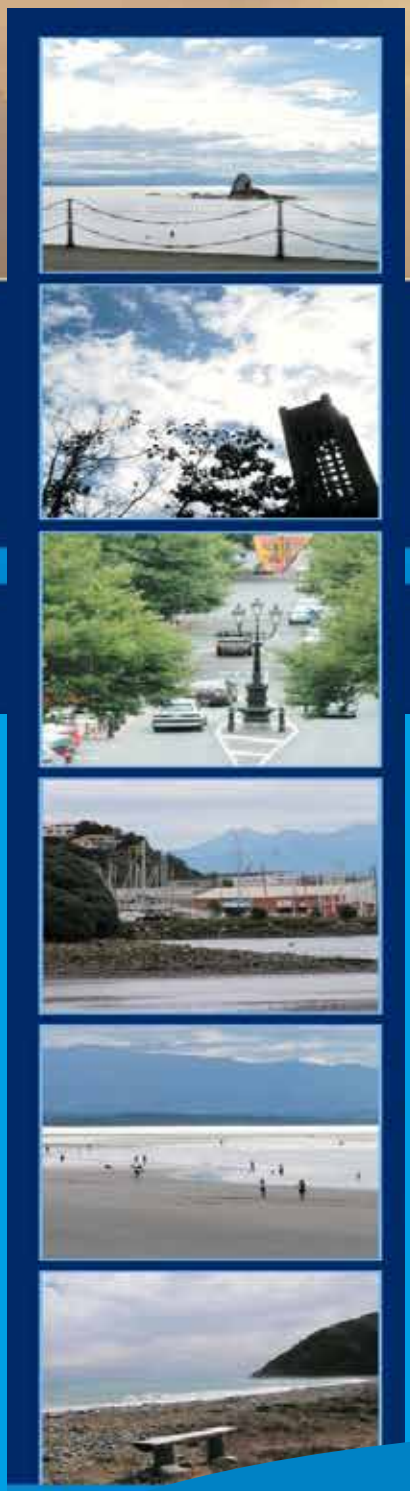
NELSON
RESOURCE MANAGEMENT PLAN



Efficiency and Effectiveness Review 2012/2013

Ref: 1486178

Nelson City Council
te kaunihera o whakatū

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MOVE OFF PATH
WHEN STOPPED
WARN WHEN
APPROACHING

PART I – EXECUTIVE SUMMARY

This report reviews the efficiency and effectiveness of the key policies and rules of the Nelson Resource Management Plan (NRMP). This report also considers whether key national and regional objectives are achieved as required by Section 35 of the Resource Management Act 1991 (RMA). As this assessment is a five yearly review the focus is on determining whether the outcomes that are anticipated in the resource management plans are being achieved rather than reviewing the overall objectives. Given the enormity of this task, this assessment is largely based on available data with gaps and uncertainty in data acknowledged along the way. This assessment is evidence based where possible.

This report is broken into two main parts. Part I includes this Executive Summary, the Introduction, and the key findings chapters which provide a high level overview. Part II of this report, provides a greater depth of assessment of the efficiency and effectivenessof the NRMP.

The objectives of both the Nelson REgional Policy Statement (NRPS) and NRMP are grouped by topic. A summary of national, regional, and district objectives is provided along with a summary of NRMP rules. A review of monitoring information is then provided to ascertain whether the rules have been effective at achieving the outcomes (key objectives and performance indicators from the NRMP, NRPS and National Policy documents) sought in the relevant topic area. An assessment is also provided in relation to whether the rules are efficient at achieving the relevant objectives by reviewing resource consent, plan user surveys, and plan change data. Recommendations are also provided relating to on-going monitoring needs and required changes to the NRMP.

This information will then be made public and be utilised to inform the future resource management plan work programme, that builds on the past plan change programme as part of a rolling plan review, to ensure that the NRMP remains current and statutory compliant.

A significant body of work has been compiled through the development of this report. This information should be retained as a baseline for future monitoring work.

KEY FINDINGS SUMMARY

Overall it is clear that air quality is improving and solid waste volumes are reducing. Accordingly these objectives are being effectively achieved. All other objectives are only being partially achieved as summarised below:

- Growth is generally occurring in the areas anticipated (urban areas) apart from retail/ commercial activities in Industrial zones and residential development around the urban periphery and in some sensitive environments (landscapes, heritage, and natural hazard areas)
- Amenity objectives are largely being met apart from Inner City noise issues, the quality of buildings in the Inner City ring route, and a representative range of heritage not being protected. Ensuring growth is occurring in those places anticipated in the NRMP and in a manner that achieves quality urban design will also improve amenity across the city
- Transport objectives are partially achieved with residential densities slowly increasing along public transport routes and close to services although CO_2 emissions, traffic volumes, and the use of private cars has increased and is projected to increase further
- Contamination national and resource management plan objectives are not being achieved as water quality monitoring shows that contaminants are still entering a number of Nelson's waterways and the management of hazardous substances focuses on future sites rather than historic sites

- Heritage provisions are generally working well although there is a need to protect a wider representative range of Nelsons heritage
- Māori objectives are generally being achieved although there is an ongoing need to engage with iwi on upcoming plan changes and better protect a wider range of heritage sites of interest to Iwi
- Natural Hazards objectives anticipate a reduction in threats to human life but there is still an increasing number of buildings locating in hazard areas
- Freshwater national and resource management plan objectives are not being achieved as water quality is not meeting plan standards in a number of Nelson's waterways
- Coastal Environment national and resource management plan objectives are not being met due to a lack of planning for coastal hazard risks and aquaculture, and the need to better identify and protect Outstanding Natural Features and Landscapes in the coastal environment
- Riparian and Coastal Margins objectives are partially being met – while there is a high level of public ownership of coastal margins, only 50% of rivers and streams margins are in public ownership and there are water quality issues in a number of waterways across Nelson
- Beds of Rivers and Lakes objectives are hard to measure as there is a lack of information about in-stream impacts – while limited gravel extraction data suggets river levels are appropriate water quality issues are still arising
- While Significant Vegetation and Fauna objectives and policies in the resource management plans acknowledge that further work is necessary to identify significant natural areas, this work has not yet been completed and monitoring work suggests that these areas are being imapcted
- Landscape Values and Natural Features objectives are not being achieved as further work is required to better identify and protect landscapes in the Coastal and Conservation zones, and for outstanding and significant landscapes and natural features generally.
- Energy national and resource management plan objectives are not being achieved as it would appear that greenhouse gas emissions are increasing and there is a need to further

consider renewable energy options in response to the NPS Renewable Electricity Generation

- Soil objectives are not being achieved as the protection of the life supporting capacity of soil has been compromised with high quality soils in Nelson being largely urbanised. Based on water quality monitoring information and the need for further analysis to determine soil contamination and erosion risk it would appear that resource management plan and national objectives that promote soil management are also not being met.

A review of NRMP consent and plan change data suggests that the current plan rules are efficient (apart from possibly earthworks and bulk and location requirements) but if plan objectives were more outcome focused and up to date with national policy changes the plan would be more efficient and effectiveness would be easier to gauge.

Based on the above assessment it is clear further work is required to ensure that national policy and resource management plan objectives are effectively and efficiently achieved. A review of recommendations for further work highlights that the implementation of the planned work programme will address these issues and make the plan more efficient and effective. The planned work programme includes plan changes in the following areas:

- New Zealand Coastal Policy Statement,
- National Policy Statement Freshwater Management,
- National Policy Statement Renewable Electricity Generation,
- National Envionmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health,
- Nelson Development Strategy,
- Heritage,
- Inner City Noise,
- Heart of Nelson,
- Hazard management,
- Landscape, and
- Significant Natural Areas.

There is also a need for ongoing commitments to involve Iwi in decision making, carry out further monitoring, and undertake catchment management planning as anticipated in the Long Term Plan 2012-2022.

PART I – INTRODUCTION

This report seeks to monitor the efficiency and effectiveness of the NRMP and NRPS (RMA Plans) to ensure that the resource management plans are meeting their objectives, and as part of the Council's responsibilities under the Resource Management Act 1991 (RMA).

Section 35 of the RMA places a duty on all local authorities to monitor their functions under the Act. It requires that council's monitor the efficiency and effectiveness of policies, rules and other methods in their resource management plans at five yearly intervals where necessary and take appropriate action. This monitoring must be made available to the public. This report seeks to comply with that statutory requirement.

The parts of Section 35 relevant to this review are as follows:

S.35 Duty to gather information, monitor, and keep records

(1) Every local authority shall gather such information, and undertake or commission such research, as is necessary to carry out effectively its functions under this Act.

(2) Every local authority shall monitor –

(b) the efficiency and effectiveness of policies, rules, or other methods in its policy statement or its plan; and take appropriate action (having regard to the methods available to it under this Act) where this is shown to be necessary.

(2A) Every local authority must, at intervals of not more than 5 years, compile and make available to the public a review of the results of its monitoring under subsection (2)(b).

The terms efficiency and effectiveness are included in the requirements of section 35(2A). In this report the terms are defined by the Council as follows.

Efficiency: Whether the policy and rule framework enables the efficient administration of resource management within the City. This can be evaluated by looking at resource consents and plan rules to determine whether they are necessary, or set at the correct consent threshold, to achieve resource management plan objectives. Where possible an assessment is also made about what outcomes are achieved and whether effort is directed in the correct place.

Effectiveness: The effectiveness of resource management plans is measured by whether the policy and rule framework achieves the key objectives and performance measures. Effective policies, rules or methods are those that work ie: that produce the anticipated outcomes

As this assessment is a five yearly review undertaken part way through a rolling review of the NRMP the focus is on determining whether the outcomes that are anticipated in the resource management plans are being achieved rather than reviewing the objectives themselves. Having noted this, a review of changes in national policy provides a guide as to what new resource management issues need to be addressed in the future work programme.

Given the enormity of this task, this assessment is largely based on a review of available data with gaps and uncertainty in data acknowledged along the way. The focus is also largely on key policies and rules rather than other methods, although monitoring information is provided from sources that measure the performance of other methods (eg) transport modelling. This assessment is evidence based where possible.

This report considers the NRPS as well as the NRMP but does not assess the Nelson Air Quality Plan specifically as this was made operative more recently in 2008. An air section has however been included in this report as the NRPS has objectives and policies related to air. A fuller assessment of the Nelson Air Quality Plan is anticipated in the future.

The NRPS was due for review in 2007. This review commenced but was deferred for a number of reasons including the need for alignment between top of the south councils and the changing nature of national policy guidance at the time. While the review is on hold a useful paper was developed

(Draft Regional Policy Statement – January 2008 RAD632972). The 2008 Draft included similar resource management issues to the 1997 version of the NRPS. The key change in direction was a general shift towards more specific issues and to more emphasis on economic and social wellbeing, as well as the environment. The 2008 Draft NRPS included a number of objectives under the following topic headings which also cover similar topics to the Operative NRPS:

- Urban Growth
- Energy
- Land Transport
- Air Quality
- Freshwater Quality
- Freshwater Quantity
- Waste
- The Coast
- Greenhouse Gas Emissions and Climate Change
- Biodiversity
- Heritage
- Landscape and Natural Features
- Hazardous Substances and Contaminated Sites
- Nuclear Issues
- Protecting the health and Productivity of Nelson's Soils
- Managing Risks from Genetic Engineering.

While the 2008 Draft included objectives it did not include performance indicators, although objectives were more outcome focussed.

This efficiency and effectiveness review will incorporate the draft 2008 NRPS objectives to ascertain whether the NRMP is both giving effect to the Operative NRPS and the general direction of the Draft 2008 NRPS. This monitoring work may also provide some further direction to the future review of the NRPS.

A number of changes have been made to the RMA and national policy (NZCPS, NES, NPS's) since the NRMP and NRPS were initially notified. This report also considers these changes to indicate whether Nelson's resource management plans are still current and to inform what changes may be needed in the future.

The Council has decided to initiate a rolling review of the NRMP as this was seen as a more efficient use of resources and more effective at ensuring that the plan remains current. Below is a summary of plan changes. These plan changes are described in greater detail in relevant sections and summarised below:

Ref	Name	Notified	Status	Proponent and Summary
26	**Firefighting Provisions**	25/9/10	Operative 12/3/12	NCC - Amends water storage requirements for new rural buildings to reflect revised NZ Fire Service Firefighting Water Supplies Code of Practice (SNZ PAS 4509:2008).
25	**Technical Fixes**	25/9/10	Operative 12/3/12	NCC - Technical fixes relating to: hazardous substances; noise; Tahunanui Slump Slope Risk Overlay; soil disturbance, earthworks and vegetation clearance; definitions; the landscape rules in the Rural Zone.
24	**Freshwater**	25/9/10	Operative 12/3/12	NCC - Enables rules FWr.26 to FWr.29 to apply in all zones rather than the Rural Zone only, amends FWr.29 and updates the water quality classifications in Ap28.4.
23	**Daylight and Solar Panels**	25/9/10	Operative 12/3/12	NCC - Clarifies daylight provisions in Appendix 15 and provides for solar panels to intrude into the daylight plane on the northern site boundary, and into the maximum building height for a zone.
22	**Heritage Trees**	25/9/10	Operative 12/3/12	NCC - Added 12 additional Heritage Trees, 10 additional Landscape Trees and 2 additional Local Trees to Appendix 2 (Heritage Trees).
21	**Parking and Related Changes**	25/9/10	Operative 28/5/12	NCC - Amends parking requirements across Nelson, including for travellers' accommodation. Clarifies status of pedestrian and cycle direction signs. Amends parking and building design rules for the block bounded by Collingwood, Hardy, Harley, Malthouse Lane and Riverside, and regulates location, amount, and design and appearance of privately provided carparks in the City Centre.
19	**Blackwood St Reserve (West) Rezoning**	25/9/10	Operative 12/3/12	NCC - Rezones Blackwood St (West) Neighbourhood Reserve as two industrial titles, one residential title and an esplanade reserve.
18	**Nelson South**	28/8/10	Decision Notified 30/6/12	NCC - Proposes to rezone from Rural to both Residential and Rural - Higher Density Small Holdings Area land located to the north west of Champion Road including land accessed from Champion Road, Hill Street North, Daelyn Drive, Joyce Place and Taranaki Place. The proposed Plan Change also applies a Services Overlay to these areas and an Esplanade Reserve on both sides of the western arm of Saxton Creek.
17	**Enner Glynn and Upper Brook Valley Structure Plan**	25/9/10	Decision Notified 30/6/12	NCC - Seeks to rezone land within Enner Glynn Valley, Upper Brook Valley and portions of Marsden Valley from predominantly Rural Zoning to a mixture of Residential, Rural Small Holdings and Rural Zones. It also introduces a Structure Plan identifying future connections in the area.
15	**Heritage**	6/2/10	Operative 9/8/10	NCC - Added seven additional heritage items and amended three existing items in Appendix 1 (Heritage Buildings, Places and Objects).
14	**Residential subdivision, Land Development Manual and Comp Housing**	25/9/10	Decision Notified 30/6/12	NCC - Proposes a range of changes that incorporate better urban design into objectives, policies, rules and other methods in the NRMP. The recently approved NCC Land Development Manual 2010 (previously known as the NCC Engineering Standards 2003) is externally referenced by the Plan Change under Part 3 of the First Schedule RMA.

