in compliance with the new national standards. The results of monitoring go straight from Cawthron Institute to the newspaper and radio stations for public information.
- The national standards will, from 1 October 2005, require air pollution data to be publicly reported and whether the standards are being exceeded. Where they exceed standards, Council has to takes steps so it does comply by 2013. This is likely to mean some changes to the AQP to ensure the target date can be met.
- When deciding resource consents, Council must also now consider the combined result of all activities in Nelson and how they affect air quality. After 2013, Council will not be able to grant new discharge consents for the emission of fine particles in areas that exceed the standard.
- The Ministry for the Environment is investigating establishing a national $PM_{2.5}$ guideline in the near future and is promoting its measurement in the meantime.
- Council will consider whether to integrate the Air Quality Plan into the Nelson Resource Management Plan once all the AQP provisions are confirmed.
- New ideas and practices published recently will be assessed for possible use, including the best practice guides by the Ministry for the Environment.

Noise

Noise is a widespread pollutant. It travels long distances and one source can affect large areas of the community. People vary in their tolerance to different sounds.

Rules in the NRMP prescribe acceptable levels of noise.

What is monitored?



- The limited noise data available at the time the NRMP was compiled is now being comprehensively expanded.
- An annual survey covers ambient noise levels within zones and at zone boundaries for the port and the airport. This provides valuable data on background noise levels using continuous recording equipment.
- Noise was assessed before and after the construction of Whakatu Drive to find out how noise levels changed.
- Specific events in Council parks are also monitored.
- If monitoring identifies any problems or inconsistencies with the NRMP then the plan could be during the plan review. If an urgent change is needed then a plan change would take place.

Port Nelson and Nelson Airport

- The special characteristics of port and airport noise have led to the development of NZ standards for managing it.
- Modelling has allowed noise contours to be identified within Nelson showing exposure to these sources of noise.
- To confirm the computer modelling is accurate, and that they are complying with the NRMP requirements, both Port Nelson Ltd and Nelson Airport Ltd monitor their own activities and keep a register of complaints.
- They also convene environmental committees which provide an avenue to discuss noise complaints.
- The port is unable to meet the noise standards required by the NRMP. Because of an appeal, small sections of the NRMP which relate to the potential for conflict over noise arising between the port and near neighbours are not yet operative. These plan provisions will soon be addressed in a proposed variation to the NRMP as a result of the appeal process.

Future work programme

- Additional monitoring work in and around the port and airport is aimed to confirm the results of self-monitoring.
- The monitoring of noise at events held in Council parks will be developed into a coordinated programme, rather than being ad hoc.
- Council will implement measures to minimise major noise sources where these are identified.
- Ongoing monitoring will confirm NRMP provisions and assess their effectiveness.
- The appeal process and subsequent variation to the NRMP will see the section dealing with noise at the port resolved and operative.

Land

Our land resource

Since pre-European settlement, the land cover in New Zealand has changed dramatically, particularly at lower elevations within valleys and along coastal plains. Much of the original vegetation has been cleared and replaced with introduced grass, crop and tree species. Nelson is no exception to this.

While extensive tracts of original vegetation remain along the Bryant Range within DoC administered areas, and within Council water supply protection areas, little remains of the original vegetation cover elsewhere.

During early settlement, cleared land was developed for pastoral agriculture. Not all the land originally cleared proved suitable for pastoral uses due to low productivity, erosion and invasion by weeds. Some previously cleared land has reverted to shrubland and over time to forest. Other land has been taken up by orchards, forestry plantation and urban uses.

Approximate Land Split in 2000

Rural land – 91%	: Conservation and Council land – 43%
	: Commercial forest (ex state forest) – 21%
	: Small holdings – 4%
	: Rural balance – 32%
Urban zones – 9%	

Over more recent years, dairy farms on the flats at the head of Nelson Haven and sheep and cattle farms on the more fertile tracts of hill country are generally declining in number. Urban settlement and the development of rural-residential land holdings is increasing.

Biodiversity and land use cover

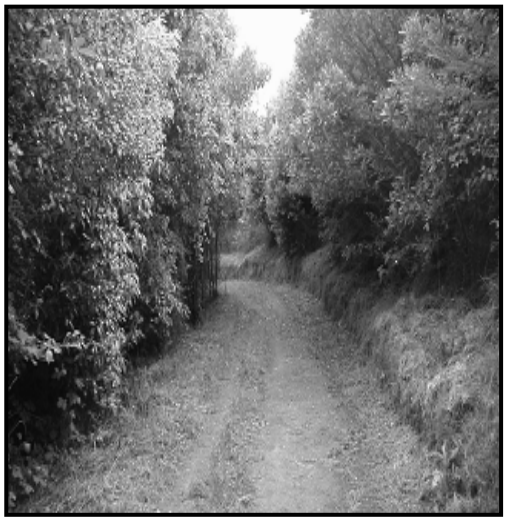
- Biodiversity decline was recognised by the Ministry for the Environment in its first national SoE report in 1997 as New Zealand's most widespread environmental issue.
- In mid-2000 government announced funding for the implementation of the NZ Biodiversity Strategy over the next five years.
- The Ministry for the Environment is currently in the process of developing a national policy statement which will provide national direction for sustainably managing indigenous biodiversity on private land.
- Good baseline information has been accumulated on land cover in Nelson under Council's aerial mapping programme.
- This programme was initiated in 1999 and data has progressively been downloaded into the Council's GIS system.
- From this information we can assess:
  - changes in land use;
  - protected areas;

- habitat fragmentation; and
- the extent of visible soil erosion features.

- This information base has now been enhanced by the recent acquisition of the Ministry for the Environment's classification system – the Land Environments of New Zealand (LENZ) system. This classifies and maps environments with respect to climate, soils and landforms.

Significant areas of native plants and animals

- Remnant native vegetation on the lowlands tends to be fragmented and may be exposed to stock grazing and/or pests. Important sites of significant indigenous vegetation or habitats of indigenous fauna are identified in the NRMP as Areas of Significant Conservation Value (ASCV).
- Council reviewed all the ASCV identified within Nelson in 2000. They were reassessed in terms of their character, significance, threats and management issues.
- The criteria used to determine the significant areas were themselves considered and found to be ambiguous and lacking in detail.
- The criteria have subsequently been made clearer and easier to apply, and rare communities, species and national lists of threatened species are listed in the NRMP.



- A desk-top assessment of other sites which could also potentially qualify as ASCV has been undertaken in recent years and further field verification surveys are programmed for 2005 and 2006.
- Part of the funding from central government under the Biodiversity Strategy targets boosting the protection of biodiversity on private land.
- Some ASCV on private land in Nelson are voluntarily protected by their land owners, for example the mixed broadleaf forest near Cable Bay which is covenanted.
- Council is developing a number of initiatives with land owners to encourage protection and recognises that private protection agreements and covenants supersede the rules in the NRMP.
- A dedicated Rural Liaison Officer also carries out work with rural land owners on natural resource related issues.
- In some cases, incentives such as assistance with fencing or pest control, rates relief, addition of development rights, provision of information or facilitation of activities by other groups may be involved.

Pests

- The Joint Regional Pest Management Strategy was first prepared by Council with TDC in 1996. It adopts different management strategies in relation to different pests, covering either total or progressive control or surveillance.
- Land owners are required by the strategy to destroy or prevent the spread of listed plants at regular intervals, and these plants are banned from sale, propagation and distribution.
- Other components of the strategy relate to plant clearance at property boundaries and the surveillance of animal pests.

- Not all harmful organisms are addressed in the strategy. For many pests it is not appropriate, necessary or reasonable to include them in the strategy. Other management responses may apply. Sometimes Council carries out small-scale management programmes for specific unwanted organisms.
- For other pests, national intervention is appropriate, such as DoC's responsibility for pest fish such as Koi Carp and Gambusia. For other pests, control is best left to individuals.
- Council encourages interested groups who wish to prepare their own pest management strategies where this is appropriate, and where it does not detract from integrated pest management in the district.
- Council and TDC reviewed their joint strategy in 2000 and changes have been made to it since it first came into force, mainly the addition of new pests.
- A number of objectives in the strategy have not been met because the eradication of widespread plants is extremely difficult. It is regularly updated as needed to cover newly arrived pests.
- The joint pest strategy is due for a its next full review by June 2006.

Riparian Management

- Council has identified all riparian margins, the edges of water bodies, and prioritised them for potential acquisition.
- Particular attention has been given to the Wakapuaka River where investigations focussed on the biological state of the river in relation to adjoining land uses, including the plantation forestry cycle.

Public access

- Council, with the assistance of other organisations, began mapping the location and extent of known public access along rivers and the coast in 2000. A complete set of maps has been produced.
- These maps require continuing updates to reflect changes such as new esplanade reserves and strips.

Erosion

- Activities that loosen or expose bare soil like vegetation clearance, soil disturbance and earthworks are the major activities that cause accelerated soil erosion.
- The aerial mapping undertaken by Council over the years has provided very useful data on the extent of soil erosion.
- The development of a regional soil erosion and sedimentation plan has resulted in its formal incorporation into the NRMP. The Land Management Overlay in the planning maps now defines those areas where controls on land management practices and activities are particularly important.

Waste

- A waste management plan for Nelson was released for public consultation in December 2004, and adopted in early 2005.
- Council has recently adopted a wider programme to provide kerbside recycling services within the city.
- The total annual amount of waste disposed at the York Valley landfill has increased since it opened. A management plan has been prepared for the York Valley site.
- Methane gas is being vented at the old Atawhai landfill, which closed in the 1980s, and the groundwater there is monitored. Remedial measures have occurred as needed. When the Wood stormwater system was upgraded in 2001, a trench was dug through the old landfill to allow further monitoring of groundwater quality and leachate production.
- The GIS system includes information on contaminated and potentially contaminated sites. Each potentially contaminated site is assessed to confirm whether it is contaminated. Old underground storage tanks at service stations are replaced with new above or below ground tanks. Thirty such tanks have been removed in recent years.
- Council plans a review of all potentially contaminated sites to give effect to new Ministry for the Environment guidelines for assessing and managing contaminated sites and the ANZEC water quality guidelines.

Amenity values

- The NRMP contains a variety of controls which relate to amenity values, including urban amenity, landscape, riparian and coastal margins and noise. Controls through the NRMP aim to reduce conflict between adjoining uses.
- Council has identified the following significant areas, some of which are protected:
  - heritage buildings, trees, and landscape features;
  - conservation and cultural areas (including archaeological sites);
  - riparian and coastal margins.