Ref	Name	Notified	Status	Proponent and Summary
13	**Marsden Valley Rezoning and Structure Plan Project**	19/9/09	Operative 18/7/11	NCC - Rezone areas of land within Marsden Valley from a mix of residential and rural small holdings zoning to a zoning pattern that provides for a residential scale community with a suburban commercial centre. Other changes are included to ensure the zoning pattern created is consistent with wider Nelson Resource Management Plan provisions and planning direction.
07/01	**Port Noise Variation**	14/7/07	Approved by Council, awaiting approval from Minister of Conservation	NCC - Based on Port Chalmers approach, involves the preparation and use of a Port Noise Management Plan, Port Noise Mitigation Plan and Port Noise Liaison Committee.
06/04	**Stoke Railway Reserve**	27/1/06	Operative 1/9/08	NCC - Proposed rezoning small strip of land adjacent to Railway Reserve from Industrial to Residential to enable daylight control, extending Railway Reserve designation and other amendments. Decision to retain Industrial Zoning but make a site-specific amendment to the Industrial zone buildings rule.
06/03	**Development Contributions**	Withdrawn	Withdrawn	NCC - Never notified.
06/02	**44 Trafalgar Street**	9/9/06	Operative 13/08/07	NCC - Nelson Womens Centre – change from Open Space to Residential
06/01	**Catal Developments Ltd**	25/11/06	Operative 31/03/08	Private - Proposed amendment to Industrial Zone retailing rule INr.21 to provide for large format retail. Schedule N (Large Format Retail) created at Honda Site.
05/05	**Solitaire Investment Ltd #2**	28/10/06	Operative 13/08/07	Private - Foothills from Ngawhatu to Marsden Valley rezoning
05/04	**Solitaire Investment Ltd #1**	24/6/06	Operative 5/06 07	Private - Foothills from Ngawhatu to Marsden Valley rezoning
05/03	**Stoke Valley Holdings Ltd**	24/6/06	Operative 5/6/07	Private - Ngawhatu rezoing
05/02	**General**	29/10/05	Operative 26/01/08	NCC - Technical changes to improve effectiveness of NRMP
05/01	**Nelson North**	5/3/05	On hold	NCC - Aimed to make subdivision in North Nelson non-complying where density standards are exceeded
04/01	**Freshwater Plan Change**	9/10/04	Operative 5/5/07	NCC - To include freshwater provisions in the NRMP
01/03	**Templemore Estates Ltd (Wakatu Industrial Estate)**	12/4/03	Withdrawn	Private

The current NRMP work programme builds on these plan changes with a focus on implementing national policy change and addressing areas not yet covered by existing plan changes.

An assessment of the objectives of the NRMP and NRPS has been undertaken to group these in to like topics as summarised below:

RPS Objective	District Plan Objective
Growth DH1.2 Urban Expansion	DO14.1 City Layout and Design DO14.3 Services DO14.4 Network Utilities DO14.5 Community Services and Facilities DO 15.1 Urban Form DO16.1 Management of Resource by Location RE1, RE2, RE4, RE5,IC1, SC1, SC3, IN1, OS1, OS2, RU1, RU2, CO1
Amenity Values NA1.2 Amenity Values DA2.2 Noise	DO8.1 Signs DO14.2 Amenity Values RE3, IC2, IC3, IC4, IC5, SC2, IN2, RU3, CM4
Transport IN2.2 Transport IN3.2 Marine Transport IN4.2 Air Transport	DO 10.1 Land Transport DO11.1 Air Transport
Contamination DH3.2 Nuclear Issues WM2.2 Management of Hazardous Substances and Contaminated Sites	DO3.1 Hazardous substances
Heritage NZ1.2	DO4.1 Heritage Values
Māori TW1 Treaty of Waitangi	DO1.1 Māori and Resources
Natural Hazards DH2.2 Natural Hazards	DO2.1 Natural Hazards CM8
Water WA1.2 Quality of Natural Waters WA2.2 Water Allocation	DO7.2 Coastal Water Quality DO18.1 Maintaining and enhancing flows and levels DO18.2 underground flows and levels DO18.3 Providing for water abstraction DO18.4 Diversion of Water DO19.1 Highest practicable water quality DO19.2 Contamination of ground water DO20.2 Integrated water Management CM6
The Coastal Environment CO1.2 Management of the Coastal Environment	DO7.1 Natural Character of Coastal Environment DO12.1 Port Industrial Area CM7, and CM1-9 inclusive
Riparian and Coastal Margins NA5.2 Management of Riparian and Coastal Margins	DO6.1 Riparian and Coastal Margins
Beds of Rivers and Lakes NA6.2 Beds of Rivers and Lakes	DO17.1 Effects of activities and Structures in the beds and margins of rivers and lakes on the natural environment DO17.2 Effects of Activities and Structures in the beds of rivers and lakes on infrastructure

RPS Objective	District Plan Objective
Significant Vegetation and Fauna NA3.2 Protection of Significant Indigenous Vegetation and Significant Habitats of Indigenous Fauna NA4.2 The Management of Pests (Animals and Plants)	DO5.1 Natural Values CM1, CM3, CO2
Landscape Values and Natural Features NA2.2 Landscape Values and Natural Features	DO9.1 Landscape CM2, CO2
Air DA1.2 Air Quality	
Energy EN1.2 Use of Energy and Emission of Greenhouse Gases	
Solid Waste WM1.2 Solid Waste Management	DO3.2 Waste
Soil SO1.2 Sustainability of the Soil resource	DO13.1 Soil erosion and Sedimentation

Relevant monitoring information has been gathered within these topics based on resource management plan performance indicators. Monitoring information has been gathered from a range of sources including:

- Census data
- Building and resource consent data
- State of the Environment reporting
- Resident and Plan User surveys
- Complaints data
- Plan Changes
- Technical assessments.

A summary of the relevant NRMP rules is also provided. Conclusions are then presented by topic as to whether plan objectives are being effectively achieved as determined by an analysis of existing and newly developed monitoring information and an assessment of the relevant rules. Recommendations are also provided in relation to ongoing monitoring requirements and future plan change needs.

A separate assessment of efficiency is also provided by looking at resource consent information in Nelson City, from neighbouring unitary authorities (TDC and MDC), and Ministry for the Environment reporting. An assessment of plan user surveys, and plan change requests is also provided to gauge views on the efficiency and effectiveness of the NRMP.

This work is then drawn together into a key findings chapter.

Part II of this report contains further chapters that explore each topic in greater detail.

This report will then be made available to the public and be used to inform the future resource management plan work programme as well as identifying key ongoing monitoring required to inform future efficiency and effectiveness reviews.

PART I – KEY FINDINGS

The key findings section of this report is a summary of the more detailed analysis found in Part II. Full size copies of the graphics in this section are reproduced in Part II.

GROWTH

Policy Direction

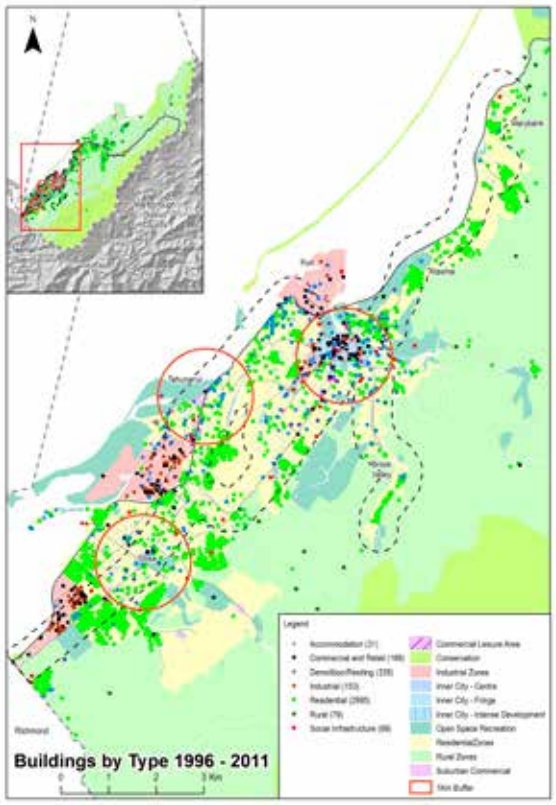
The NRPS and NRMP objectives and national policy direction (RMA, NZCPS, and NPS Freshwater) seeks the integrated management of growth and infrastructure in a manner that protects sensitive environments. The NRPS highlights the need to protect/avoid significant natural and physical resources and hazard areas. Furthermore urban intensification is a priority and urban expansion will only take place ahead of urban intensification following a thorough cost benefit assessment that considers whether the benefits to key natural, physical, and heritage resources outweigh the costs, and where future demand is determined and community expectations are met.

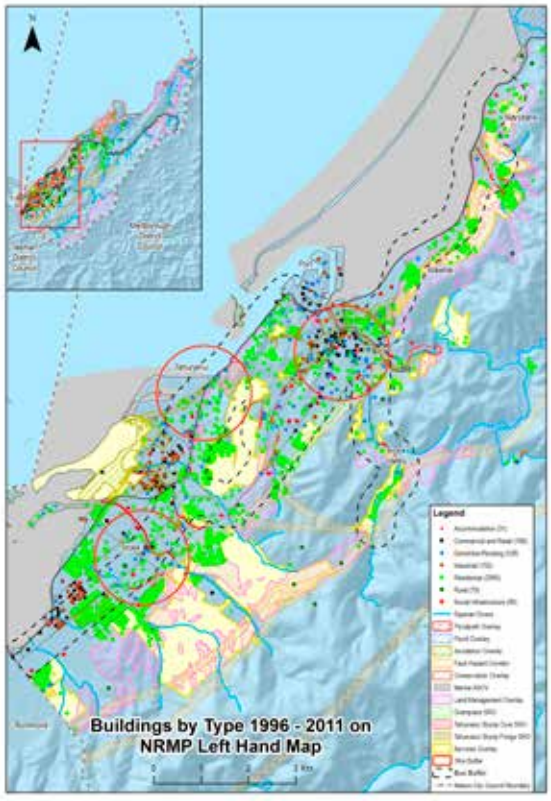
NRMP objectives, policies and rules seek :

- quality urban design outcomes,
- the orderly and efficient use of land,
- an urban form that avoids or mitigates effects on ecological, recreational, cultural, community, heritage and amenity values
- a range of activities with the highest residential densities anticipated within urban residential areas, commercial activities located in Commercial zones, industrial activities located within Industrial zones, and lower densities of activities located in the more sensitive Conservation and Coastal areas.

Key Findings

- A lower density of development is located in more sensitive areas such as the Conservation Overlay
- Growth has occurred on the urban periphery and in rural areas with limited intensification cost benefit assessment or demand analysis
- Intensification is occurring around centres and





bus routes and close to community services but to a density that will not necessarily support these services in the future (refer Transport Section)

- Building development is occurring in potentially significant landscapes, natural hazard areas, and heritage areas to a degree that may be compromising these values (refer Heritage, Natural Hazard, and Landscape Topics and bottom map opposite – Building between 1996-2011 over NRMP Left Hand Maps)
- While activities are generally occurring in anticipated zones, as much commercial/retail activity is occurring in Industrial zones as there is in Commercial zones (refer to top map opposite – Building between 1996-2011 over NRMP Right Hand Maps)
- There is a broad range of housing styles in Nelson but affordability is an issue
- Overall this monitoring information suggests that the integrated management of growth, infrastructure, and the protection of sensitive environments needs improvement if the key growth related objectives of the NRPS and NRMP are to be achieved.

Key Recommendations for Further Work

The Nelson Development Strategy should:

- Be informed by a detailed capacity study looking at residential, urban, rural population and employment matters
- Consider further analysis of regional retail demand and supply
- Consider the Integration between growth planning, water and transport management and the protection of significant natural (landscape and ecological) environments and hazard management
- Consider opportunities to improve housing intensification and affordability
- Be implemented via plan changes and other methods.
- Explore opportunities to work with Tasman and Marlborough District Councils

AMENITY

Policy Direction

The NRPS and NRMP objectives and national policy direction (RMA and NZ Urban Design Protocol) seek the preservation and enhancement of amenity values, quality urban design outcomes, and the avoidance of unreasonable noise and activities that will have an adverse effect on the environment.

NRPS objectives, policies and rules seek a spectrum of amenity controls across Nelson ranging from extensive design provisions in the Inner City to the subdivision and development standards in rural and conservation areas that result in open space and the retention of the vegetated city backdrop.

The subdivision rules provide for a range of densities across the city and urban design standards have recently been introduced as part of Plan Change 14 that seek a quality urban design outcome.

A range of activities are also provided across the zones with the most noxious being able to locate in the Industrial zones with the most limited range of activities in the Coastal Marine Area and Conservation zone.

Key Findings

The rules are generally effective at achieving the NRPS and NRMP policy direction.

Residents are satisfied with the way Nelson looks and feels but are increasingly concerned about safety issues particularly after dark in the inner city.

The rules in the plan result in the resource consents being granted in areas anticipated in the policies and objectives that seek minimal signage, enhanced air quality, limited coastal development, and protection of heritage (although as noted later and in the heritage section there is a desire to protect a greater range of heritage).