Development and hazards

- The NRMP contains a range of provisions to provide for development while reducing impacts on natural values and the exposure to hazards. Development in hazard-prone areas is also avoided.
- Council has expanded its database over recent years on the nature and extent of hazards by:

- recording during and after events, including oblique air photography, flood debris lines and coastal erosion;
- resurveying the benchmarks on Tahunanui beach;
- carrying out a high accuracy traverse of the existing benchmarks of the Tahunanui landslide; and
- undertaking a detailed investigation of fault hazards in Nelson including the trenching of the Waimea Flaxmore fault system;

- Particular features and environments are identified within the NRMP to prevent development occurring at the expense of natural and amenity values, for example along ridgelines, or in conservation areas.

- Specific studies in recent years have identified potential development options in specific areas like Nelson North and Hira and at Tahunanui.
- Council implements a number of asset management plans to control development and its services in relation to water supply, solid waste disposal, stormwater and flood protection, roading, community facilities and parks and reserves.

What else is happening

Freshwater Plan Change and Air Quality Plan

- These two resource planning documents were publicly notified in 2004. It is anticipated they will have spin off benefits for the management of land including soil resources including:
  - riparian margins, stormwater and wetlands management through the water plan change;
  - controls on activities within riverbeds, including structures through the water plan change; and
  - spray drift management through the air plan.

Ministry for the Environment

- The Ministry is assessing the application of bio-solids to land as a potential national environmental standard.
- MfE has developed a national policy statement on biodiversity to provide direction for sustainably managing indigenous biodiversity, including on private land.
- The Land Environments of New Zealand (LENZ) classification system was released in 2003. It provides a classification of environments that is nationally consistent, works at a range of scales and provides the ability to predict the potential character of areas where natural ecosystems have been substantially modified, such as by land clearance, or replaced by introduced plants and animals like pests and weeds.
- The ecological footprint concept has been developed for each region in the country to measure the total amount of productive land required to support each population. This footprint measure can be used as an indicator of sus-

tainability performance. The footprint for Nelson questions our sustainability, due primarily to our comparatively small geographic area and urban population. This ecological assessment work is ongoing.

Council initiatives

Biodiversity

- Council has initiated a number of projects aimed at enhancing biodiversity within the city and supports other projects that are privately led.
- A significant project is under way at the Brook Waimarama Sanctuary which has been initiated by a private trust. This involves development of a mainland island nature reserve, in the Brook Waimarama Sanctuary. The area is the formerly Council-owned Brook Valley water supply catchment which was fenced off for the reserve. Council has supported this venture through funding and staff input.
- Council has worked hard over the last twenty years to plant the central city backdrop and acquire land in the Maitai Valley. A long-standing school planting project has improved the Marsden Valley reserve.
- Ecofest has become a significant festival providing a wide range of information about environmental protection and enhancement. It is run each year by the Council and TDC.
- "*Living Heritage : Growing Native Plants in Nelson*" is a guide published in 2003 by DoC and the Council describing eight different lowland ecosystems in Nelson. It provides advice on planting and lists native species appropriate for each ecosystem with the Nelson area.
- Under the Tasman-Nelson Regional Pest Management Strategy, Council assists individuals and community groups to control pests in their local area.
- Council's Rural Liaison Officer provides free advice to assist rural property owners management of the environment including native plant establishment.
- Council has helped with the costs involved to establish and maintain covenants and to ensure the protection of stream margins.

Growth

- A major study (NUGS) looked at historical and current growth patterns in Nelson, with projections for future trends. The implications for managing future growth over the next 20 to 50 years are still being determined.
- Growth patterns in Nelson North have been assessed and residents surveyed to find their preferred strategy for future development. The intensification of small lot developments is a growing trend.

Future Work Programme

Biodiversity

- Council will complete its surveys of river margins by including structures.

- Extending field verification of Areas of Significant Conservation Value is programmed for 2005 and 2006, and all sites will be reviewed after that.
- River margins surveys will be considered in terms of their ecology and river bed levels. These surveys would cover high priority areas first.
- An integrated assessment will look at changes in rural land uses, extent of plantation forest, extent of erosion features, extent and changes to indigenous vegetation, connectivity of indigenous vegetation and habitats, extent and changes to areas of significant conservation value, extent of land reversion, health and the rate of regeneration of indigenous vegetation.
- The national policy statement on Indigenous Biodiversity requires Council to consider more ways to foster the protection and enhancement of indigenous biodiversity in this area. This strategy will be implemented over time in Nelson as funding becomes available.
- For now, Council will continue to survey significant natural areas, and develop strategies to maintain and enhance natural biodiversity.
- Council is preparing a biodiversity strategy. Consultation and drafting this strategy will take place during 2005. After this, specific strategies will look at riparian margins, the Maitai River and revegetation of the hills behind Nelson.
- Similar strategies have been developed elsewhere in the country, including the Port Hills in Christchurch and for parts of Wellington and Waitakere cities.
- Council will consider preparing promotional literature, including guides to protect biodiversity and assist with fencing costs associated with priority riparian margins.
- Council has made contributions in the past to Sustainable Management Fund projects such as the Waimea Estuary investigation, WAIORA computer modelling of the impact of water abstraction, and assessments of integrated catchment modelling. Council will continue to contribute as appropriate to future projects like these.

Growth and amenity

- Open space in the city centre will be reviewed.
- Council aims to survey and record heritage and amenity items within the city, and assess any changes in their state.
- Council will look at database options to assess the extent of urban land uses and prepare inventories of available land in each zone and activity class.
- Council will be involved in work with the NZ Centre for Ecological Economics to take part in a regional futures modelling project. This project follows the ecological footprint work and seeks to improve understanding of the economic, ecological and social costs and benefits associated various future development options. It is a government-funded research project and will bring together a number of community representatives, business leaders and policy makers.
- Associated strategies will be developed by Council, like the Nelson Land Transport Strategy during 2005.
- Kerbside recycling has recently been re-introduced and will be regularly reviewed.

Public Access

- The public access maps will be regularly updated by:
  - providing draft maps to the public;

- searches of subdivision records and property titles to locate and record easements and agreements which do not appear on survey plans;
- recording changes so maps can be continuously updated;
- compiling summary statistics;
- possible provision of summary maps and guides for particular rivers, perhaps to advise people of where access rights exist, where land owner or occupier consent is needed and who to ask;
- funding provision in community and annual plans, where appropriate, to purchase access links.

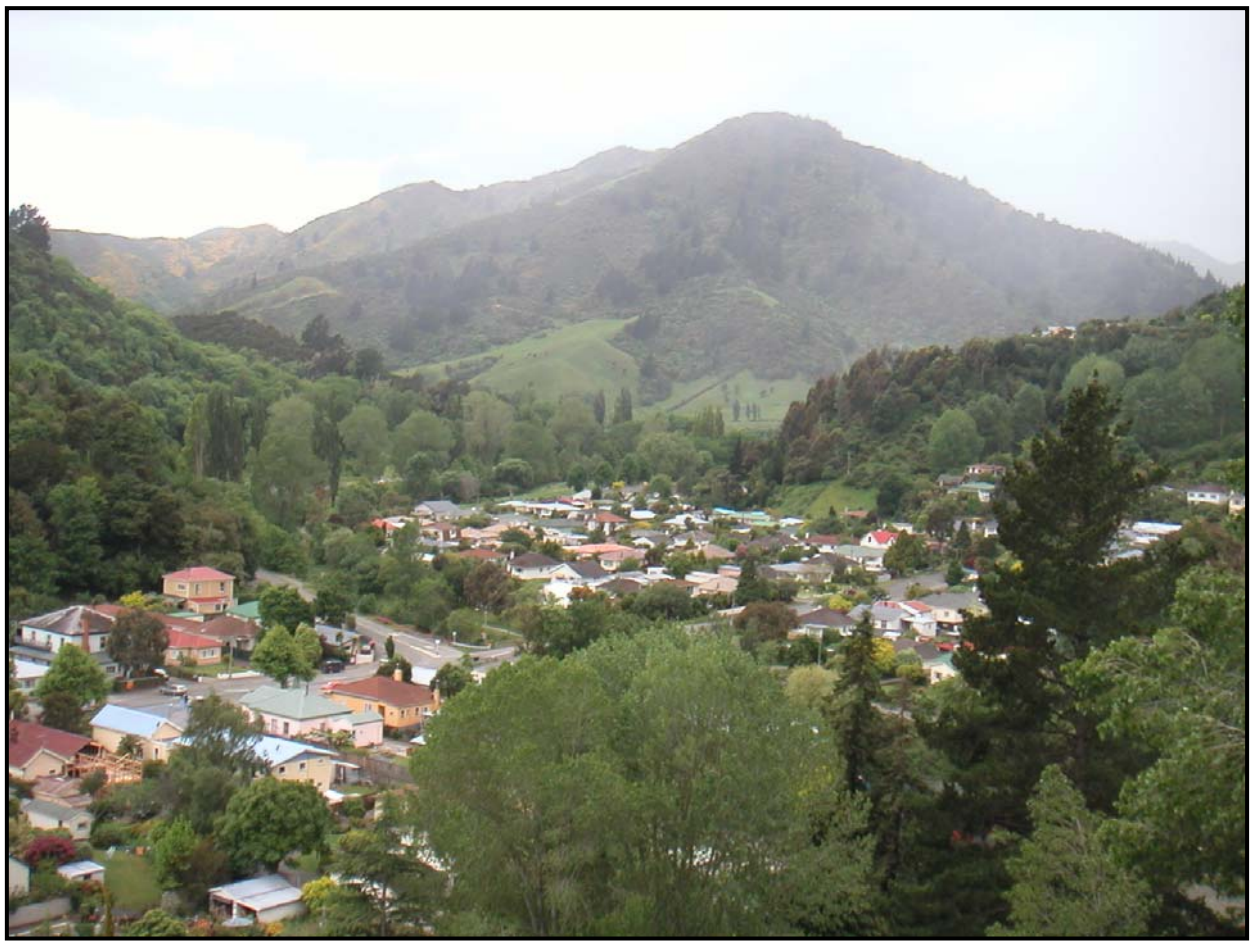
Pests

- The Tasman-Nelson Regional Pest Management Strategy will be reviewed by June 2006. It will be revised to:
  - link objectives to the specific stage of infestation that each pest has reached; and
  - target pests at early infestation stages to reduce pest numbers and distribution with the ultimate goal of eradication.
- Under the strategy, Council will carry out inspections and require control on private land.
- Widespread pests with a significant adverse effect will be contained to avoid further distribution.

Hazards and waste

- Two Stage 1 environmental performance indicators which assess erosion have been confirmed by the Ministry for the Environment and can be implemented in future monitoring regimes. These are the susceptibility to hill country erosion and changes at slip sites.
- Council will continue to expand its database on hazards by:
  - resurveying the benchmarks on Tahunanui beach every few years;
  - completing the investigation the Waimea Flaxmore fault system;
  - continuing to survey rural rivers to assess bed and bank stability and likely flooding potential.
- Council plans a review of all potentially contaminated sites during 2005 and 2006.

Plan Performance



Plan performance - overview

- This section considers how the NRMP is achieving the environmental outcomes set for it.
- Up until now, emphasis on evaluating the NRMP has been on implementing its provisions. It has recently been reviewed and made operative. New plan changes and associated plans have been developed and are going through the planning process towards finalisation. These are the Air Quality Plan and freshwater plan change. Evaluation of the NRMP will now turn to assessing its performance and its impact on the environment. The relevant provisions of the RPS are considered as part of this evaluation.

Feedback System

- One of the main ways of assessing the performance and effectiveness of the NRMP is to evaluate feedback from the Councils consents, complaints and compliance monitoring systems.
- Another way is to look at baseline monitoring of natural and physical resources to reveal trends.

Resource Consents

- Applications for resource consents provide information on what activities are being proposed in the Nelson area. Under the NRMP, these activities might have potential negative effects on the environment. They might also be inappropriate in the proposed location or zone.

Compliance

- Resource consents need to be monitored to ensure compliance with any conditions on the consent. The success of this compliance system relies heavily on the depth and extent of its coverage.

Complaints

- Complaints can be lodged with Council by members of the public with respect to any activity taking place in the environment.

Other Sources

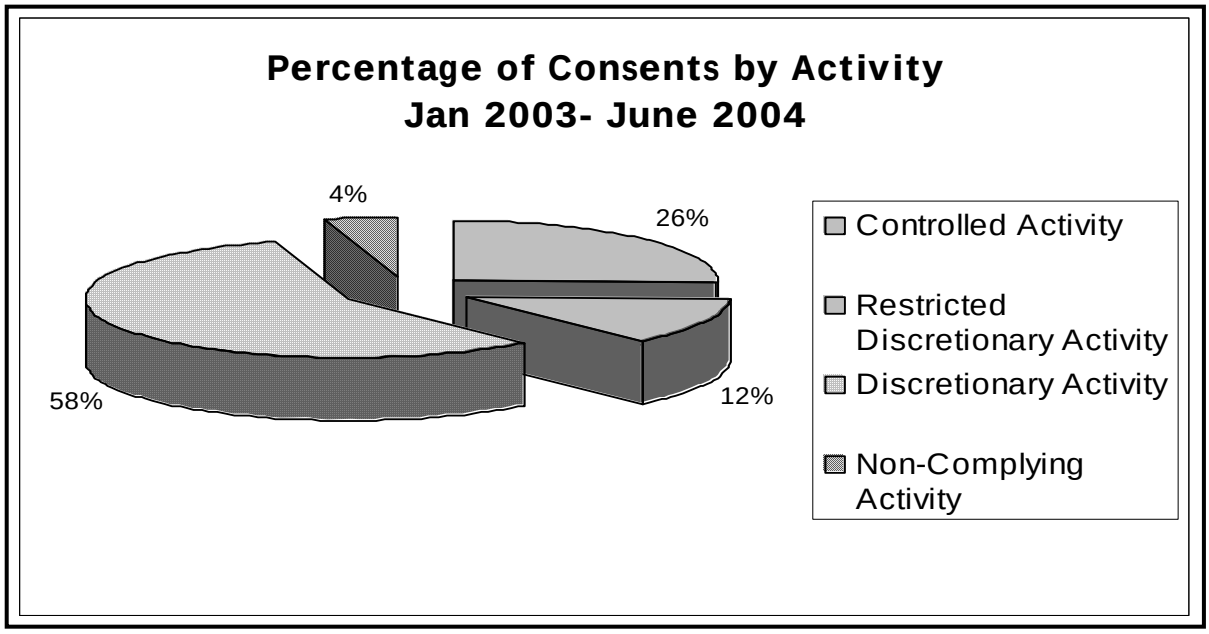
- Consents, compliance and complaints data do not tell us directly what is happening to the environment. This is because consents tend to be site specific and complaints tend to be one-off events. However, when looked at in total they are more useful.
- Feedback data is therefore supplemented by information from other relevant sources where possible.

Consents

- By definition, resource consent is usually required where a rule in the NRMP is transgressed in some way.
- It is useful to know what rules trigger consents and how regularly. This analysis identifies which rules most commonly require consents. Later changes to plan provisions might reduce the number of consents and simplify administration of the plan or highlight areas which need more consideration to achieve good environmental outcomes.

Types of consents

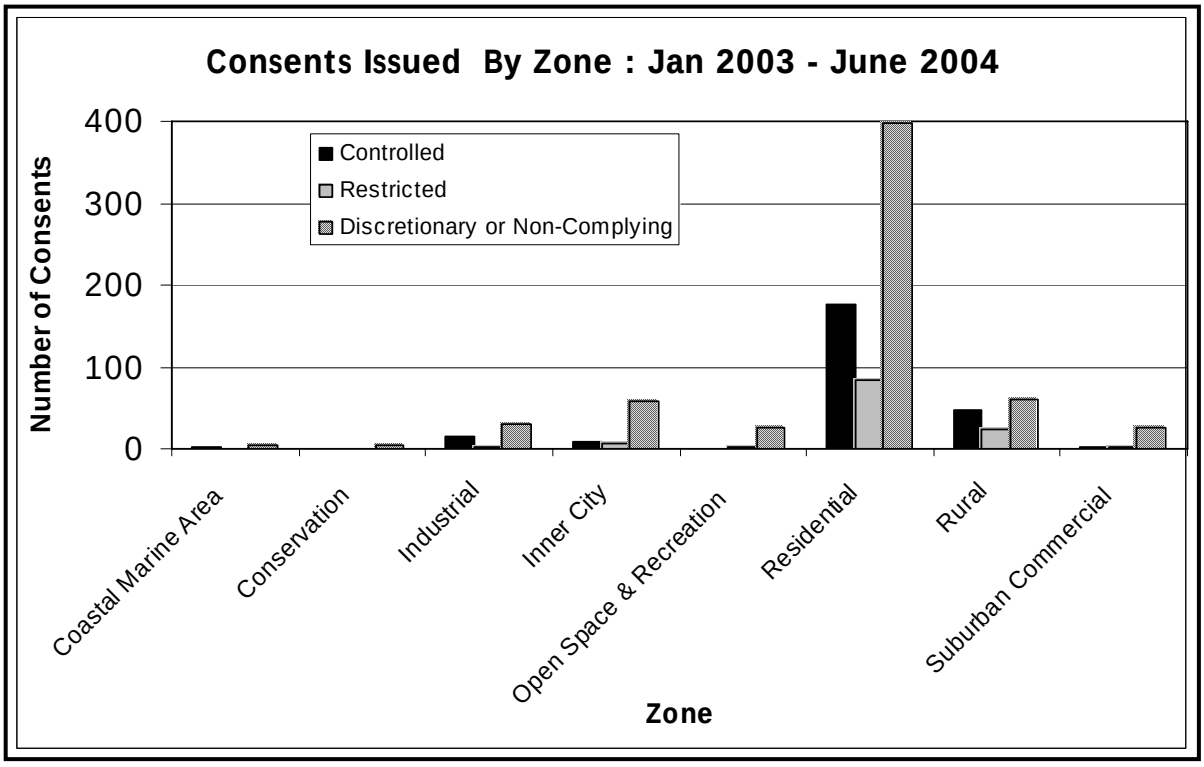
- A general analysis of applications for consents over the last two years reveals the following general findings:
    - About one quarter of the applications were for controlled activities. Controlled activities are those for which consent must automatically be granted but Council may impose conditions as a part of the consent;
    - There were a small number of applications for restricted discretionary activities. These applications may be granted, but if so, Council can only impose conditions in relation to specific matters which are listed in the NRMP;
    - Most applications have been for discretionary activities. Discretionary activities comply with provisions in the NRMP because the activity is generally suited to the zone, but the activity has to be assessed to determine whether it is suitable to that particular site. Consent may be granted and any condition attached;
    - Very few applications were for non-complying activities. These activities directly contravene a plan rule. Again, they can be granted and have a condition attached;
    - Conditions able to be imposed by Council are controlled under the RMA and are wide-ranging. They aim to avoid, remedy or mitigate any adverse effects of the activity on the environment.



Consents by zone

- The analysis of consent applications can be broken down into each zone the consents were applied for. This analysis indicates the following trends:
    - o by far the greatest number of requests for consent were made in relation to the Residential Zone and these were for discretionary activities. This is discussed further below;
    - o the Rural Zone is the only other zone to feature in any significant way and again is assessed below, except for applications for discretionary consents in the Inner City Zone which dealt primarily with signs and parking/loading, and, to a lesser extent in the Industrial Zone where no stand-out rule was involved.

Residential Zone

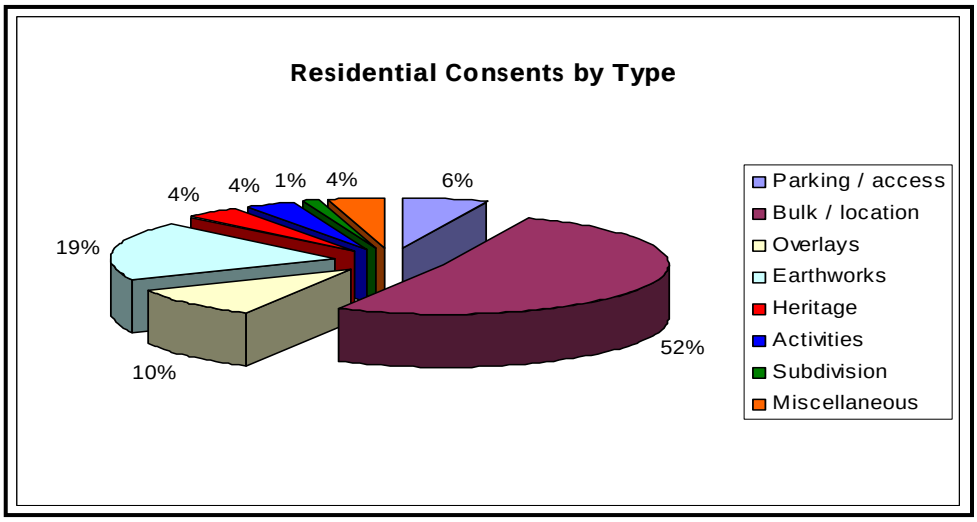


Types of consents

- The Residential Zone has been evaluated further. It is clear from the figure above that the vast majority of applications deal with the bulk and location of structures to be constructed or redeveloped within the zone.
- Bulk and location rules deal with such matters as building over drains or on road reserve, the location of decks and terraces, building height, site area and coverage, yards, relocated buildings, and daylight admission.
- The different rules affected by consent applications can be evaluated in terms of what degree the activity transgressed the NRMP, including looking at whether it was a controlled activity.