Recently completed plan changes have made amendments to the plan to improve urban design and subdivision outcomes, which have been supported via the establishment of the Nelson/

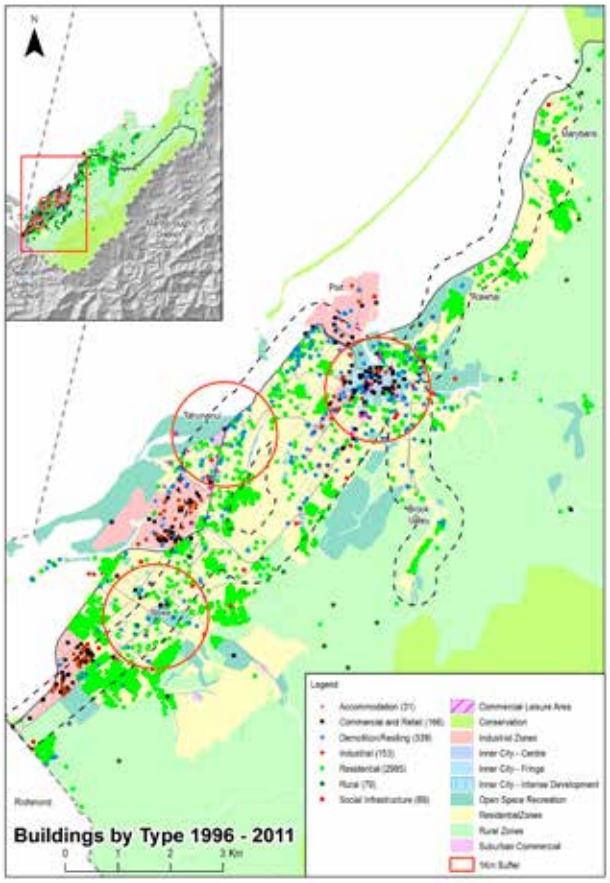
Tasman Urban Design Panel and the Nelson City Council Major Projects Team

However there are still a number of amenity issues that could be improved such as:

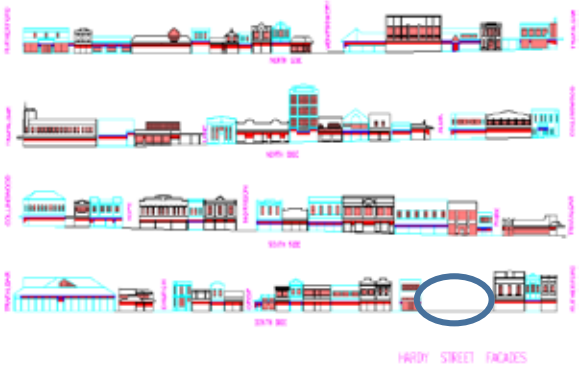
- the management of noise in the Inner City area and associated with community events
- building appearance on other main streets in the Inner City, such as the ring route
- potential amenity impacts that may arise due to earthquake prone building issues
- building development in the northern rural areas, significant landscape areas, and heritage areas which may be impacting on amenity (see map right)
- a wider representation of Nelson's heritage warrants protection
- further citywide strategic work is necessary to consider future areas for intensification and to better manage rural development.

Key Recommendations for Further Work

- Progress Plan Changes on the current work programme relating to Heritage, Inner City Noise, and Heart of Nelson
- Implement and monitor the outcomes of Plan Changes 21 and 14 (including the Land Development Manual)
- Monitor changes to the Inner City facades (see Hardy St example right)
- The Nelson Development Strategy should consider the Integration between growth planning, water and transport management and the protection of significant natural (landscape and ecological) environments and hazard management



Hardy Street 1995



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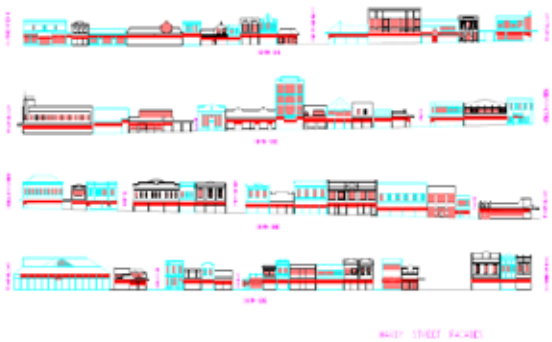


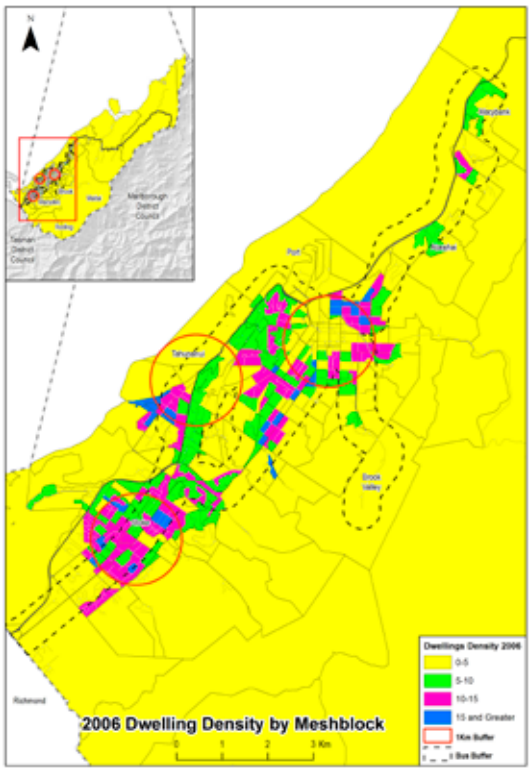
TRANSPORT

Policy Direction

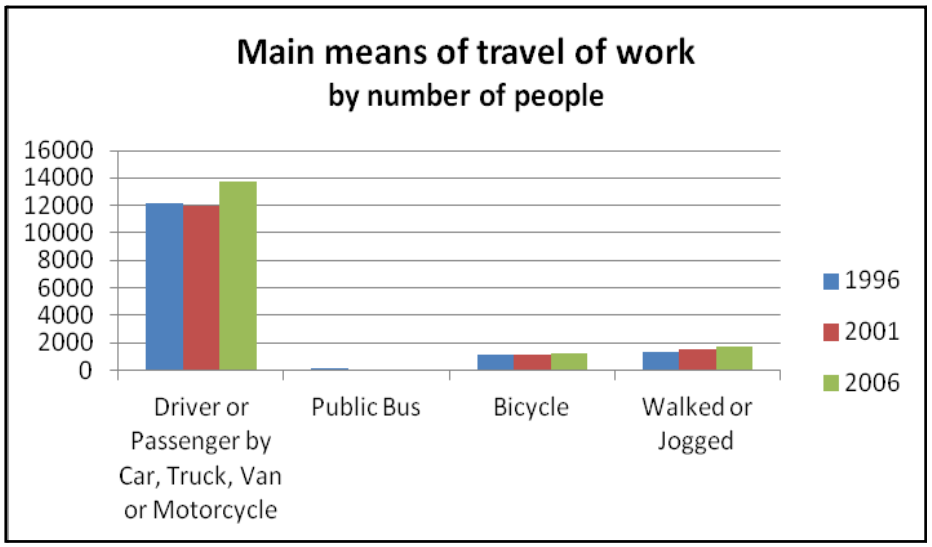
The NRPS and NRMP objectives and the RMA require the efficient use of natural and physical resources and energy. Since 2005 regional functions under the RMA have included the strategic integration of land use and infrastructure, including transport.

NRMP and NRPS policies promote a transport system that meets community accessibility needs, discourages dispersed development and favours intensification over urban expansion, uses energy efficiently, and supports alternative modes such as walking and cycling. In addition the environmental effects of vehicles should be avoided or mitigated by promoting more intensive development and co-location of housing, jobs, shopping, leisure, education and community facilities and services to minimise the number and length of vehicle trips and encourage the use of transport modes other than the private vehicle.

The NRMP zoning controls provide for urban consolidation by allowing higher density housing in urban areas (rather than rural areas) generally and even higher densities in areas within walking distance of shopping areas and transport nodes in the Wood and Stoke. A wider range of more intensive business activities, such as retail and office, are provided for in the Inner City and Suburban Commercial zones (and not residential, Industrial, and rural) which are also typically located along transport routes. There is no minimum parking requirement in the Inner City area. Car parking controls generally provide guidance for where parking reductions may be acceptable. Transport connections are encouraged via the use of indicative roads and walkways. Road design is controlled via the Land Development Manual which encourages slow street environments and reduced road widths where appropriate to the function of the street.



Yellow 0-5 households/ha
Green 5-10 households/ha
Pink 10-15 households/ha
Blue >15 households/ha



Key Findings

Overall the transport data shows that the transport objectives of the NRMP are partially being met.

- household density is increasing in town centres and along main transport routes relative to other areas (refer to map on previous page) however further intensification (both residential and employment) is desirable to better support the provision of public transport
- increasing density around key transport routes may also aid in reversing the trend of increased journey to work via private car identified in census data (see graph on previous page), increased traffic volumes displayed in Nelson Arterial Traffic Volume data, and projected increases in CO_2 emissions outlined in The Sustainability Stock-take of Nelson City (see Energy section)
- plan Changes 14, 17, and 18 also require improvements to road and walkway/cycleway connectivity which should also have a positive impact on reducing travel distances and support alternative transport modes
- having a clearer understanding of future land use change as part of the Nelson Development Strategy will allow for more informed medium to long term transport planning.

Key Recommendations for Further Work

- The Nelson Development Strategy should assess further opportunities for intensification and strategic road, walkway, and cycle linkages.
- Implement the Nelson Development Strategy through plan changes to the NRMP and NRPS where necessary.
- Explore opportunities to work with Tasman and Marlborough District Councils.

CONTAMINATION

Policy Direction

The NRPS and NRMP objectives and national policy direction (RMA, NZCPS, and NES Managing Contaminants in Soil) requires safeguarding the life supporting capacity of soil, and ecosystems while managing any adverse effects of activities on the environment. Council functions include the control of land to prevent and mitigate adverse effects of hazardous substances and the effects of contaminated land. Section 15 of the RMA also controls the discharge of contaminants into or onto air, water, and land.

The NES controls the removal of fuel storage systems, sets guidelines and limits for sampling of soil, disturbing the soil, and subdividing and changing use on land subject to potential contaminants on the HAIL (Hazardous Activities and Industries List). The HAIL includes matters such as storage, servicing, disposal and production associated with the following activities: Chemicals, electrical and electronic works, power, explosives, metals, minerals, vehicles, cemeteries and waste.

The Draft 2008 NRPS hazardous substances and contaminated sites Objective encourages the identification of contaminated sites to determine existing risks and rehabilitation of sites where risks to the environment or health is remedied or mitigated. This, along with the NES, addresses the gap in the existing NRMP and NRPS objectives which tend to deal with the management of future hazards rather than historic sites.

The rules in the NRMP utilise a Hazardous Facilities Screening Procedure to manage the use and storage of hazardous substances. These rules establish an effects ratio to determine whether activities are appropriate in different zones. The effects ratios are the lowest in the most sensitive zones such as the conservation and residential zones and highest in the industrial and rural zones.

Key Findings

Very little formal monitoring information is currently gathered in relation to the management and risk of hazardous facilities within Nelson City. While records are held by Environmental Inspections Limited they are not widely accessible although they are recorded on the "Conditions Book" that is used to inform the building consent process. The Council is presently undertaking a project to formally record existing hazardous sites and then expand this to include substances on the HAIL as required by the recent National Environmental Standard for Assessing and Managing Contaminants in Soil to protect Human Health.

However, monitoring results highlighted in the Freshwater section of this report suggest that there are contaminants entering some of the City's waterways as a result of stormwater runoff and discharges

Nevertheless, NRMP rules do align with current resource management plan objectives by establishing more conservative limits for the storage and use of contaminants in more sensitive zones and more liberal thresholds in less sensitive areas such as Industrial areas

Key Recommendations for Further work

- Progress work to establish a comprehensive Hazardous Activities and Industries List for Nelson City to implement the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.
- Investigate discharges of contaminants to waterways as part of the implementation of the Freshwater NPS.

HERITAGE

Policy Direction

The NRPS and NRMP objectives and national policy direction (RMA and NZCPS) seek the protection of historic heritage and customary rights from inappropriate subdivision, use and development through, amongst other things, identification and inclusion of areas within regional policy statements and plans.

NRMP and NRPS objectives seek the retention and enhancement of heritage items that contribute to the character, heritage and cultural values, or visual amenity of Nelson, in a setting that enhances such items.

Heritage and archaeological sites and protected trees are identified in the NRMP. The greater an item's heritage value the higher the consent threshold that is established in the NRMP to protect it.

Key Findings

The rules are generally effective at achieving the NRPS and NRMP policy direction. The NRMP rules have been relatively successful at protecting Nelson's heritage since the notification of the NRMP. While a review of building consent data (see table next page) indicates that approximately 10% of demolitions (32) between 1996-2011 affected heritage buildings or sites it would appear that no category A or B buildings have been intentionally demolished.

However, the Heritage Inventory Project has indicated that the NRMP is not current in terms of protecting an appropriate range of Nelson's heritage. A number of buildings and sites have recently been damaged or altered suggesting that a plan change to protect this wider range of heritage is now becoming a high priority. Such a plan change would also improve the NRMP's effectiveness at achieving recent amendments to the purpose of the RMA and the NZCPS.

A process needs to be established to ensure that requests to add heritage items are expeditiously responded to and ongoing monitoring is undertaken to identify the age of buildings lost as well as tracking development

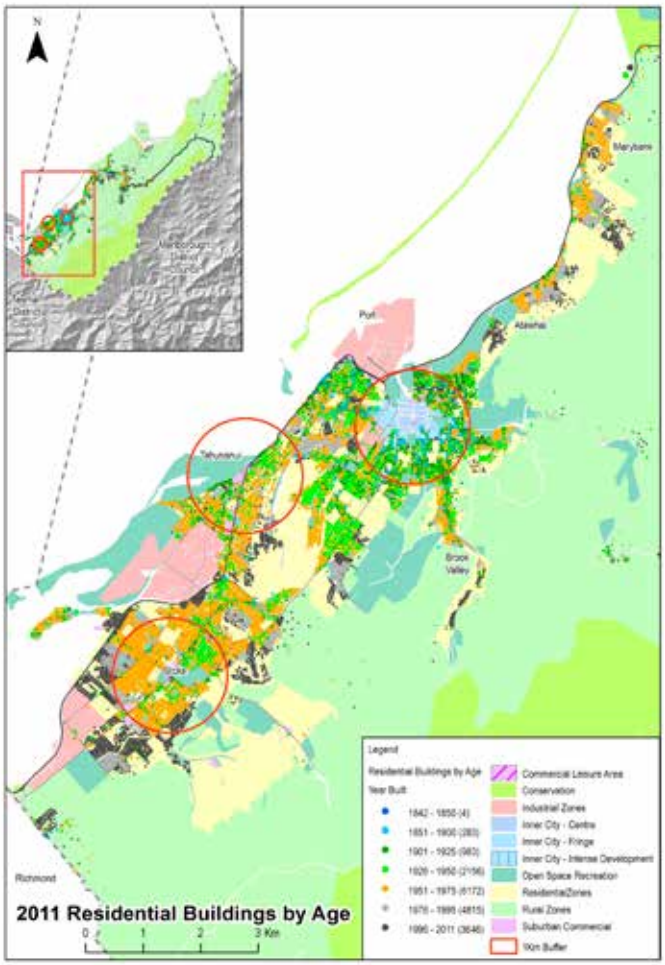
occurring on sites identified in the Heritage Inventory Project.

The heritage tree identification methodology has recently been confirmed as being appropriate via Plan Change 22. There is, however, a need to ensure that existing tree listings are current in terms of location and condition to ensure rules are efficient and effective (ie) landowners and Council are clear about which trees on a property are protected and where trees have already been damaged/removed.

While there appears to be limited development within the heritage and landscape woodlands (four consents according to building consent data) there are no rules that appear to manage development in these areas apart from the subdivision controls. A review of these areas should be undertaken to clarify the role of their identification.