Controlled activities

- These are automatically granted consent. However around half of those applied for the in Residential Zone, 91 in all, relate to rule REr.61. This deals with earthworks.
- The only other stand-out rule for controlled activities related to the controls over front yards and being allowed to build within them.

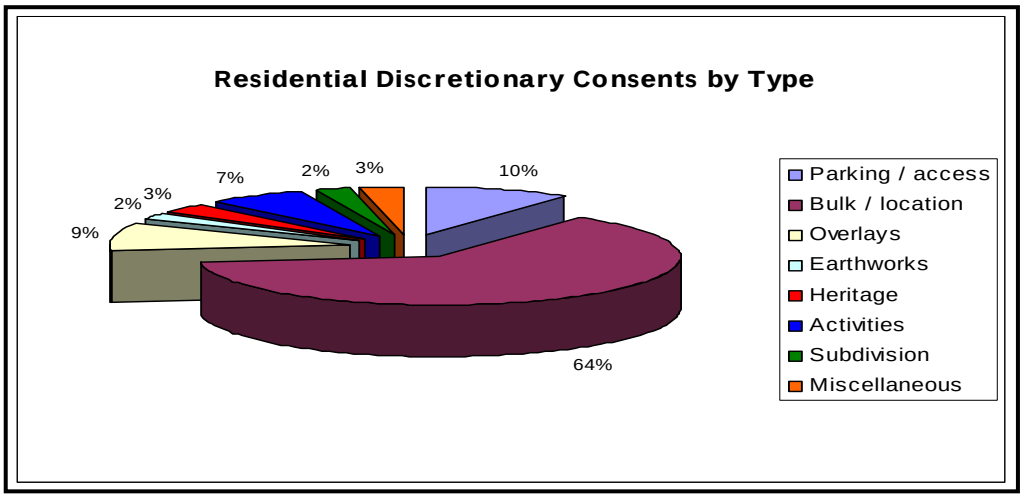


Restricted discretionary activities

- Again, the stand-out rule under this type of application relates to REr.61 which includes controls on earthworks.

Discretionary activities

- Just over one quarter of the applications for discretionary consent relate to daylight admission, rule REr.35.
- The rules next most affected deal with the provision of yards. These were other yards followed by front yards.



- The controls over building decks, terraces, verandas and balconies and also site coverage also stand out as rules which are consistently queried.
- All of the rules above deal with bulk and location requirements.
- A relatively large number of applications are also being made for non-residential activities, though this is less than the combined number transgressing the rules governing parking and access.

Non-complying activities

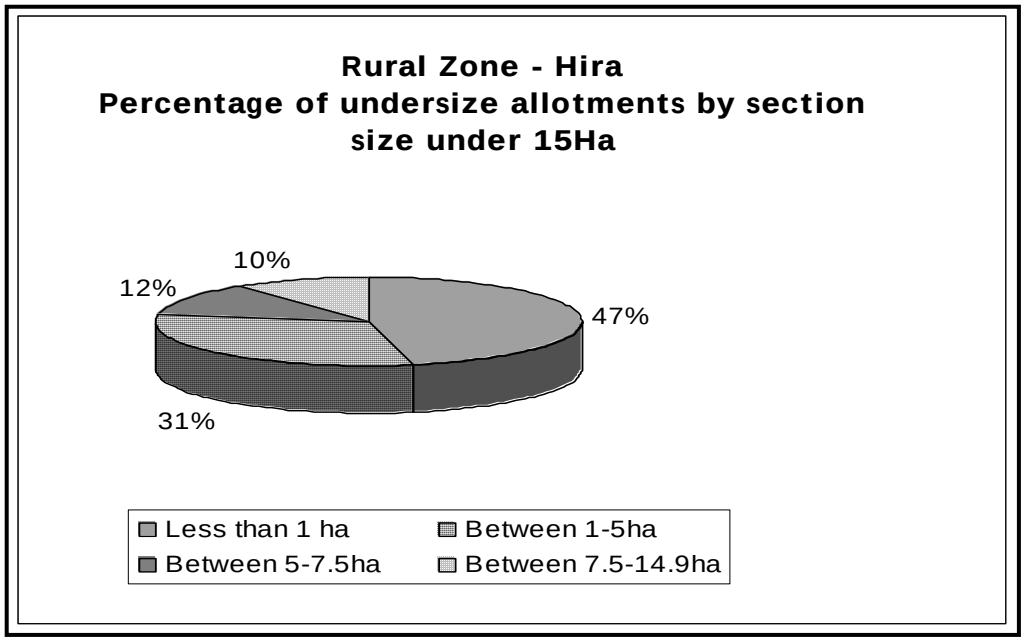
- The only rule from which departure is consistently sought is rule REr.24 addressing site coverage, followed to a much lesser extent by applications seeking reductions in the minimum lot size.

Residential zone evaluation

- Council is in the process of drafting formal changes to the plan which deal with a number of the issues highlighted above. These relate particularly to provisions in the plan covering earthworks, the construction of decks and terraces and daylight controls.
- Given the number of applications for discretionary activities in particular, careful consideration will be given to the environmental impact of granting these consents before any decision is made to change plan rules. For example, granting earthworks consents might raise concerns about sedimentation and degradation of waterways and impacts on the landscape.
- Council will also look at the controls over yard provisions. This might be included with consideration of site coverage and provisions for on-site parking, access and manoeuvring.
- Council will focus on controlling non-residential activities within the Residential Zone. This reflects the intent to avoid, remedy or mitigate adverse effects on the living environment.

Rural zone

- The earthworks rule is often the basis for an application in the Rural Zone. Most of these are controlled activity applications and, to a lesser extent, restricted discretionary activity applications. This suggests that no major deviations from the earthworks rule are being sought.
- The location of buildings not permitted in the Rural Zone is also the subject to a reasonable number of applications.
- The two tables below show subdivision during the period 1996 - 2002.

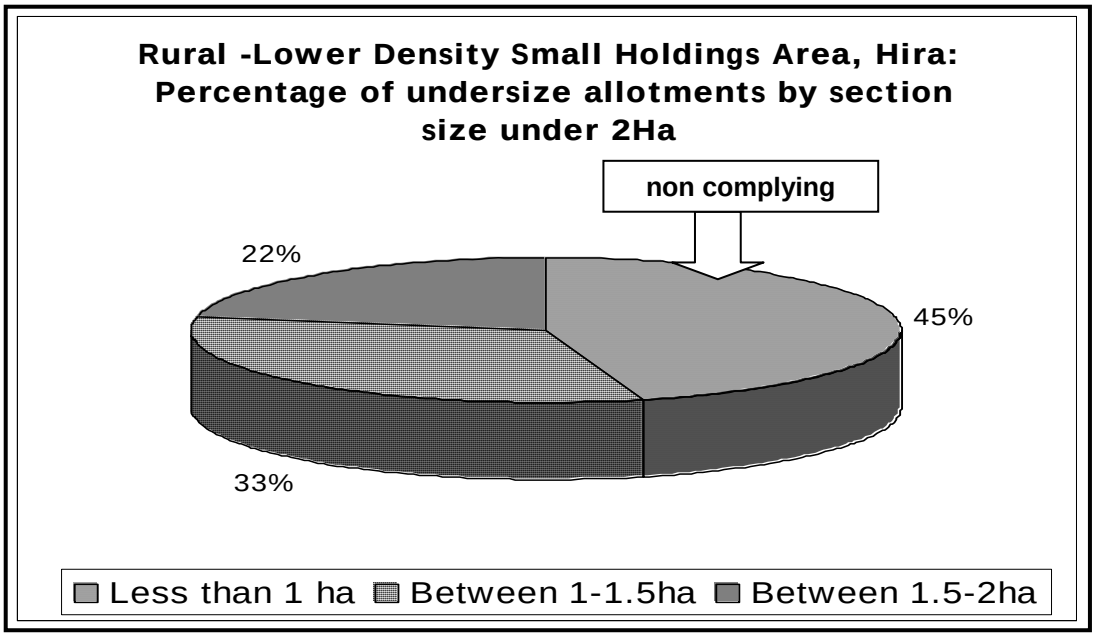


Nelson North

- The location described as Nelson North is generally that area north of Todds Valley, including The Glen, Hillwood Valley, Cable Bay Road, Hira, and the Lud and Teal Valleys.
- Nelson has for several years experienced strong interest in rural residential development in Nelson North. Analysis of subdivision consents since the

NRMP was notified in 1996 indicates a trend towards the re-subdivision of rural-residential developments, particularly in the Hira/Lud Valley area.

- Consent is needed for developments seeking lot sizes below the minimum, which is 15ha in the Rural Zone and 2ha in the Lower Density Small Holdings Area of the Rural Zone. There is an averaging provision allowing landowners to subdivide one significantly over-size lot to offset other undersize lots. There are no specific controls on re-subdivision. The result has seen the development of lots below the minimum lot size.



- Council undertook an in-depth study of Hira in 2002 which revealed over 70% of sections created in the Rural Zone and 45% of sections created in the Rural Low Density Small Holdings Area were less than the minimum permitted size. Ninety percent of the undersize Rural Zone allotments are less than half the permitted size.
- The trend to seek undersized rural lots and re-subdivision is leading to concerns about the loss of rural character, land fragmentation, increased traffic movements, precedent, and cumulative effects such as water supply constraints and discharge effects.
- The Nelson Urban Growth Strategy (NUGS04) has highlighted the ongoing demand for rural lifestyle lots, and the need for a more structured approach to subdivision and development. It is anticipated that NUGS 04 Stage 2 will provide clear direction for the future development in Nelson North.
- Until NUGS Stage 2 is completed, Council has notified a plan change to provide an interim solution by tightening the provisions for rural residential subdivision in Nelson North.

Inner city zone

- The only other zone which shows up a relatively high number of applications under any specific rule is in the Inner City Zone where applications dealing with signs and, to a lesser extent, parking and loading are involved.
- Council will review the rules consistently affected by applications in the Inner City Zone.

Notification

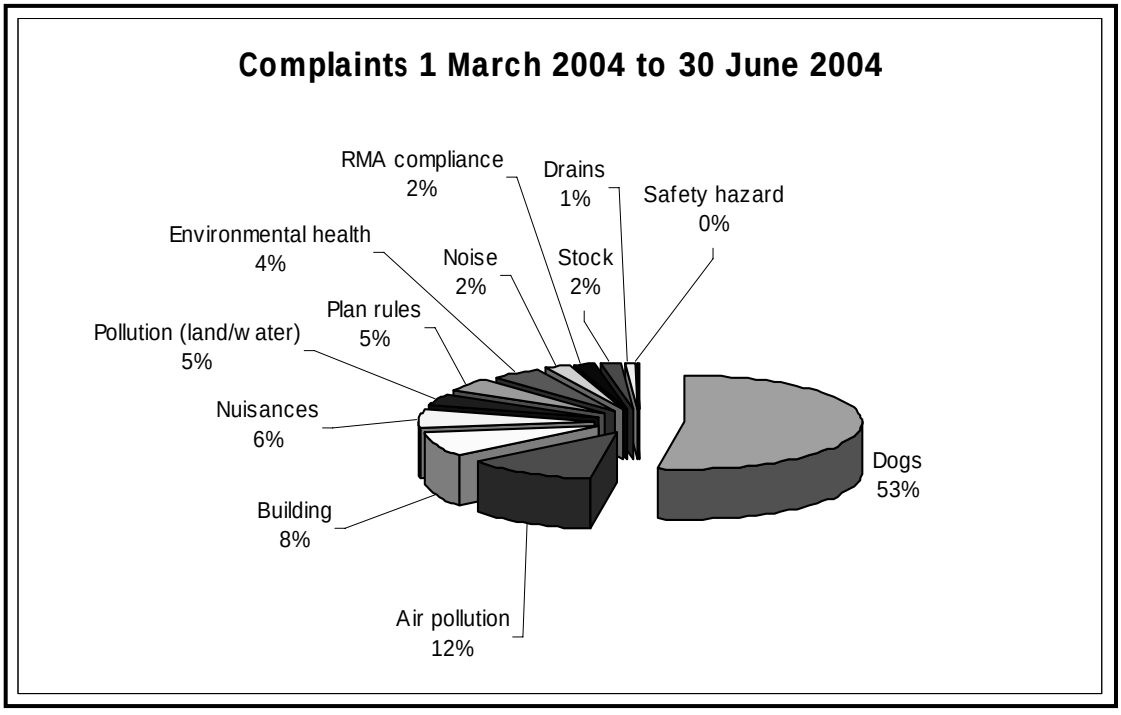
- During the period from January 2003 to June 2004 eighteen applications for resource consent were fully notified. Another two received limited notification. No applications were declined consent.

Compliance

- An upgraded system of monitoring resource consents is being developed. This will include a database listing the conditions attached to resource consents, what requires monitoring and how and when this will be undertaken. Conditions may be imposed on a consent to avoid, remedy or mitigate any adverse effects of the activity on the environment.
- This system will readily allow for the inputting of monitoring results and show up the need for any follow up action.
- In this manner Council's enforcement officers will be able to pro-actively monitor consent compliance, and not rely on complaints to check out where enforcement action may be required.

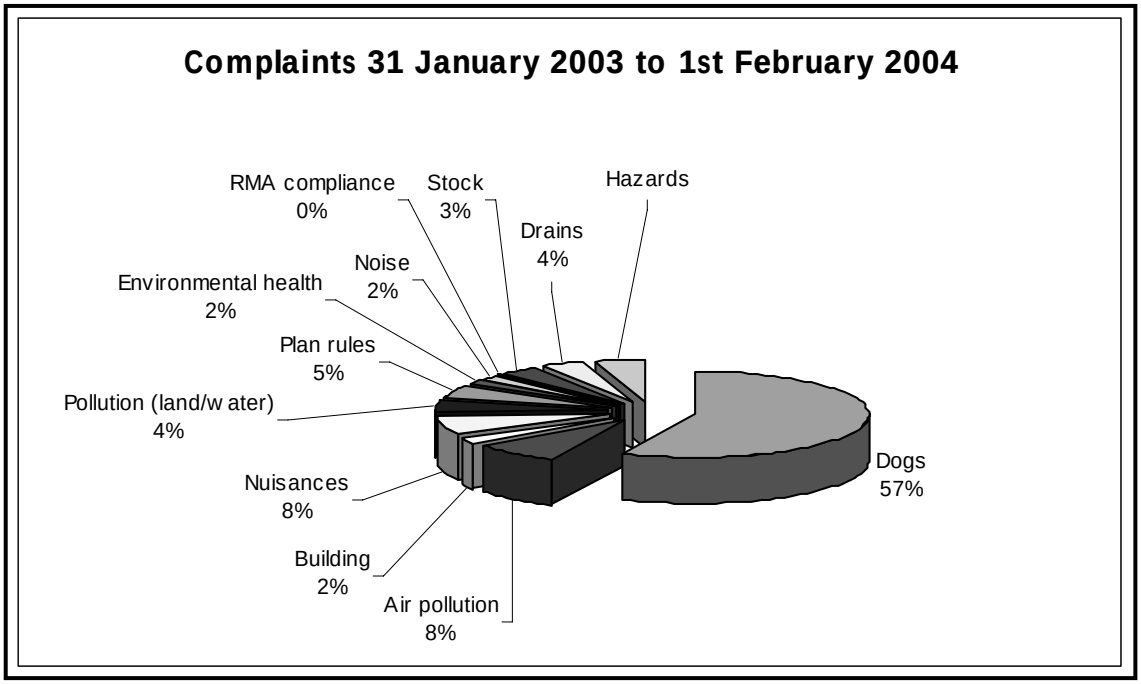
Complaints

- Complaints relate to particular events and tell us about environmental problems or perceived problems.
- Complaints can relate both to activities that have a resource consent and those allowed as of right as permitted activities. They indicate situations where consents might be required in future.
- Complaints monitoring can help fill gaps in knowledge and information about the quality of the environment and community attitudes.
- A brief analysis of complaints recorded from 31 Jan 2003 to 1 Feb 2004 reveals the following:
    - by the far the most complaints were received about dogs. This involved a range of issues, including aggression, attacks, barking and wandering;



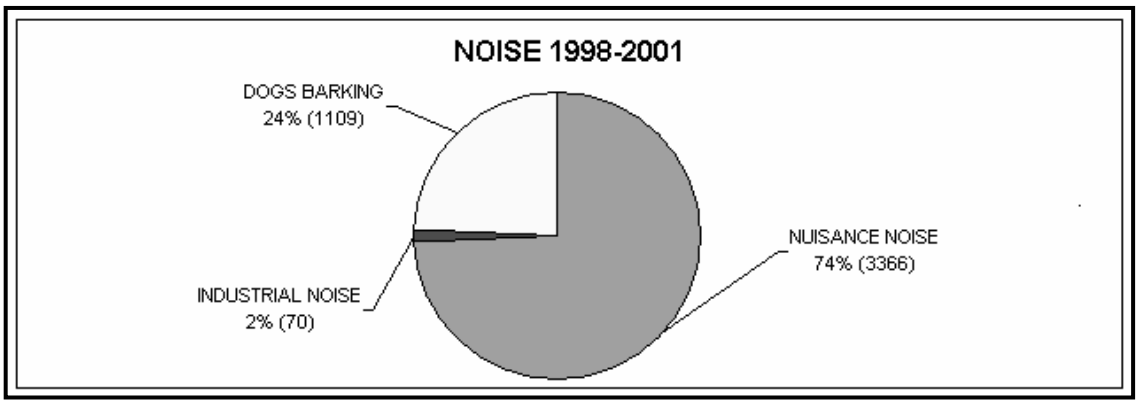
- air pollution is the next major issue of concern to the community and this is equalled by complaints relating to general nuisances, which included the keeping of animals, rubbish, composts, house bus camping and similar issues;
- conflict with rules in the NRMP drew few complaints, and related mainly to signs and earthworks; and
- few hazards were recognised, and those to do with fire hazards significantly outweighed concerns over dangerous goods.

- The figure below provides a breakdown of complaints over the latest four month period for which data is readily available, from March to June 2004.
- A broad evaluation of these two sets of data highlights some similarities and contrasts, though an analysis over a longer period is necessary to determine significant trends.
  - Dog complaints are by far the main source of complaints and are a particular nuisance. During 2003 the Dog Control Act 1996 was amended requiring Council to review its Dog Control Policy and By-laws. This has now been completed strengthening dog control activities and enforcement.
  - Air pollution is a concern to the community and is the most common form of pollution notified to Council;
  - An increased number of illegal buildings drew complaints;
  - General nuisances are reported at low but ongoing levels.