Key Recommendations for Further work

- Progress the Heritage Inventory Project.
- Assess the impacts of earthquake risk on the City's heritage resources as part of the Heritage Inventory Project.
- Establish an efficient system to assess requests to add heritage items to the NRMP.
- Annually monitor the loss of Heritage Buildings, Sites and Objects and the age of buildings that are demolished utilising building consent, resource consent and valuation data (see map above right).
- Review tree listings to ensure that data is accurate and listings are appropriate.
- Review the woodland areas to better understand the purpose of their identification.
- Explore opportunities to work with Te Tau Ihui iwi.



Overlay	Number of Building Consents	Demolition	Total Consents %
Archaeological	**11**	0	0%
Heritage Buildings, Places, or Objects	**88**	23	2%
Heritage Woodland	**4**	2	0%
Heritage Precincts	**39**	9	1%
All consents	**3852**		

MĀORI

Policy Direction

The purpose of the Resource Management Act has always recognised the role that Māori play in the sustainable management of natural and physical resources by highlighting the principles of the Treaty of Waitangi, having particular regard to Kaitiakitanga and the ethic of stewardship, and recognising and providing for the relationship of Māori with taonga. The protection of historic heritage (which includes sites of significance to Māori) and customary rights, and the need to ensure that Iwi planning documents and customary title documents are taken into account when changing resource management plans are key components of the RMA. The NZCPS 2010 and NPS Freshwater also reinforces Māori participation in decisions relating to the coastal environment and water matters.

Nelson Resource Management Plan objective DO1.1 anticipates that the management of natural and physical resources recognise the needs of Māori communities and enables Māori to provide for their social, economic, and cultural wellbeing and their health and safety.

The Nelson Resource Management Plan contains a number of rules that address objective DO1.1. Papakainga are specifically provided for in the Open Space and Recreation zone rules relating to the Whakatu Marae and generally provided for in the Rural zone. Deposition of materials and discharges to water are controlled by earthworks, vegetation clearance, freshwater and the Coastal Marine Area rules. Subdivision controls specifically reference Māori values and consultation with tangata whenua as a matter of assessment and access to water is encouraged by requiring the formation of esplanade reserves in accordance with Riparian Overlays. Sites of significance to iwi are protected through subdivision rules requiring the avoidance of heritage overlay areas and any disturbance of sites being controlled via Archaeological Sites rules which require advice from iwi.

Key Findings

To some extent the objectives of the resource management plans, that seek the management of resources that recognises the relationship of Māori with key taonga, are now being met through the development of the Iwi Inventory Project and via the policies and procedures that are in place to ensure that Iwi management plans and Iwi groups are considered in the development of Plan Changes and through the resource consent process. It is recommended that the Iwi Inventory Project is progressed before significant sites to Iwi are damaged, and that Iwi are involved in significant plan changes on the future plan change programme.

A review of recent plan changes suggests that Iwi are satisfied with the resource management relationship between Council and tangata whenua. It is however recommended that surveys of Iwi groups are undertaken on an annual basis to explore Iwi views on current resource management practice and that priority is given to reviewing Iwi Management Plans to ensure plan provisions remain current. Also a number of terms in the resource managment plans should be defined in order to aid with interpretation.

Key Recommendations for Further Work

- Consult with Iwi about the findings of this report
- Progress the Heritage Inventory Project, the Significant Natural Area Plan Change and involve Iwi in the NZCPS and NPS Freshwater Plan Changes
- Continue policies and procedures for Iwi involvement in Resource Management Act Processes
- Establish an annual survey of Iwi groups regarding feedback on Council Resource Management Act processes.
- Review Iwi Management Plans on a five yearly basis
- Provide a comprehensive glossary of interpretation for concepts in the Resource Management Plans
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

NATURAL HAZARDS

Policy Direction

Resource management plan objectives generally seek a reduction in threats to human life as a result of natural hazards. There is also a drive at the national level to improve natural hazard management given the recent Canterbury earthquake. The NZCPS also requires that coastal hazards such as tsunami and sea level rise are appropriately managed.

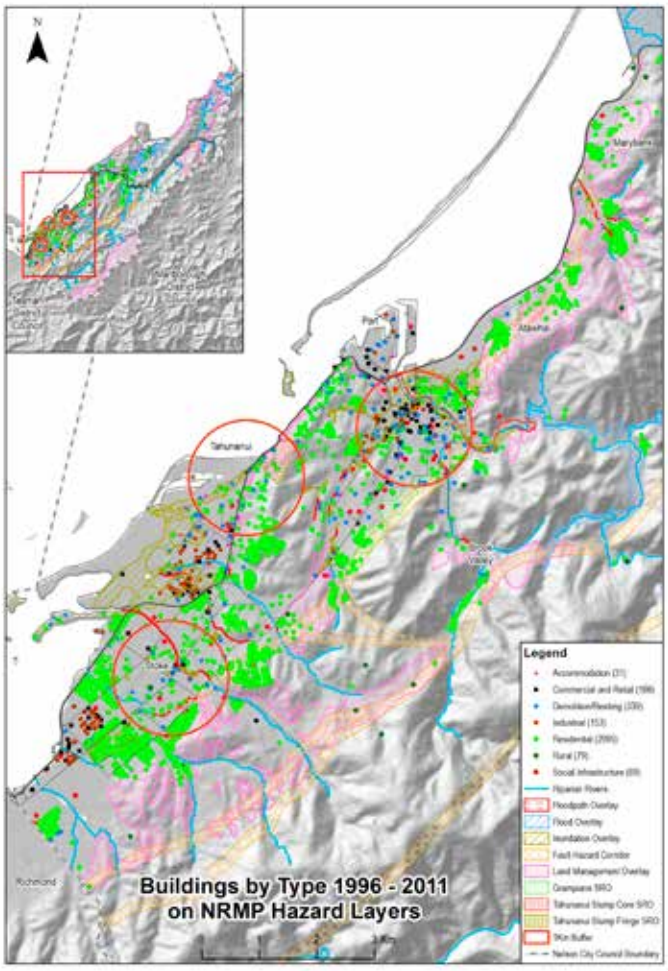
Key Findings

NRMP rules are relatively restrictive in that subdivision of sites within a Hazard Overlay requires assessment as a discretionary activity and other rules control the establishment of buildings and earthworks in identified hazard areas. However, the location of buildings within natural hazard areas is not always a good indicator of hazard risk, particularly in the case of the fault hazard and flooding where engineering assessments are provided to beter define hazard areas.

Nevertheless, monitoring information indicates that an increasing number of buildings are located on sites that are subject to natural hazards (see map and table on this page) such as in the December 2011 Rain Event. The effectiveness of these rules at achieving the NRMP objectives is therefore questionable, particularly given the dated nature of the NRMP hazard maps. Further work is therefore recommended in order to more accurately predict the scope and improve the management of natural hazards in the future.

This work should have a relatively high priority given the potential for increasing risk, the need to respond to national policy change in the short term, and the need to inform the preparation of the Nelson Development Strategy in 2012/2013.

How landowners respond to potential earthquake risk may have a significant impact on the City's heritage and amenity values.



Hazard Type	Building Consents 1996-2011	Demolition	Total Consents %
Land Management	**407**	17	11%
Fault Hazard	**267**	20	7%
Flood Hazard	**409**	72	11%
Slope Risk Overlay	**58**	10	2%

Key Recommendations for Further Work

- Expand the Maitai flood modelling work to the other catchments across the city.
- Add the Flood paths identified in the table at the front of the Planning Maps to the actual Planning Maps and further refine these as part of ongoing catchment management planning work.
- Indertake and analyse sea level rise, liquefaction, and tsunami modelling work.
- Review the Land Management Overlay and Slope Risk Overlay utilising data from the December 2011 Rain Event.
- Complete work to refine the Waimea-Flaxmore fault-line maps.
- Assess the list of potentially earthquake prone buildings and consider the possible impact of their alterations/demolition in terms of heritage and amenity value.
- Explore opportunities to work with Tasman District Council and Marlborough District Council on natural hazards work.

FRESHWATER

Policy Direction

In achieving the purpose of the RMA Councils need to consider the protection of ecosystems within water and the efficient use of water as a resource. Water management is a key role of regional Councils, including the need to maintain water quality and quantity along with ecosystems within water. The control of the use and allocation of water, and discharges to water, are key methods to achieve this role.

The NPS Freshwater Management 2011 directs regional Councils to safeguard the life supporting capacity, ecosystem processes, and indigenous species and associated ecosystems of freshwater, in sustainably managing water. In particular the integrated management of freshwater and land-use across whole catchments (including interactions between freshwater, land, associated ecosystems and the coastal environment) is required. A programme of work is required to be developed by November 2012 to indicate how the requirements of the NPS can be implemented by 2030.

The NRMP freshwater provisions are relatively new, becoming operative in mid 2007. NRMP Objectives seek:

- to maintain and enhance water flows and levels within water bodies and groundwater while providing for appropriate and equitable abstraction,
- an integrated management approach to the protection and use of freshwater resources,
- the avoidance of the diversion of surface water where this impacts on the natural functioning of ecosystems, and
- that all surface water bodies and groundwater contain the highest practicable water quality.

In particular policies seek the maintenance and enhancement of water quality with a minimum grade of C (moderate) to be achieved for waterbodies.

The Freshwater rules address activities and structures that can occur in the bed of rivers, lakes and wetlands along with water take, and discharges to or near water-bodies. There are also a range of other rules in the plan that will impact on water quality such as controls for earthworks, vegetation clearance, hazards, subdivision, engineering standards, and services.

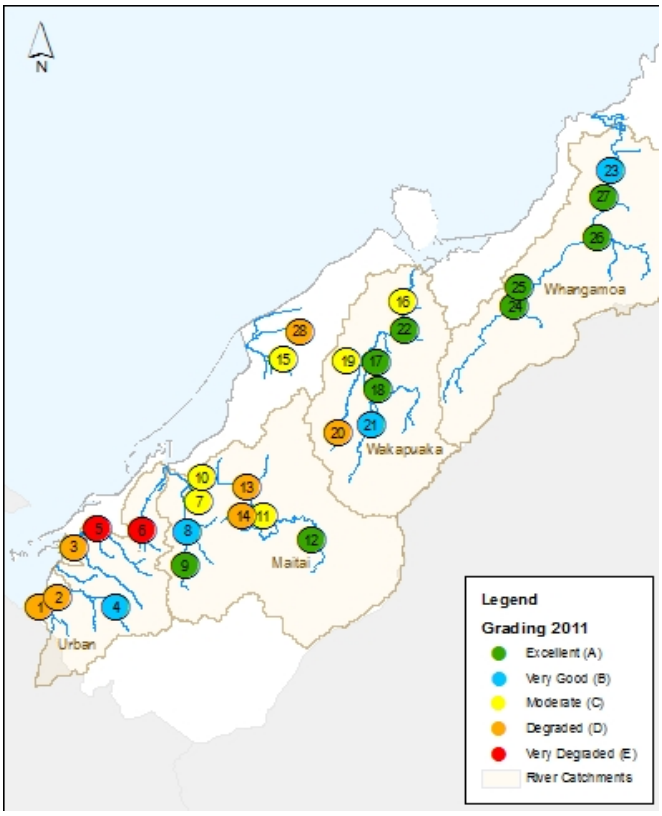
Key Findings

- Nine of the 28 sites monitored in 2011 had degraded water quality below the moderate C grade (see map right).
- Three of the eight freshwater recreational bathing sites historically have high bacteria counts and were identified as "Very Poor" in 2010/11.
- Stormwater discharges breach NRMP discharge standards and have had increased levels of metals and nutrients over time.
- Improvements are needed to effectively manage landfill and contaminated sites to reduce water quality contamination.

- A better understanding of water flows, levels, and extraction is needed.
- A comprehensive water management programme is needed by November 2012on how the Council proposes to meet the requirements of the NPS.

Key Recommendations for Further Work

- Establish a cross Council Freshwater working group with a focus on developing a work programme on how to achieve the NPS Freshwater Management.
- Ensure that the Maitai Catchment Management Plan meets the requirements of the Freshwater NPS and complete Catchment Management Plans for the remainder of the City.
- Monitor and enforce the NRMP stormwater provisions.
- Investigate the causes and actions needed to address contamination.
- Investigate further plan changes and other methods to implement Catchment Management Plans.
- Contact forestry companies and landowners to ascertain when and where forestry areas are planned to be logged to help determine the potential for future freshwater impacts.
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.



1	Saxton at Main Rd
2	Orphanage at Saxton Rd
3	Poorman at Seaview
4	Poorman at Barnicoat
5	Jenkins at Pascoe St
6	York at Waimea Rd
7	Brook at Manuka St
8	Brook at Burn Pl
9	Brook at Motor Camp
10	Maitai at Riverside
11	Maitai at Groom Rd
12	Maitai South Branch
13	Sharland at Maitai
14	Groom at Maitai
15	Todds at SH6
16	Wakapuaka at Maori Pa
17	Wakapuaka at Hira
18	Wakapuaka
19	Lud
20	Lud
21	Teal
22	Pitchers
23	Whangamoa at Kokorua
24	Whangamoa at Kokorua
25	Graham
26	Collins
27	Dencker
28	Hillwood

COASTAL

Policy Direction

The NRPS and NRMP objectives and national policy direction (RMA and NZCPS) requires the preservation of the natural character of, and access to, the coast. The NZCPS also requires strategic planning for growth and development, the protection of biodiversity and water quality, the provision for aquaculture and renewable energy, and the management of coastal hazard risks.

NRMP objectives and policies support the preservation of the natural character of the coastal environment from inappropriate subdivision use and development, maintain or enhance the life supporting capacity of Nelson's water quality and coastal ecosystems, amenity values, water quality and public access, protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna and outstanding natural features, management of activities to facilitate natural coastal processes, minimise natural hazards, and avoid reclamation.

NRMP rules reinforce these objectives as development within the more sensitive areas of the Coastal environment require more extensive assessment as discretionary or non-complying activities particularly where located within estuaries or Areas of Significant Conservation Value.

Key Findings

The objectives and policies of the NRMP align with those of the NRPS and the national policy to the extent that Areas of Significant Conservation Value are identified and protected and good coastal access is provided. Activities that can occur within the Coastal Marine Area are also relatively restricted. This direction is supported by existing rules as, in both cases, there is a limited range of permitted activities. Building consent monitoring data also confirms a limited number of buildings are constructed within areas of significant landscape and conservation value.

There are however some gaps in the NRMP in terms of alignment with current national policy direction, particularly the NZCPS. There is little provision for aquaculture in the plan, discharges of

Contaminant monitoring sites Nelson Haven.

Tab. 1. Recreational Bathing Water Quality Results

Site Name	Bacteria grade 2007/08	Recreation grade	Bacteria grade 2010/11	Recreation grade
Tahunanui Beach	B	Good**	B	Good
Monaco Beach	B	Good	B	Good
Cable Bay	B	Good	C*	Good-Fair*
Atawhai	C	Fair	B	Good
Hira Reserve	D	Very Poor	D	Very Poor
Paremata Flats	D	Very Poor	D	Very Poor
Maitai Camp	C	Fair	C	Fair
Sunday Hole	D	Poor	C	Fair
Girlies Hole	C	Fair	C	Fair
Collingwood St Bridge	D	Very Poor	D	Very Poor

*2010/11 Cable Bay bacteria grade declined from B to C due to one elevated bacteria sample after rainfall. The primary source of bacteria is unexplained.

** Sites with grades Fair to Good are suitable for recreation most of the time. Exceptions may include after rainfall.

contaminants appear to be impacting on marine receiving environments (see map and table on previous page), the management of coastal hazard risks such as sea level rise and Tsunami is limited, and limited strategic planning around the location of growth and future impacts on outstanding natural features and landscapes is in place.

Key Recommendations for Further Work

- Review the provision for aquaculture within the coastal environment, particularly on the landward side.
- Clearly define the coastal environment from a landscape perspective.
- Incorporate investigating the potential impacts on marine receiving environments into catchment management planning.
- Undertake and analyse sea level rise and tsunami modelling work.
- Incorporate the above in planning for growth within the coastal environment as part of the Nelson Development Strategy.
- Undertake coastal monitoring work including coastal habitat mapping and consent monitoring.
- Incorporate the findings of the above into the NRMP as part of implementing the NZCPS.
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

RIPARIAN AND COASTAL MARGINS

Policy Direction

The preservation of public access to and the natural character of the coastal environment, wetlands, lakes, and rivers and their margins is a matter of national importance. Regional council functions include the maintenance and enhancement of ecosystems and the quality of water bodies. The management of riparian and coastal margins helps to achieve these matters of national importance and regional council functions along with the requirements of the NZCPS and NPS Freshwater Management.

NRPS and NRMP objectives envisage riparian and coastal margins where natural character, public access, natural functions, landscapes, heritage values, water quality and ecological values are protected and enhanced. Policies seek that priority margins should be identified and acquired at the time of subdivision, activities should respect margin values, and access to the Coastal Marine area should be maintained and enhanced particularly along the foreshore between Richmond and Tahunanui beach, along Rocks Road and Wakefield Quay, Cable Bay to Cape Soucis, and along the lower reaches of the Maitai and Wakapuaka rivers.

These policies and objectives are reinforced by subdivision rules that require esplanade strips or reserves, in accordance with Appendix 6, to be provided at subdivision stage across all zones.

Key Findings

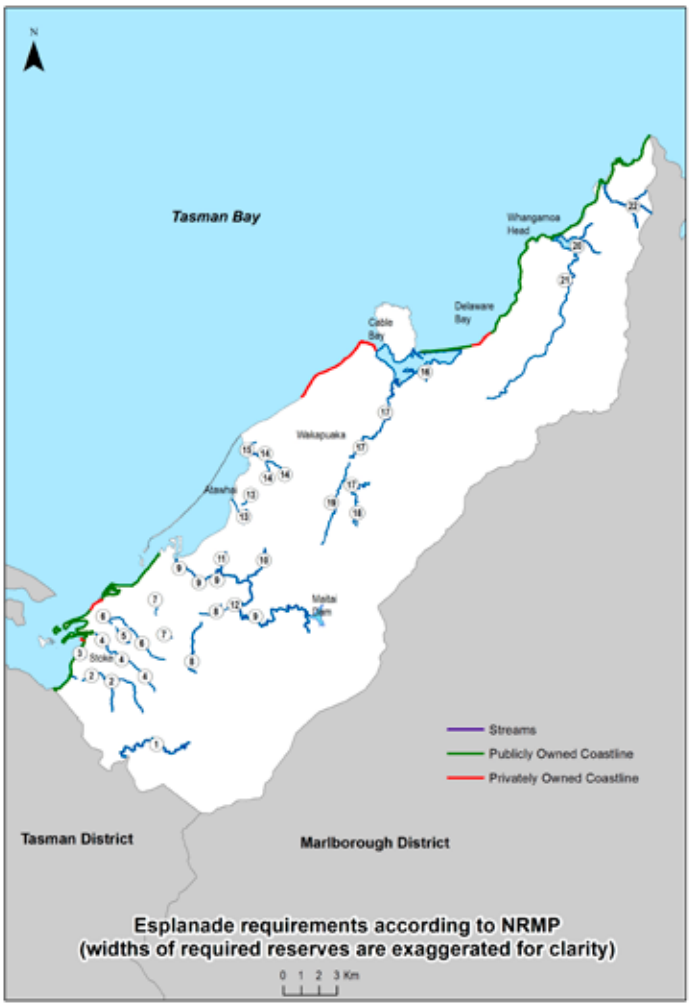
Riparian and Coastal Margins provide a range of functions in seeking to achieve the NRMP and NRPS objectives of protected and enhanced public access, natural areas, water quality, and ecological values and the avoidance of damage from natural processes.

Limited success has been attained in terms of securing esplanade reserves (approximately 50% of anticipated areas are currently in public ownership, see map and table on next page), and in some cases this will be difficult to achieve in the future due to the existing level of development adjacent to streams. Conversely coastal margins are largely in public ownership.

A review of other monitoring data suggests that existing NRMP rules have not been effective as coastal and freshwater quality could be improved across a number of areas, the potential for natural hazards could be reduced, and natural values improved if significant natural areas and biodiversity corridors were identified and protected, pests species and contaminants were controlled, and development was further restricted within and adjacent to margins.

Key Recommendations for Further Work

Review the function of, and ability to achieve, esplanade reserves as part of the Catchment Management Plan programme and Nelson Development Strategy.



	River	Required Area (ha)	Achieved Area (ha)
1	Roding	41.2	33.3
2	Orphanage Creek	20.6	9.9
3	Orchard Creek	1.24	1.18
4	Poorman Valley Stream	10.56	7.86
5	Arapaki Stream	1.76	0.44
6	Jenkins Creek	7.63	3.04
7	York Stream	3.35	1.19
8	Brook Stream	14	12.04
9	Maitai River	81.59	56.68
10	Maitai River (sharlands)	11.13	0.13
11	Maitai River (Kaka Hill)	5.99	0.09
12	Maitai River (Groom)	1.66	0.13
13	Oldham Creek	4.09	0.67
14	Todds Valley Stream	8.71	4.79
15	Wakapuaka Drains	1.3	1.3
16	Deleware Inlet	38.5	5.71
17	Wakapuaka Main Stream	28.53	9.15
18	Teal River	4.34	0.14
19	Lud River	7.53	0.87
20	Whangamoa Inlet	23.65	2.51
21	Whangamoa River	33.97	18.50
22	Omakau Bay Stream	28.98	17.62
Total		**380.31**	**187.2**

BEDS OF RIVERS AND LAKES

Policy Direction

The purpose of the RMA includes the need to safeguard the life supporting capacity of water while avoiding remedying or mitigating adverse effects on the environment. Regional council functions include the control of the bed of water bodies. NRMP policies generally seek to avoid the disturbance of (including structures within or under, deposition of materials, stock access, realignment and reclamation) river and lake beds, protect natural character, avoid flood damage, control diversion and damming of surface water and planting along margins and within rivers and lakes.

NRMP rules are structured to achieve these policies with limited permitted activities for the purpose of maintaining and enhancing in-stream values and flow levels.

The following are discretionary activities:

- vehicle crossings
- planting in, on, or under the bed of any river of lake
- in stream dams for reticulated urban water supply on the Roding and Maitai rivers
- T\the realignment or piping of beds of rivers or lakes and wetlands where permitted standards are not met.

Non-complying activities include:

- the planting of exotic plants in, and disturbing the bed of, a natural wetland
- in stream dams in the Whangamoa, Wakapuaka, or Teal Rivers
- the planting of willow species within 5.0m of riverbanks and any pest plant, and the placement or deposition of any waste, toxic, or radioactive material is also prohibited.

Key Findings

Monitoring information appears to indicate that the impacts on the beds of rivers and lakes are largely due to works occurring outside these environments themselves. This may be due to a paucity of monitoring information relating to activities occurring in streams rather than a clear signal that in-stream activities are not causing impacts. Available information relating to riverbed levels in the Whangamoa and Wakapuaka rivers suggests that there have not been significant changes. There is the possibility that further monitoring could be undertaken as part of a planned review of the Natural Hazards Overlay and as part of the Catchment Management Plan programme. Until further monitoring work is provided it is difficult to ascertain whether the objectives of the NRMP are being effectively achieved.

The current rules in the NRMP would make it difficult to monitor impacts as permitted activities are subject to performance standards that are sometimes difficult to quantify prior to development occurring. Therefore this monitoring information needs to be considered through a wider lens that incorporates water quality, flooding, fish passage, and impacts on aquatic habitats and the link with works within watercourses as well as works outside.

Key Recommendations for Further Work

- Establish a methodology for monitoring gravel extractions as part of the consent process, and
- Ensure that further monitoring work undertaken as part of a planned review of the Natural Hazards Overlay and the Catchment Management Plan programme considers the potential impacts of in-stream and stream margin development.

SIGNIFICANT VEGETATION AND FAUNA

Policy Direction

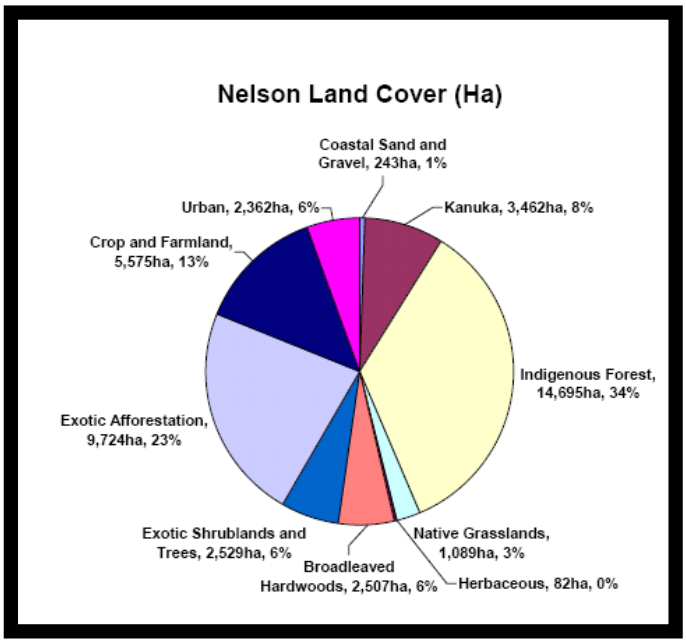
The NRPS and NRMP objectives and national policy direction (RMA, NZCPS and Draft NPS on Indigenous Biodiversity) seek the protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna, and areas of indigenous biodiversity. NRMP policies require that additional mapping of Significant Natural Areas be carried out and the promotion of linkages and corridors between areas of natural vegetation be sought. NRMP rules generally discourage the clearance of indigenous vegetation in sensitive areas that have already been identified in the NRMP such as the Conservation zone, Conservation Overlay, Biodiversity Corridors, or Riparian Overlay.

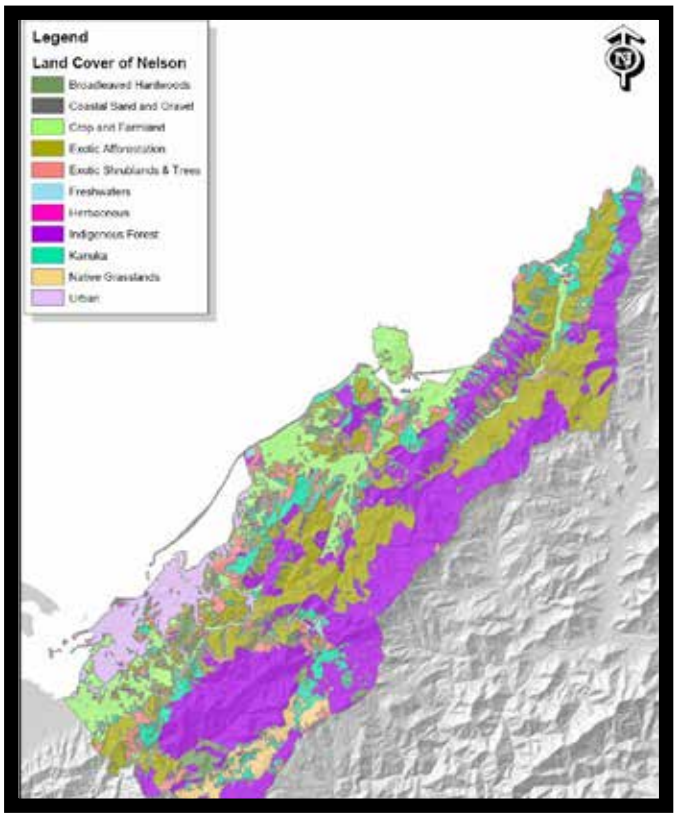
Key Findings

While the existing rules in the plan relating to vegetation clearance and subdivision go some way to protecting significant vegetation and fauna, progress has been slow in achieving the objectives of the NRMP as further work is needed to better identify areas of significant vegetation and fauna habitat. The introduction of biodiversity corridors and the commencement of mapping potential Significant Natural Areas is a positive step in the right direction. However Biodiversity corridors have not been considered on a citywide scale and areas of significant vegetation and fauna habitat (Significant Natural Areas) do not have formal protection within the NRMP as directed by the Environment Court and anticipated in the NRMP objectives and policies. Furthermore, buildings are starting to be built on sites identified as potential Significant Natural Areas.

While the rate of vegetation clearance appears to have slowed pest and weed management needs to improve as this has been identified as the largest threat to significant vegetation and fauna habitat within Nelson in a number of studies.

A significant area of high conservation value land is protected via public ownership in the





Conservation zone (approximately 14,000ha out of 42,000 ha or one third of Nelson city's land area).

A number of studies have also highlighted the risk to coastal and freshwater habitat from increased intensification and expansion of urban areas and poor rural land and water management.

A better understanding of forestry operations will also help anticipate the potential for future ecological, freshwater and landscape impacts.

Key Recommendations for Further Work

- Undertake comparative analysis between NZ Land Cover Database 2 & 3 (see map on previous page)
- Progress the Significant Natural Area Mapping and associated Plan Change
- Assess initiatives to improve Pest and Weed management via consultation with landowners required as part of the Significant Natural Area Mapping
- Investigate the inclusion of additional biodiversity corridors in the NRMP in the remainder of the city as part of the Nelson Development Strategy.
- Contact forestry companies to ascertain when and where forestry areas are planned to be logged to help determine the potential for future ecological impacts
- Implement the NZCPS and, once finalised, the NPS Indigenous Biodiversity
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

LANDSCAPE VALUES AND NATURAL FEATURES

Policy Direction

The purpose of the Resource Management Act includes the protection of outstanding natural features and landscapes and the preservation of the natural character of the coastal environment.