Noise Complaints

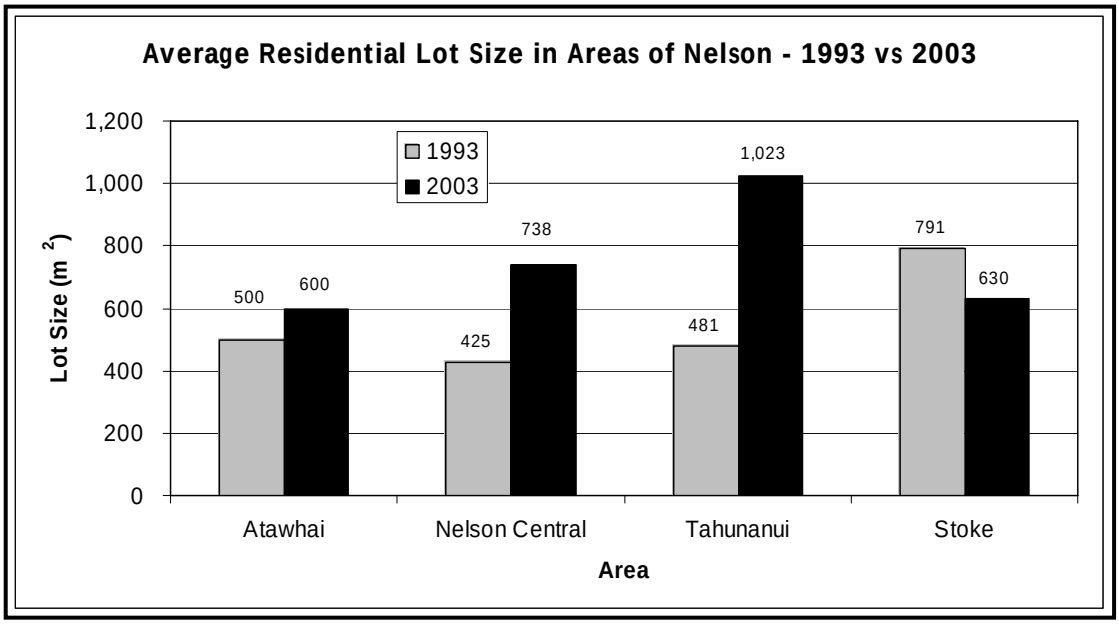
- Noise complaints are assessed where they relate to ongoing noise not one-off events like stereos.
- In the 12 months between 1 Aug 1998 and 31 July 1999 a total of 1242 noise complaints were received and responded to by Council.
- In comparison, a tally of noise complaints over the year 31 Jan 2003 to 1 February 2004 showed a substantially reduced number of complaints at 42 in total. By refining the NRMP in 1999, the subsequent education campaign and enforcement of the noise standards, excessive noise does not seem to be a problem any more.



Other sources of information

- Key work under way or planned will identify ways to deal with significant developmental pressures. These include:
    - Nelson Urban Growth Strategy (which discusses the recent property boom);
    - Tahunanui Structure Plan;
    - Extension of the cycle-way/walkway network;
    - Nelson Regional Land Transport Strategy review;
    - SH6 road corridor study into upgrade options ;
    - Nelson-Tasman Regional Economic Development Strategy;
    - Development of an industrial land database;
    - Development options for SH6 in Nelson North (Hira);
    - Plan change dealing with rules impacting on the operations of Port Nelson including noise controls.
- Other pressures Council is aware of include:
    - Demand for new or expanded areas for bulk retail outlets;
    - Conflicts between inner city functions like cultural activities and retailing, and suburban functions including community services and retailing;
    - Conflict between apartment developments on Wakefield Quay and the adjacent state highway, and the potential expansion of port operations in the same area;
    - Average lot sizes in new residential subdivisions are generally increasing over time.
- The increased residential lot size in part reflects the fact that a lack of available land is driving subdivision onto hillsides, where larger lots are required to achieve building platforms.
- Some of these issues will be considered through NUGS Stage 2.
- Findings can then inform Council's responsibilities and management tools, including its annual plans and reports, long term community plan, asset

management plans, financial reports, strategic plans such as the Regional Land Transport Strategy and other resource management documents.



Anticipated environmental results and performance indicators

- Both the RPS and NRMP include anticipated environmental results and performance indicators.
- Anticipated environmental results (AER) state the practical results that we can expect to see or experience as the plans are implemented.
- Performance indicators (PI) are the key factors that will be monitored to assess whether or how well the objectives in the plans are being achieved.
- The AERs and PIs relevant to this report are listed in Appendix 1.
- The investigations and monitoring activities undertaken by Council and described earlier in this report explain how changes in our environment are being monitored and assessed.
- Ongoing investigations and accumulation of results will allow comparison of these results against the AERs.
- Many of the monitoring programmes are still in their early or mid stages. A number of initiatives are still being developed, including the iwi environmental performance indicators for monitoring freshwater.
- More information on the studies undertaken by Council in promoting the AERs can be found in the Council's earlier SoE reports and in the documents they refer to.

Future monitoring and SoE reports

- While Nelson city has a small Council with limited resources that must prioritise and programme work, we will make progress towards an integrated monitoring strategy. Consideration will be given to:
    - Assessing reference material and best practice examples of monitoring regimes developed by other regional and territorial local authorities;
    - Incorporating environmental performance indicators as they are progressively confirmed by government;

  - Developing an Access and GIS-based software programme for recording monitoring results;
  - Developing a relational database which will allow for the automatic input of data from our monitoring system, like sampling results on river ecology and air monitoring, river levels and so on. Future capabilities might include links between the monitoring system, GIS and GPS systems, reporting tools and website access by the public.
  - Options for linking with Tasman District Council's monitoring regime.
  - Monitoring work programmes and other strategies dealing with proactive non-regulation methods such as education about the importance and significance of feedback about environmental impacts.
- The programme for SoE reports over the next five years will be reviewed and might be amended to reflect the increased significance of particular issues like the outcomes of new air quality initiatives or pressures for ongoing subdivision at Nelson North.

Appendix 1
Anticipated Environmental Results and Performance Indicators

RPS - Resource Monitoring

Anticipated environmental results	Performance indicators
RM1.6.2 Compliance with conditions set in resource consent decisions.	**RM1.7.1** Public information available for state of the environment reporting.
RM1.6.2 An improved understanding of the interrelationships between the natural and physical resources of the region and a basis upon which more informed resource management decisions may be made.	**RM1.7.2** Feedback into the Regional Policy Statement as a result of monitoring the effectiveness of policies and methods.
RM1.6.3 Understanding the cumulative effects of resource use.	**RM1.7.3** Regular recording of key environmental indicators.

RPS - Soils

Anticipated environmental results	Performance indicators
SO1.7.1 The maintenance of the natural fertility and structure of the soil resource on Council's jurisdictional area.	**SO1.8.1** Monitoring of land use activities using remote sensing techniques such as repeat aerial photography which indicate whether changes or activities are taking place which have the potential to result in degradation of the soil resource. **SO1.8.3** Analysis of soil samples showing no significant accumulation of chemical contaminants.
SO1.7.2 The maintenance of the coastal environment and river and stream environment (including water quality).	**SO1.8.2** Monitoring of water quality indicating no significant reduction in visible clarity as a result of land disturbance activities. **SO1.8.4** Analysis of sediment in the coast and in the rivers and streams showing no abnormal change in composition or rate of deposition.
SO1.7.3 Avoidance of adverse effects on other natural or physical resources from land management practices.	**SO1.8.4** Analysis of sediment in the coast and in the rivers and streams showing no abnormal change in composition or rate of deposition.

NRMP - Soil Erosion and Sedimentation

Anticipated environmental results	Performance Indicators
DO13e.1 Increased awareness and use of land management practices which avoid or minimise soil erosion and sedimentation.	**DO13e.1.1** Response to Council educational programmes. Water quality.
DO13e.2 Reduced soil erosion and sedimentation.	**DO13e.2.1** Appearance of landscape. Land productivity, water quality.

RPS Provisions for Amenity Values

Anticipated environmental results	Performance indicators
NA1.7.1 The protection and enhancement of significant townscape features, cultural sites, trees, and historic sites and buildings while minimising conflict with private land ownership rights.	**NA1.8.1** Significant townscape features, cultural sites, trees and historic sites and buildings being afforded a level of protection which preserves or enhances the amenity values enjoyed by the people of Nelson City.
NA1.7.2 Development which is sympathetic to or complements significant townscape features, cultural sites, trees and historic sites and buildings.	
NA1.7.3 Minimisation of conflict between adjoining land uses in relation to a compromise of amenity values.	**NA1.8.2** A reduction in the number of conflicts between adjoining land uses identified through complaints received by Council.

RPS Provisions for Landscape Values

Anticipated environmental results	Performance indicators
NA2.7.1 Preservation or enhancement of significant landscape and natural features while minimising conflict with private land ownership rights.	**NA2.8.1** Significant Positive protection being introduced for significant landscape and natural features.
NA2.7.2 Development which is sympathetic to or complements significant landscape and natural features.	**NA2.8.2** Development which preserve or enhance landscape and natural features.

RPS - Protection of Significant Indigenous Vegetation/Habitats

Anticipated environmental results	Performance indicators
NA3.7.1 Protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna from adverse effects resulting from land use change and development while minimising conflict with private land ownership rights.	**NA3.8.1** Progress towards and achievement of formal protection of priority areas. **NA3.8.2** Changes in areas of significant indigenous vegetation and significant habitats of indigenous fauna where stock is excluded and pests are controlled.
NA3.7.2 Management of significant areas of indigenous vegetation and significant habitats of indigenous fauna to actively enhance their intrinsic value.	**NA3.8.3** Restoration of degraded aspects of areas of significant indigenous vegetation and significant habitats of indigenous fauna.

NRMP - Natural Values, Landscape Values and Areas of Significant Value

Anticipated environmental results	Performance indicators
DO5e.1 – Natural Values Increased knowledge by public and property owners of natural values of places.	**DO5e.1.1** General level of community discussion and debate.
DO5e.2 – Natural Values Retention of areas of significant natural and conservation values.	**DO5e.2.1** New development that avoids or accommodates natural and conservation values.
DO9e.1 – Landscape Values Natural character of landscapes retained or enhanced.	**DO9e.1.1** Unobstructed views of significant features and features listed in Policy DO9.1.4.
DO9e.2 – Landscape Values Development that is sympathetic to landscape features.	**DO9e.2.1** Buildings are unobtrusive. Consistent approach to resource consent applications.

RPS - Amenity Values Associated with Subdivision and Development

Anticipated environmental results	Performance indicator/s
NA1.7.1 The protection and enhancement of significant townscape features, cultural sites, trees, and historic sites and buildings while minimising conflict with private land ownership rights.	**NA1.8.1** Significant townscape features, cultural sites, trees and historic sites and buildings being afforded a level of protection which preserves or enhances the amenity values enjoyed by the people of Nelson City.
NA1.7.2 Development which is sympathetic to or complements significant townscape features, cultural sites, trees and historic sites and buildings.	

NA1.7.3 Minimisation of conflict between adjoining land uses in relation to a compromise of amenity values.	**NA1.8.2** A reduction in the number of conflicts between adjoining land uses identified through complaints received by Council.

RPS - Development

Anticipated environmental results	Performance indicators
DH1.7.1 Urban expansion which avoids, remedies or mitigates adverse effects on areas identified as having special significance or value to the community.	**NA2.8.1** The degree to which minimum environmental standards and the protection of significant areas are maintained.
DH1.7.2 Maintenance of environmental standards when assessing the relative merits of intensification of the urban area versus urban expansion.	
DH1.7.3 A pleasant, functional and coherent urban area which provides for the reasonable expectations of the community while avoiding, remedying or mitigating adverse effects on the environment.	