A key focus to the New Zealand Coastal Policy Statement 2010 (NZCPS) is on preserving the natural character of the coastal environment and protecting natural features and landscape values through identifying these features and protecting them from inappropriate subdivision, use, and development and encouraging restoration of the coastal environment.

NRMP Policies DO9.1.1-DO9.1.4 seek the protection of significant landscape and coastal features (particularly ridgelines, the coastal environment, and riparian margins) and the management of development to achieve this (particularly when viewed from primary road routes).

The Conservation, Coastal, and Landscape Overlays along with the Open Space and Recreation and Conservation zones cover over half the Nelson land area (25,305ha out of 42,275ha), even when allowing for some overlap in zonings. These zones all aid in maintaining a natural open backdrop and foreground to the city and play a key role in landscape protection. Subdivision in these areas is generally a discretionary activity, apart from the Rural zone where it is structures and earthworks (rather than subdivision) that generally require a discretionary activity consent.

Key Findings

NRMP landscape controls do not meet the intent of the NRMP objectives in that landscape matters are identified as important considerations in the Coastal and Conservation zone objectives but there is little or no reference to landscape matters in the relevant rules.

Provisions in the NRMP do not meet the intent of national and regional policy direction as outstanding natural features and landscapes, and

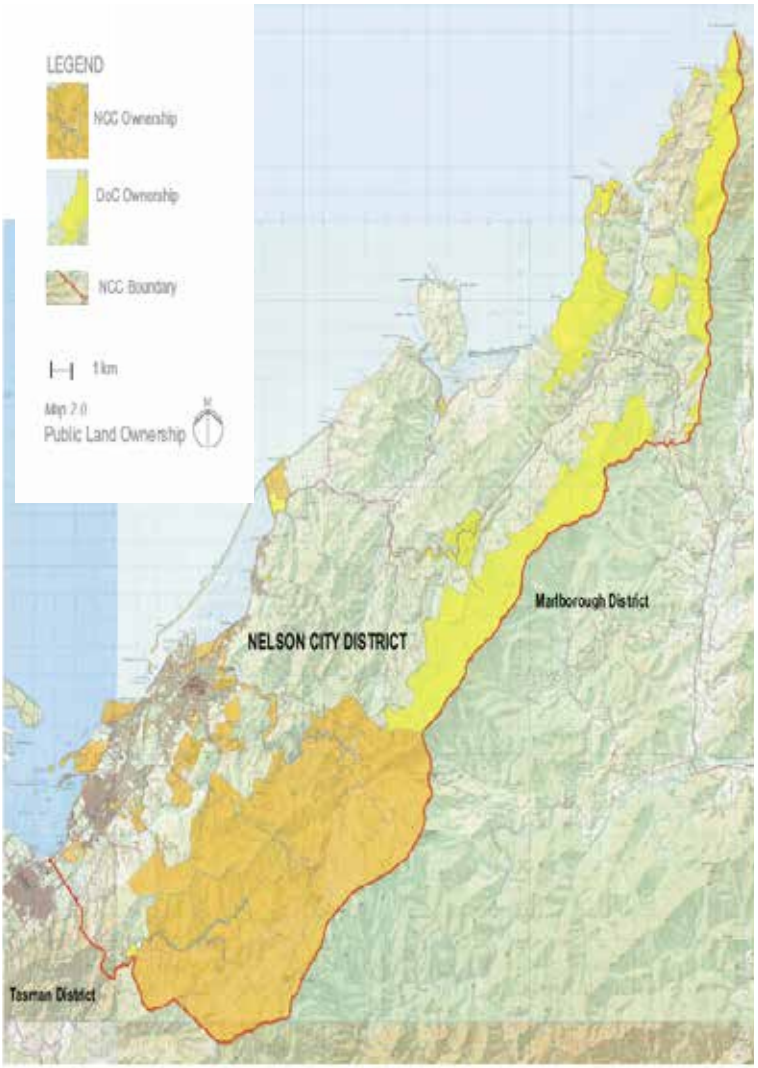
natural coastal character areas, have not been appropriately identified and protected.

A review of the available quantative data suggests that the plan is effective at achieving its general objectives by limiting the extent of development in significant landscapes as currently identified but has less effect at controlling development in other important landscapes.

Recent plan changes (PC13, 17, and 18) will result in an increased density of development in the Lower Foothills areas. Existing Council forestry operations are also located within significant landscape areas. Accordingly, there is a need for further qualitative analysis due to the limitations of the quantitative analysis undertaken as part of this s35 report, and given that the last landscape assessment (the Nelson Landscape Study) is over seven years old and has not been considered by the public or Council.

Key Recommendations for Further Work

- Contact Forestry companies and landowners with forestry blocks to ascertain when and where forestry areas are planned to be logged to help determine the potential for future landscape impacts.
- Undertake further landscape analysis, in consultation with the community, as part of the Nelson Development Strategy and to inform a response to the NZCPS.
- Following further landscape analysis, review the landscape provisions in Resource Management Plans to ensure that they meet national and regional policy direction and reflect the current state of the environment.
- Explore opportunities to work with Tasman and Marlborough District Councils.



AIR

Policy Direction

Safeguarding the life supporting capacity of air and having particular regard to the finite characteristics of natural and physical resources and the maintenance and enhancement of amenity values are Part II RMA matters. Natural resource allocation is a key regional Council function.

The National Environmental Standards for Air Quality came into effect on 8 October 2004. The NES for Air Quality are regulations made under the Resource Management Act 1991 which set a guaranteed minimum level of health protection for all New Zealanders.

The NES is made up of 14 separate but interlinked standards. The 14 standards in the NES include:

- seven standards banning activities that discharge significant quantities of dioxins and other toxics into the air
- five standards for ambient (outdoor) air quality
- a design standard for new wood burners installed in urban areas
- a requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions.

Nelson Regional Policy Statement Objective DA1.2 seeks improvement in Nelson's ambient air quality. A key method highlighted in DA1.4.2 is for Council to prepare a regional air quality management plan.

The Nelson Air Quality Plan (NAQP) was notified in 2003, having immediate legal effect, and was made operative on 3 November 2008. The NAQP is therefore not due for an assessment of its efficiency and effectiveness until 2013. This assessment purely looks at whether the objectives of the NRPS have been achieved.

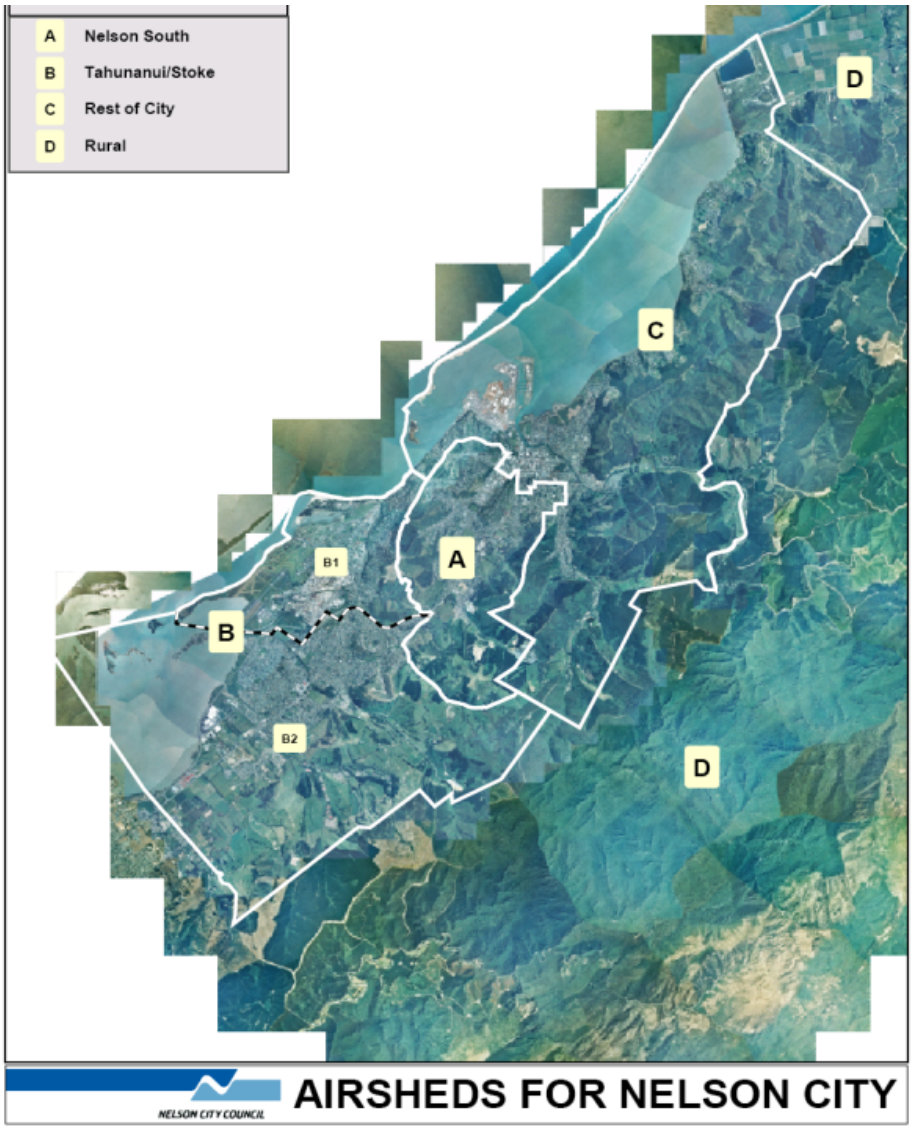
Key Findings

A mix of regulation and incentive has seen air quality improve significantly in Nelson since 2001. PM_{10} concentrations have fallen from levels of 165ug/m^3 in Airshed A in 2001, to 58ug/m^3 and 15 breaches in 2011 (see map and graph on next page). Airshed B concentrations have fallen from 100ug/m^3 in 2007 and 9 breaches to not more than one breach per year and compliance with the national standard (50ug/m^3). Airshed C is fully compliant.

Overall the NRPS objective, that seeks improvement in Nelson's ambient air quality, and the NES Air Quality standards are on track to being effectively achieved by 2013.

Key Recommendations for Further Work

- That a full assessment of the efficiency and effectiveness of the Air Plan be carried out in 2013 in accordance with the s35 requirements of the RMA.
- To ensure on-going compliance with the NES Air Quality, it is recommended that the five yearly emission inventory continue.


A Nelson South
B Tahunanui/Stoke
C Rest of City
D Rural
A
B
B1
B2
C
D
D
NELSON CITY COUNCIL
AIRSHEDS FOR NELSON CITY


Airshed A – Clean Heat & Air Quality
Expenditure ($million)
No. of times standard breached
2.5
2.0
1.5
1.0
0.5
0.0
80
60
40
20
0
Year ended June ... 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
timeline
1. CHWH stage I – phase out of all open fires and some enclosed burners
2. CHWH stage II – phase out of remaining pre-1996 enclosed burners
3. Financial assistance following first compulsory phase-out date of older enclosed burners that came into effect 1 January 2010

ENERGY

Policy Direction

The effects of climate change, the efficiency of the end use of energy ,and the benefits derived from the use and development of renewable energy, are considerations that should be had regard to when making decisions pursuant to part 2 of the RMA. Regional functions under the RMA include the strategic integration of infrastructure with landuse.

The NPS Renewable Electricity Generation requires that provisions for renewable electricity generation are incorporated into resource management plans by April 2013. Renewable electricity generation includes solar, biomass, tidal, wave, ocean current, hydro-electrical, wind, and geothermal resources.

The NZCPS requires that the potential of renewable resources in the coastal environment, such as energy from wind, waves, currents, and tides, to meet the reasonably foreseeable needs of future generations be taken into account.

NRPS objectives promote the sustainable use of energy through an orderly transition from non-renewable to renewable resources and the stabilisation of greenhouse gas emissions below the 1990 levels by the year 2000. Policies in the NRMP require environmentally responsive subdivision and development through the efficient use of infrastructure, containment of urban sprawl, reduction in vehicle dependence, the solar orientation of buildings and sites, and the encouragement of the use of renewable energy sources and sustainable building materials.

Rules in the NRMP do not specifically encourage the provision of renewable energy although daylight standards, high density subdivision controls, carparking and road design standards, may result in a potential reduction in the use of non-renewable energy sources.

Key Findings

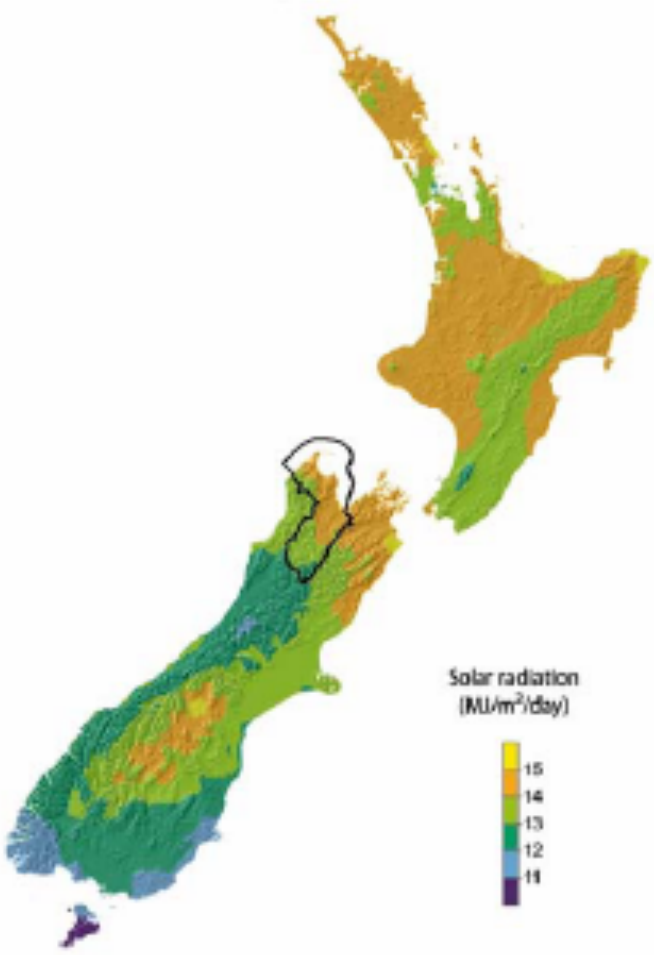
While efforts are being made to reduce non-renewable energy use by promoting alternative means of travel, solar hot water heating, and insulation retrofits, it is unclear whether the objectives of the NRPS are being achieved in terms of green house gas emissions, as 1990 emission levels are not defined in the NRPS. However data included in the Communities for Climate Protection Programme Local Action Plan suggest that greenhouse gas emissions are increasing (see graph on next page).

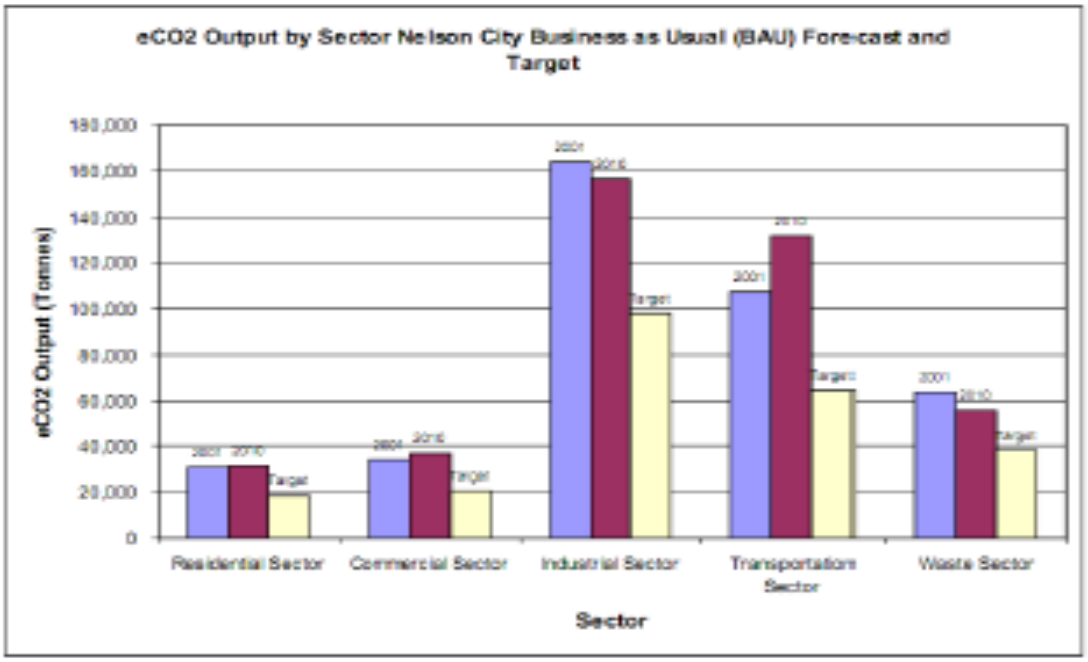
While Plan change 14 and 23 have recently introduced a range of new provisions to support reductions in energy use it is too soon to measure their effectiveness.

While there are NRMP provisions in place that provide for the transmission of electricity in accordance with the National Policy Statement on Electricity Transmission 2008, further work may be required to implement the NPS for Renewable Electricity Generation 2011. Based on a review of the Renewable Energy Assessment - Tasman District, it appears that the focus on support for independent renewable energy sources such as solar energy (and potentially Ground Source Heat Pumps), landfill gas transfer, and alternative transport modes, should be the main focus for the future (see solar map on next page). Consideration should also be given to exploring the potential for forestry waste to create energy. On the basis that this is correct, it appears that the provisions in the NRMP (following Plan Change 14 and 23) are effective and efficient as they do not significantly constrain, and in some cases promote, these forms of renewable energy. This does need to be reviewed over time and would benefit from a renewable energy assessment specific to Nelson City. However, the trend in relation to transport emissions is a particular concern. Clear emission targets and a plan to achieve these would also be a useful addition to the Resource Management Plans.

Key Recommendations for Further Work

- Update NRPS objectives to reflect more measureable and up to date greenhouse gas emission targets.
- Undertake a renewable energy assessment for Nelson City with reference to the Tasman and Marlborough reports.
- Change the NRMP to implement the National Policy Statement Renewable Electricity Generation
- Monitor greenhouse gas emissions and amend the NRPS controls to achieve targets, where required.
- Explore opportunities to work with Tasman and Marlborough District Councils.





SOLID WASTE

Policy Direction

The purpose of the RMA includes the need to utilise resources efficiently while maintaining and enhancing the quality of the environment.

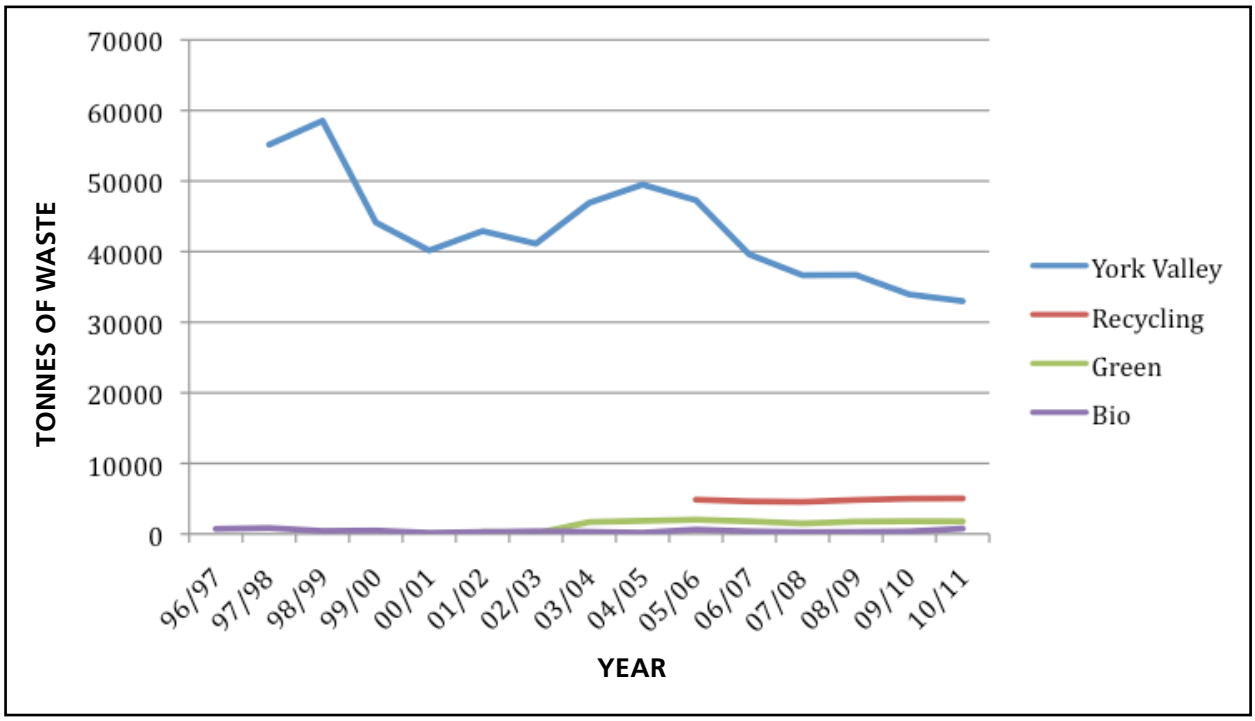
NRPS objectives (WM1.2) for solid waste seek that waste streams will be managed to the highest practical level of clean production, waste reduction, reuse, recovery, and recycling to dispose of residual wastes and a 20% reduction by weight in solid waste requiring landfill disposal per head of population by the year 2000 compared to 1993.

NRMP objective DO3.2 seeks the highest practical level of waste reduction, reuse, recovery, and recycling and appropriate management of impacts from waste disposal. Plan Change 14 introduced objective DO13A.6 that indicates that urban development should meet the community's current needs without compromising future needs. Policy DO13A.6.1 requires that development should be environmentally responsive by considering sustainable options for the minimisation and treatment of waste.

Other than controls relating to landfills and the effects of disposal of solid waste there are no rules that specifically seek to manage solid waste.

Key Findings

It would appear that the overall NRMP objective for waste reduction is being achieved with the total tonnage of waste decreasing and alternative waste disposal methods increasing (refer graph below). The specific target requiring a 20% reduction by weight in solid waste requiring landfill disposal per head of population by the year 2000 compared to 1993 appears to have been achieved also and exceeded in the longer term. There was a 69% decrease in tonnes per person between 1997 and 2000 and a 50% decrease between 1997 and 2011 (46,200 people generating 32,000 tonnes in 2011 – or 0.69 tonnes per person).



SOIL

Policy Direction

Safeguarding the life supporting capacity of soil and having particular regard to the finite characteristics of natural and physical resources are RMA Part 2 matters. Soil conservation is a key regional Council function.

The NZCPS 2010 (policy 22) seeks to control the effects of sedimentation on the coastal environment by ensuring that subdivision use and development will not result in a significant increase in sedimentation, controlling the impacts of vegetation removal(including harvesting plantation forestry), and reducing sediment loadings in runoff and stormwater through landuse controls.

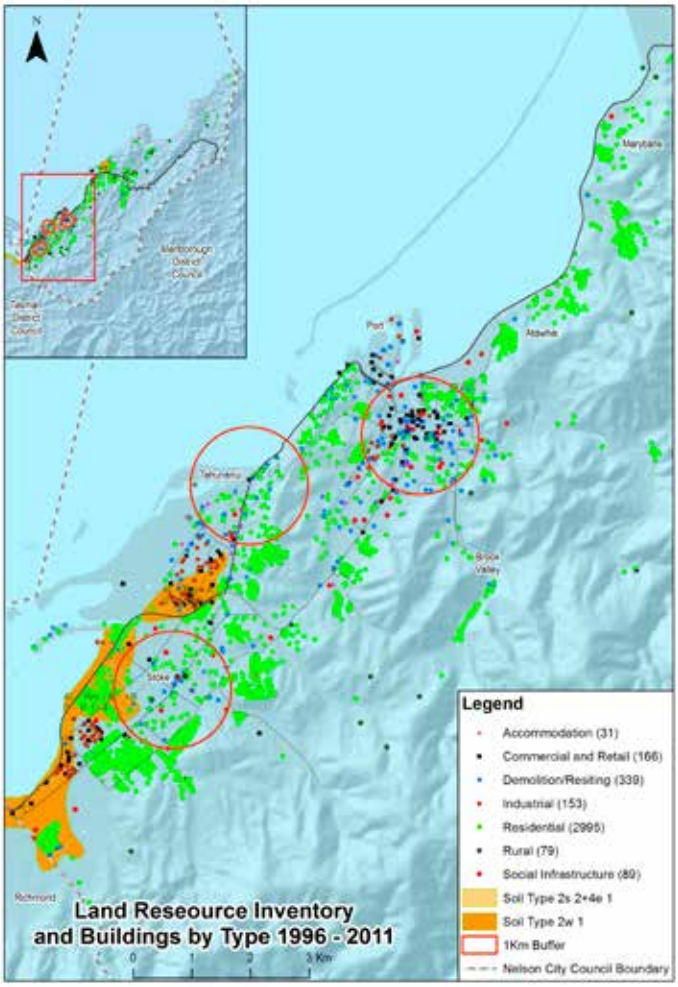
NRMP Objective DO13.1 promotes an environment where the adverse effects of accelerated soil erosion are avoided remedied or mitigated. Objective RU1 seeks to protect resources and capacities including the life supporting capacity of soil to meet the reasonably foreseeable needs of future generations.

The most relevant rules relating to the management of soil are vegetation clearance, soil disturbance and earthworks controls

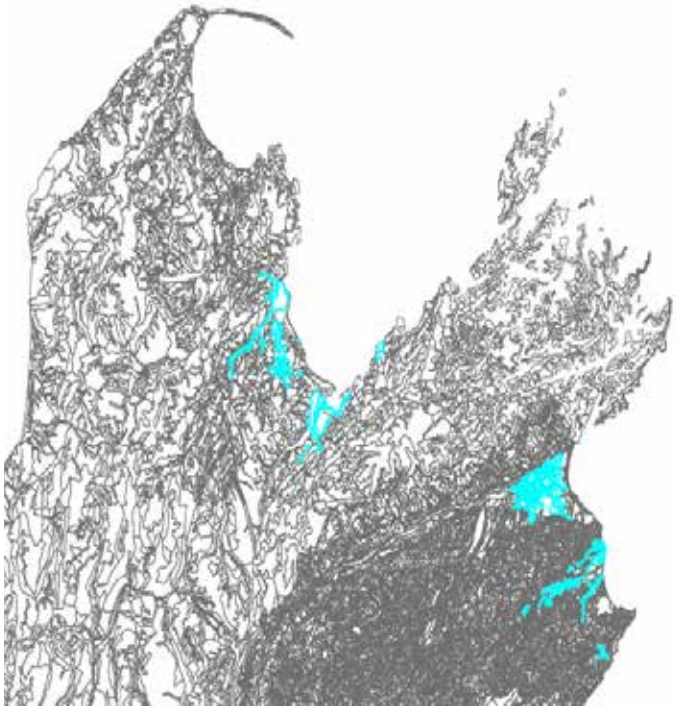
The Land Management Overlay reflects slope stability risk areas as well as low lying areas subject to potential coastal erosion. The rules in the plan apply to the Residential, Open Space, and Rural zones and refer to the earthworks controls in the relevant zone. These rules have as a matter of assessment the loss of topsoil or movement of soil down slope, damage to structures on adjoining sites and a number of other sedimentation, hazard, and water quality matters.

Key Findings

- Nelson's high quality soils (see map above right) are now fragmented and developed to a degree that they are beyond recovery although this resource is minor in size when considered on a wider regional scale, (see bottom map adjacent that outlines areas of class 1 and 2 soils across the top of the south).



Class 1 and 2 Soils Across the Top of the South



- The loss of native vegetation cover has declined,
- Water quality may be being impacted by sedimentation and runoff associated with forestry, farming and earthworks,
- Soil contamination needs better management, and
- The Land Management Overlay is necessary but due for review

On this basis it is debateable as to whether NRMP Objective DO13.1, that promotes an environment where the adverse effects of accelerated soil erosion are avoided remedied or mitigated, is being met.

Key Recommendations for Further Work

That the recommendations in the Freshwater, Significant Vegetation and Fauna, Natural Hazards and Contamination Sections are implemented as they relate to improving water quality and better management of soil contamination and natural hazards, protection for significant vegetation, and an understanding of the impacts of forestry and farming operations.

NRMP EFFICIENCY

NRMP efficiency has been gauged by considering where the majority effort is placed in terms of consent and plan change work and whether this is aligned to the general outcomes sought in the Plan.

The Rules in the NRMP appear to be efficient at achieving the NRMP policy direction as:

- The highest number of resource consents are typically in the residential zone and the least in the conservation zone reflecting the anticipated location of growth
- the lowest proportion of consents were typically related to coastal, signage, air quality, and heritage which is consistent with policies that seek minimal signage, enhanced air quality, limited coastal development and the protection of heritage.

The majority of resource consents are being issued for earthworks and bulk and location. As depicted in the graphs on next page, the lower threshold consents (controlled and discretionary) are for earthworks and higher threshold consents (discretionary and non-complying) appear to relate to bulk and location (daylight, site coverage and yards). This brings the efficiency of the earthworks and bulk and location rules into question, particularly the earthworks rules where the effectiveness of these controls is debateable given water quality decline highlighted in the Freshwater section of this report. A more in-depth analysis of resource consents would be useful to determine whether permitted thresholds could be adjusted to reflect the current situation or to be clearer about the effects that are attempting to be avoided, remedied, or mitigated. This work should be incorporated into the NPS Freshwater Plan Change and consider further monitoring of Plan Change 14 which introduces changes to the Residential zone bulk and location controls.