NRMP – Landscape and Heritage Values

Anticipated environmental results	Performance indicators
DO9e.2 – Landscape Values Development that is sympathetic to landscape features.	**DO9e.2.1** Buildings are unobtrusive. Consistent approach to resource consent applications.
DO4e.1 – Heritage Values Increased knowledge by the public and property owners of heritage values of buildings, objects and trees.	**DO4e.1.1** General level of community discussion and debate.
DO4e.2 – Heritage Values Retention of heritage buildings, objects and trees.	**DO4e.2.1** Adaptation of heritage buildings to new uses. New development that accommodated listed trees. Number of listed trees and heritage items remaining, removed with consent or without consent.

NRMP – Subdivision and Development

Anticipated environmental results	Performance indicators
DO14e.1 Retention and enhancement of natural landform.	**DO14e.1.1** Extent of land re-contouring.

DO14e.2 Progressive development of the city in an ordered manner to ensure efficient resource use.	**DO14e.2.1** Consistent treatment of resource consent applications. Infrastructure capital and maintenance costs to Council.
DO14e.3 Maintained amenity values.	**DO14e.3.1** Consistent treatment of resource consent applications. Complaints to Council. Visual inspection.
DO14e.4 Cost effective provision of services.	**DO14e.4.1** Infrastructure capital and maintenance costs to Council.
DO14e.5 Reduced development, especially building, in areas where services are not adequate or available.	**DO14e.5.1** Consistent treatment of resource consent applications. Infrastructure capital and maintenance costs to Council.
DO14e.6 Better conditions for cyclists and pedestrians.	**DO14e.6.1** Traffic counts. Comments to Council.
DO14e.7 Availability of resources for community services and facilities.	**DO14e.7.1** Consistent treatment of resource consent applications. Annual Plan capital expenditure on community services and facilities. User statistics.

NRMP – Peripheral Urban Expansion

Anticipated environmental results	Performance indicators
DO15e.1 Compact urban form	**DO15e.1.1** Consistent treatment of resource consent applications. Infrastructure capital and maintenance costs to Council.
DO15e.2 Increased infill development	**DO15e.2.1** Consistent treatment of resource consent applications.
DO15e.3 Maintenance of amenity values	**DO15.e.3.1** Retained green belt areas, and access to country side. Complaints to Council. Visual inspection.

NRMP – Management by Zones

Anticipated environmental results	Performance indicators
DO16e.1 A pattern of land use that reflects the varying needs/capabilities of the areas of the District.	**DO16e.1.1** Consistent treatment of resource consent applications.

DO16e.2 A pattern of land use that locates activities according to their effects on the environment.	**DO16e.2.1** Consistent treatment of resource consent applications.
DO16e.1 A pattern of land use that reflects the varying needs/capabilities of the areas of the District.	**DO16e.1.1** Consistent treatment of resource consent applications.

RPS - Energy

Anticipated environmental results	Performance indicators
EN1.7.1 A reduction in the use of non-renewable energy.	**EN1.8.1** Increased number of buildings being constructed or refitted to achieve energy conservation, as shown by a sample of survey of owners.
EN1.7.2 A decrease in the rate of carbon dioxide emissions.	**EN1.8.2** A greater number of people using public transport, cycling and walking.
EN1.7.3 An increase in the amount of carbon dioxide fixation by plants and animals.	**EN1.8.3** An increase in the area of both production forest planting and amenity planting in Nelson City.
EN1.7.4 Urban form resulting in reduced dependence on non-renewable sources of energy.	**EN1.8.1** Increased number of buildings being constructed or refitted to achieve energy conservation, as shown by a sample of survey of owners.

RPS - Maritime Transport (Port Nelson)

Anticipated environmental results	Performance indicators
IN3.7.1 Impacts of existing port facilities on the natural environment being reduced, remedied or mitigated as far as possible and/or compensated for through restoration or enhancement of other areas of the coastal environment.	**IN3.8.1** Monitoring environmental indicators showing the natural character of the coastal environment being preserved or enhanced.
IN3.7.2 The impact of existing port facilities on residential amenity is kept to a minimum.	**IN3.8.2** A reduction in valid complaints regarding effects from the Port activities.
IN3.7.3 Any expanded port facilities having minimal environmental impact and maximum community benefit.	

RPS - Land Transport

Anticipated environmental results	Performance indicators
IN2.7.1 Impacts Adverse effects of road construction, maintenance or upgrading being avoided, remedied or mitigated.	**IN2.8.1** The number of injury accidents associated with the road transport system.
IN2.7.2 Adverse effects on amenity values caused by vehicular traffic and goods handling being avoided, remedied or mitigated.	**IN2.8.2** The number of valid complaints related to loss of amenity values as a result of adverse effects associated with transportation.
IN2.7.3 The functioning and integrity of the road network being maintained.	**IN2.8.3** The impact of road construction, maintenance and upgrading on conservation areas.
	IN2.8.4 The number of people walking, cycling and using public transport.

NRMP – Land Transport

Anticipated environmental results	Performance indicators
DO10e.1 Lower growth in the use of private cars, leading to less noise, pollution and other adverse effects.	**DO10e.1.1** Vehicle counts.
DO10e.2 Improved safety.	**DO3e.1.2** Crash statistics.
DO10e.3 Better access to and within the Inner City, for pedestrians and vehicles.	**DO10e.3.1** Vehicle and pedestrian counts. Public car park use.
DO10e.4. Lower growth in cars parked on roads.	**DO10e.4.1** Consistent treatment of resource consent applications in regard to parking and access requirement. Car park use.

RPS - Air Transport

Anticipated environmental results	Performance indicators
IN4.7.1 Impacts Adverse environmental effects of the existing air transport system being remedied or mitigated	**IN4.8.1** The number if injury accidents associated with the road transport system.
IN4.7.2 Future expansion of the air transport system avoiding as far as possible adverse environmental effects and remedying or mitigating those which do occur.	**IN4.8.2** The number of valid complaints related to loss of amenity values as a result of adverse effects associated with transportation.

RPS - Waste

Anticipated environmental results	Performance indicators
WM1.7.1 A substantial reduction in the volume of waste generated per head of population	**WM1.8.1** A reduction in the volume of solid waste per head of population received at the York Valley landfill site.
WM1.7.2 More efficient use of natural and physical resources.	**WM1.8.2** Monitoring showing targets being achieved and an increase in the percentage of reuse, recycle and recovery per head of population.
WM1.7.3 Increased life expectancy for the York Valley landfill.	**WM1.8.3** Results from the landfill monitoring programme showing no adverse effects which can not be avoided or mitigated.
WM1.7.4 A waste management system which positively responds to changes in technology and environmental values.	
WM2.7.1 Reduced danger to the people and the environment of Nelson City resulting form the transport, storage, use and disposal of hazardous substances.	**WM2.8.1** A reduction in the range and volume of hazardous substances being used and being disposed of in Nelson City. **WM2.8.2** Better control of those hazardous substances still in use.
WM2.7.2 A reduction in the hazard posed by contaminated sites in Nelson City.	**WM2.8.3** Results from the landfill monitoring programme showing no adverse effects which can not be avoided or mitigate. **WM2.8.4** A reduction in the number of contaminated sites in Nelson City.

NRMP – Waste

Anticipated environmental results	Performance indicators
DO3e.2 Reduced volumes of waste produced by industry and the community.	**DO3e.1.2** Volumes of waste being disposed of at Council landfills and sewerage systems.

RPS - Management of Pests

Anticipated environmental results	Performance indicators
NA4.7.1 Land use practices which mitigate increases in pest numbers.	**NA4.8.2** Monitoring of land use activities in order to determine the extent of adoption of land use practices which result in reduced proneness to pest infestation.
NA7.7.2 Control of pest numbers undertaken before adverse effects on natural and physical resources become apparent.	**NA4.8.1** Monitoring of pest numbers, in order to determine whether these are below the threshold where significant adverse effects on natural and physical resources are likely.
NA4.7.3 A greater community awareness of pest related issues and a greater land owner commitment to undertaking regular pest control work.	

RPS - Natural Hazards

Anticipated environmental results	Performance indicators
DH2.7.1 Threat to human life and loss of natural and physical resources from potential hazard situations will be minimised.	**DH2.8.1** Reported damage of threats to human life and natural and physical resources from hazard events being reduced.
DH2.7.2 Any further development in hazard prone areas will be restricted to those activities where the danger to human life and property is avoided or minimised.	**DH2.8.2** Assessment of financial losses associated with hazard events. **DH2.8.3** Assessment of costs/benefits associated with hazard mitigation measures implemented.
DH2.7.3 A high degree of community understanding of natural hazards and preparedness for natural hazard events.	

NRMP Provisions on Natural Hazards

Anticipated environmental results	Performance indicators
DO2e.1 Safer communities.	**DO6e.1.1** Low incidence of damage to property and risks to life from natural hazards.
DO2e.2 Low density of development and improved design and construction standards in areas where this Plan identifies major risks from natural hazards.	**DO2e.2.1** Consistent refusal of development proposals or increased design requirements when resource consents are applied for.

RPS - Fresh Water Quality

Anticipated environmental results	Performance indicators
WA1.7.1 Water classifications being met.	**WA1.8.1** Monitoring of water quality showing that water classifications are achieved and conditions placed on water and discharge permits are being met. **WA1.8.3** Monitoring of indicator in-stream fauna
WA1.7.2 Rapid and effective response to emergency or accidental discharges resulting in their effects being remedied or mitigated.	
WA1.7.3 Reduced risk of new exotic organisms becoming established in coastal marine area.	**WA1.8.2** Monitoring of the marine environment in the port area showing no new introduced exotic organisms or chemical/heavy metal contamination.

RPS - Fresh Water Allocation

Anticipated environmental results	Performance indicators
WA2.7.1 Plant and animal communities associated with water bodies, natural character and other values (including recreation) being maintained and enhanced.	**WA2.8.1** Monitoring of water abstractions, river flows, and the health of in-river plant and animal indicator species (undertaken by both Council and water abstractors), showing that river flows are not being artificially reduced to levels where significant adverse effects are occurring.
WA2.7.2 Sustainable management of known water resources.	**WA2.8.2** Monitoring of water allocation plans showing that the provisions and environmental outcomes of the plan are being met.

WA2.7.3 Water abstracted from rivers being used in an efficient and beneficial manner which reflects the value of the available resource.	**WA2.8.3** Monitoring of abstractive water usage showing that water is being used beneficially and efficiently.
WA2.7.4 A deferment of the need for further abstraction to supplement existing urban water supply.	**WA2.8.4** Frequency of water shortages. **WA2.8.5** Reduction in domestic water usage per capita and reduction in usage per unit of production.

RPS - Protection of Riparian Margins

Anticipated environmental Results	Performance indicators
NA6.7.1 Maintenance of the life supporting capacity of riparian ecosystems/natural processes e.g. river discharges, sediment transport.	**NA6.8.1** Recorded instances of adverse effects on natural process, including obstruction of fish passage, as a result of works and structures in or on river and lake beds.
NA6.7.2 Maintenance of river bank and river bed stability.	**NA6.8.2** Recorded instances of flood events made worse by structures or works within riverbeds.
NA6.7.3 A reduction in flooding problems associated with river bed use.	
NA6.7.4 Maintain fish passage past river structures.	See NA6.8.1

RPS - Beds of Rivers and Lakes

Anticipated environmental Results	Performance indicators
NA5.7.1 Management of riparian margins which better promotes significant habitats, natural processes, natural character, cultural values, natural features and landscapes, amenity values, life supporting capacity of ecosystems, public access and recreational values and water quality.	**NA5.8.1** Changes in the protection of riparian margins under formal protection. **NA5.8.2** Changes in the volume of sediment entering rivers and changes in bacterial, viral and chemical contamination of water in rivers. **NA5.8.3** The extent of public access available along riparian margins.

NRMP Provisions Relating to Riparian Margins

Anticipated environmental results	Performance indicators
DO6e.1 Increased knowledge by the public and property owners of natural values of margins.	**DO6e.1.1** General level of community discussion and debate.
DO6e.2 Retention of margins having significant natural and conservation values.	**DO6e.2.1** New development that avoids, remedies or mitigates adverse effects on margins.
DO6e.3 Increased public ownership of esplanade reserves on priority margins, and increased access via esplanade strips and access strips.	**DO6e.3.1** Esplanade reserves and strips consistently acquired on subdivision and other consent applications.

RPS - General Coastal Issues

Anticipated environmental results	Performance indicators
CO1.7.1 - Protection A level of protection given to the coastal environment which reflects its status under the Resource Management Act and the New Zealand Coastal Policy Statement.	**CO1.8.2** Trends in water quality. **CO1.8.5** The preparation of water quality plans and undertaking of water classifications within annual plan targets.
CO1.7.2 – Public Access Maintenance and enhancement of public access to and along the coast.	**CO1.8.3** Changes in public access to the coast.
CO1.7.3 - Development Appropriate future development being provided for.	**CO1.8.1** The number, type and style of developments and activities locating within the coastal environment.
CO1.7.4 - Restoration Progress towards restoration of some damaged parts of the coastal environment.	**CO1.8.4** Species numbers and diversity in the coastal environment.

RPS - Protection of Coastal Margins

Anticipated environmental results	Performance indicators
NA5.7.1 Management of coastal margins which better promotes significant habitats, natural processes, natural character, cultural values, natural features and landscapes, amenity values, life supporting capacity of ecosystems, public access and recreational values and water quality.	**NA5.8.1** Changes in the protection of coastal margins under formal protection. **NA5.8.2** Changes in the volume of sediment entering the coast and changes in bacterial, viral and chemical contamination of water in the near shore area. **NA5.8.3** The extent of public access available along coastal margins.

NRMP - Protection of Natural Character

Anticipated environmental results	Performance indicators
DO7e.1 Preservation of the natural character of the coastal environment.	**DO7e.1.1** Maintained or enhanced water quality, maintained or enhanced natural vegetation and habitats.
DO7e.2 Reduced building and development impacts on the coast.	**DO7e.2.1** Level of new building and development in the coastal environment. New building and development in sympathy with landscape character. Consistent treatment of resource consent applications for activities in coastal environment.

NRMP - Coastal Water Quality

Anticipated environmental results	Performance indicators
DO7e.3 Coastal water quality that supports community aspirations for use.	**DO7e.3.1** Trends in visual water quality. Uses continuing in terms of classification. Consistent enforcement of water standards.

RPS - Air Quality

Anticipated environmental results	Performance indicators
DA1.7.1 A reduction in the level of emissions from domestic fires, including both heating and rubbish fire.	**DA1.8.1** The air quality monitoring programme showing a decline in mid winter particulate matter levels.

DA1.7.2 Industrial and commercial emissions being controlled so that they do not result in a significant reduction in air quality or in adverse effects on amenity values.	**DA1.8.2** Monitoring of industrial and commercial emissions showing compliance with standards and/or consent conditions being met.
DA1.7.3 Generally lowered vehicle emission levels.	
DA1.7.4 A reduction in dust and odour complaints.	

NRMP - Land Transport Emissions

Anticipated environmental results	Performance indicators
DO10e.1 Lower growth in the use of private cars, leading to less noise, pollution and other adverse effects.	**DO10e.1.1** Vehicle counts.

AQP – Air Quality

Anticipated environmental results	Performance indicators
A5e.1 Steady improvement in levels of PM20 both winter peaks and annual daily average (taking account of climatic variation), including declining PM10 emissions from home heating fires and industrial and trade sources, and at least no increase in overall vehicle emissions.	a) measure downward trends in ambient particulate levels (taking account of year to year climatic variation). b) trend in ambient air quality. c) Numbers of fires and wood burners being replaced with cleaner heating methods. d) Number and quality of industrial and trade discharges. e) Computer modelling of vehicle emissions. f) Profile of emissions from local vehicle fleets.
A5e.2 Outdoor burning in the Urban Area limited to a few activities on large sites, with minor effects	a) Number of illegal fires. b) Number of resource consents granted for burning. c) Uptake in subsidy for compost bin/worm farms.
A5e.3 Improved local air quality and amenity	a) number of smoke, pesticide spray, dust, odour and related complaints received. b) Measurement against relevant guidelines or standards.
A5e.4	a) measure levels in ambient air of par-

No appreciable degradation of ambient air quality for range of key pollutants	ticulate pollutants.

RPS - Noise Levels

Anticipated environmental results	Performance indicators
DA2.7.1 A reduction in the incidence of excessive and unreasonable noise.	**DA2.8.1** A reduction in the frequency of noise levels exceeding specified levels at specified locations.

NRMP - Aircraft Noise

Anticipated environmental results	Performance indicators
DO11e.1 Airport remaining viable at future levels of aircraft movements.	**DO11e.1.1** Level of noise complaints from residents around airport.
DO11e.2 Low density development in vicinity of airport. Insulated residential units.	**DO11e.2.1** Consistent approach to applications.
DO11e.3 Aircraft operations do not exceed noise limits.	**DO11e.3.1** Regular noise monitoring. Level of noise complaints from residents around airport.

NRMP - Port Noise (Provisional Only*)

Anticipated environmental results	Performance indicators
DO12e.1 Port Nelson remaining environmentally viable.	**DO12e.1.1** Demand for locations at the port. Environmental issues arising from port activities.
DO12e.3 Port operations do not exceed noise limits.	**DO12e.3.1** Level of noise complaints from residents around port.

***** These provisions are subject to a reference to the Environment Court. Therefore the clauses in this table may change.

RPS - Tangata Whenua Interests

Anticipated environmental results	Performance indicators
TW1.9.1 Resource management and information procedures which avoid accidental or unanticipated damage to resources or sites of significance to the tangata whenua.	**TW1.10.1** A reduction in the incidence of damage to sites or cultural significance.

TW1.9.2 Planning provisions which provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.	**TW1.10.2** An increase in the level of physical and legal protection of archaeological and cultural sites.
TW1.9.3 Tangata whenua are involved in resource management decision-making processed which affect cultural sites or values.	**TW1.10.3** The level of satisfaction expressed by tangata whenua on procedures and practices followed by Council in terms of its resource management responsibilities.
TW1.9.4 Appropriate consultation is undertaken on resource management matters of significance to tangata whenua.	
TW1.9.5 Tangata whenua are involved in environmental monitoring of matters of resource management significance to them.	

NRMP - Tangata whenua

Anticipated environmental results	Performance indicators
DO1e.1 Resource management decision making includes perspectives of Maori communities.	**DO1e.1.1** Regular consultation between Maori and the Council.
DO1e.2 Increased management by iwi of their resources.	**DO1.e.2.1** Establishment of papkainga, taiapure or mahinga mataitai.

References

Boffa Miskell Ltd & MWH (NZ) Ltd: July 2004: **Nelson** *Urban Growth Study – Stage One*

Cawthron Institute: Report No. 627, P Barter and S Frisk, March 2001: *A Review of Sediment Contaminant Levels in Nelson Area Catchments*

Cawthron Institute: Report No. 848, P Barter and S Thompson, Oct 2003*: Sediment Contaminant Levels in Nelson Area Catchments: 2003*

Cawthron Institute: Report No. 857, A Crowe, J Hayes, J Stark, R Strickland, T Hewitt and C Kemp, Sept 2004: *The Current State of the Maitai River*

Cawthron Institute: Report No. 917, R Sneddon and P Barter, July 2004: *Stormwater Monitoring for Nelson City: 2004 Assessment of Four Catchments*

Ministry for the Environment: June 2000: *District Plan Monitoring*

Nelson City Council: August 2003: *Air Quality Plan – Section 32 Evaluation Report*

Nelson City Council : Notified 9th October 2004: *Freshwater Plan Change*

Nelson City Council: 2004: *Nelson Community Plan 2004 - 2014*

Nelson City Council: March 1997: *Nelson Regional Policy Statement*

Nelson City Council: August 2003: *Proposed Air Quality Plan*

Nelson City Council: Sept 2004: *Nelson Resource Management Plan*

Nelson City Council: 1999, 2000, 2001, 2002, 2003: *State of the Environment Report*

Nelson City Council: complaints and consents databases

Various news articles and pamphlets

Websites

www.ncc.govt.nz

www.mfe.govt.nz

www.qualityplanning.org.nz

SoE Examples

Environment Waikato: *State of the Environment Report 1992 – 1993*

Environment Waikato: 1998: *Waikato State of the Environment Report*

Gisborne District Council: 1997 and 1998: *The State of our Environment*

Marlborough District Council: 2001 – 2001 and 2002 – 2003: *State of the Environment Update Report*

Manukau City Council: 1999: *The Environment is in Our Hands*

Tasman District Council: 2000: *Environment Today*

Wellington Regional Council: 1999: ***Measuring Up***