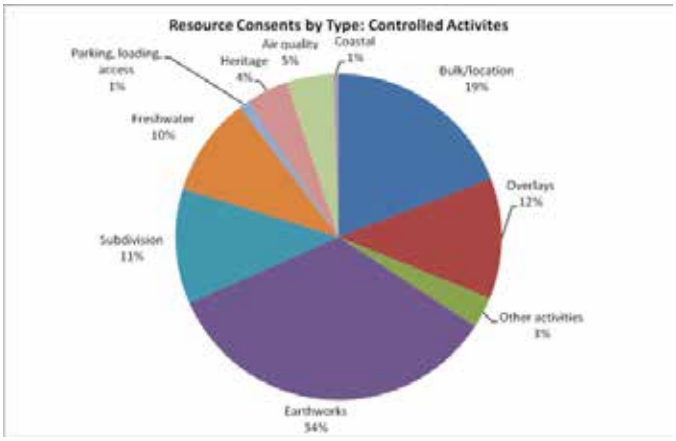
A survey of Plan users in 2009 suggests that the NRMP is efficient to use although there was a desire to have a clearer strategic vision for how the city should be in the future which raises a question

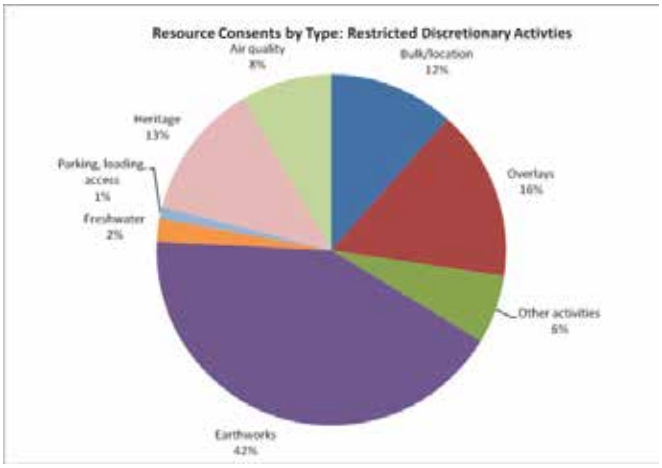
about whether objectives need to be more outcome focussed and measureable.

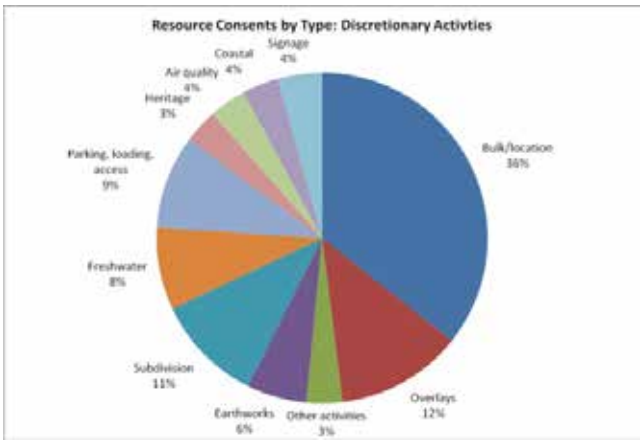
A range of issues have been highlighted for plan amendments since 2001. The vast majority of these have been addressed and those that have not will be addressed when the relevant section of the plan is reviewed in accordance with the general direction in the Long Term Plan. The majority of issues identified in the effectiveness component of this report are already provided for in the 2012-2022 work programme which suggests that this is an efficient system for identifying plan changes.

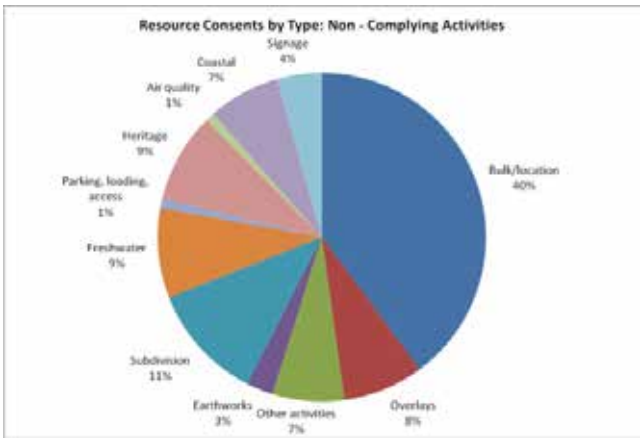
Recommendations for Further Work

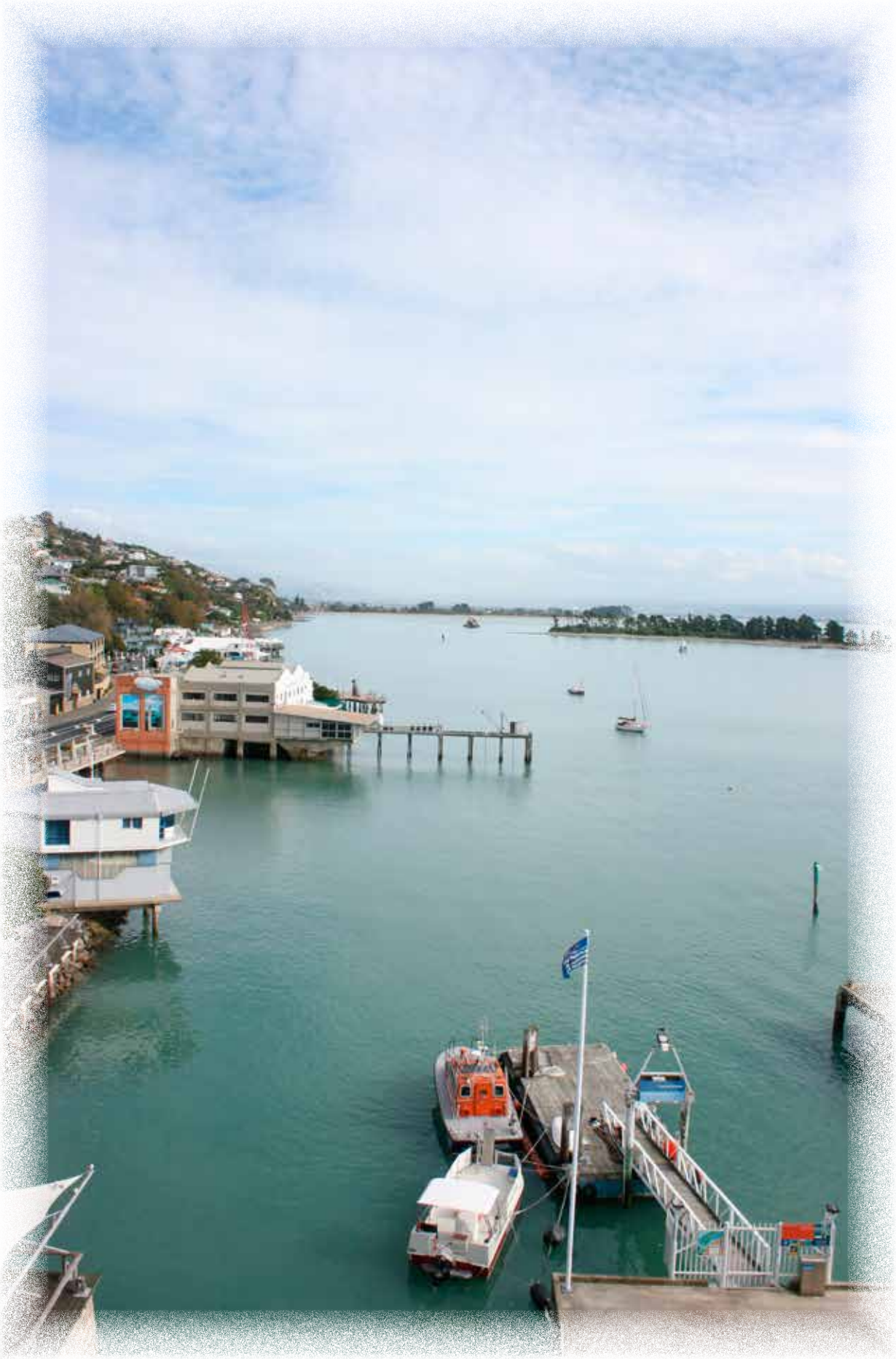
- Seek feedback from Plan users about this efficiency and effectiveness review to compliment the Plan user surveys of 2009
- Undertake a review of the earthworks controls as part of the NPS Freshwater project to investigate if their efficiency can be improved
- Undertake a review of the residential bulk and location controls following further monitoring of Plan Change 14 outcomes











PART II – RESEARCH AND ASSESSMENT

This part of the report provides an in depth analysis of how effective and efficient Council has been at achieving the objectives of the NRMP. A summary of recent changes in national and regional resource management policy is provided for each objective area. This gives a sense of how current the NRMP and NRPS is. A summary of the relevant objectives and performance indicators and of the monitoring information available for each objective area is provided below. Following each summary is an assessment of whether the NRPS and NRMP objectives are being met through current mechanisms. If the objectives are not being met, additional work is recommended to inform future monitoring needs and the NRMP work programme generally. An assessment of the efficiency of the NRMP rules is provided at the end of this report.

GROWTH

NATIONAL POLICY DIRECTION

The Resource Management Act promotes the sustainable management of natural and physical resources. It identifies a number of matters of national importance (largely natural and heritage features) that should be protected from inappropriate subdivision use and development, and encourages the efficient use and development of natural and physical resources. A key function of regional councils has been the integrated management of the natural and physical resources of the region. In 2005 the functions of regional Councils were also extended to include the strategic integration of infrastructure with landuse. More recently there has also been a trend towards spatial plans influencing the development of Resource Management Plans.

Two reports were developed for the Minister for the Environment in 2010 as part of the Phase 2 Resource Management Act reforms.

The report entitled "Report to the Minister for the Environment's Infrastructure Technical Advisory Group" (ITAG) recommended that "The development and operation of regionally and nationally significant infrastructure" be added to s6 as a matter of national importance to provide a social and economic balance to the existing environmental matters.

The report entitled "Report to the Minister for the Environment's Urban Technical Advisory Group" (UTAG) recommended that:

- the importance of urban outcomes and urban design be added to s6,
- a National Policy Statement be developed to improve direction on housing affordability, the built environment and urban growth, and
- the definition of the environment be expanded to include the built environment

In October 2011 the government established a technical advisory group to review the principles (s6&7) of the RMA. The recommendations will be considered during 2012. The scope of work in the terms of reference includes whether UTAG and ITAG s6&7 recommendations can be given greater emphasis in the RMA.

The New Zealand Coastal Policy Statement (NZCPS) 2010 highlights the need to consider where, how, and when to provide for future residential, rural residential, settlement, urban development and other activities in the coastal environment (Policy 7a) and also encourages the consolidation of existing coastal settlements and urban areas where this will contribute to the avoidance or mitigation of sprawling or sporadic patterns of settlement and urban growth (policy 6(c)).

The NPS Freshwater 2011 has the integrated management of water and landuse including the sequencing of regional growth, landuse and development and the provision of infrastructure as a key objective.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

The NRPS objectives and policies guide urban structure whilst the NRMP focuses on the anticipated form and location of urban growth/ development.

NRPS objective DH1.2.1 seeks to avoid, remedy, or mitigate any adverse effects of urban expansion on the sustainable management of natural and physical resources including rural land uses.

Policies under DH1.3 indicate that areas containing significant natural and physical resources and hazards should be identified and protected/avoided. While urban intensification is favoured over expansion, expansion will be considered where the benefits to key natural, physical, and heritage resources outweigh the costs, and where future demand is determined and community expectations are met. Urban subdivision and development needs to make adequate provision for services.

The Draft 2008 NRPS growth objectives anticipate more intensive and efficient use of land suitable for residential, commercial, and Industrial uses in a manner that sustains and enhances the quality of Nelson's environment and lifestyle. Strategic infrastructure will be enabled to function efficiently and effectively to meet the needs of a growing region while managing adverse effects on the community.

The NRMP contains a range of citywide and zone specific objectives that guide the form and location of urban growth and development. Plan Change 14, notified in late 2010 with decisions released in mid 2012, has recently provided a significant review of some of these key objectives particularly as they relate to urban design and residential subdivision and development.

Plan Change 14 introduced a suite of new urban design objectives (DO13A) with the aim of creating sustainable places and communities, high quality public spaces and inspiring places, providing for diversity of housing choice and employment and recreational activities and improved natural and physical connectivity, while recognising the local context. Plan change 14 also proposed changes to DO14.1 and DO14.3 to ensure that city layout and design is not only appropriate to the natural characteristics of the City and the orderly and efficient use of land but is also consistent with quality urban design and that the provision of services should also consider the development potential of adjoining land.

DO14 also provides further guidance for city growth as it relates to network utilities (DO14.4) and community services and facilities (DO14.5). These objectives require the efficient use of network utilities and the management of their effects on surrounding environments and the appropriate provision of community services and facilities in the district.

DO15.1 relates to urban form and proposes that intensive development is not detached from existing urban boundaries and avoids or mitigates adverse effects on ecological, recreational, cultural, community and amenity values.

DO 16.1 provides an umbrella objective in relation to zone specific objectives by recognising that the management of the natural and physical resources should respond to the varying resource management issues and the varying actual and potential effects of use, subdivision, development, and protection arising in different parts of the District. The policies then go on to establish the high level purpose for individual zones which can be summarised as follows:

- **Residential** – A quality, high amenity, environment providing for a choice of living styles
- **Inner City** – A City Centre which provides a strong and vibrant focus to the city (particularly for business), together with a City Fringe which supports and complements the City Centre by providing a transition to residential and industrial areas and is the preferred location for larger retailers and wholesalers but not smaller retailers as this would tend to weaken the City Centre.
- **Suburban Commercial** – enable community needs to be met, while minimising their impacts on surrounding areas.
- **Industrial** – provides opportunities for the needs of industry to be met, where the actual

and potential effects of industrial activity are contained and some large format retailing is provided for in a discrete and efficient manner within Schedule N (in Tahunanui). Includes protecting opportunities for future industrial land growth.

- **Open Space and Recreation** – A framework for the present and future management of open space and recreation land
- **Rural** – An environment within which soil, water and land resources are managed sustainably, and the rural character of the District, including water works catchments, and the surroundings of urban Nelson, is maintained or enhanced. Space is provided for genuine rural or rural based activities to occur. The landscape is intended to remain green, spacious and uncluttered and will maintain this character as it is a highly important component of the Nelson landscape. Small holdings are included where they do not compromise these values.
- **Conservation** – An environment where natural character and landscape values are preserved and enhanced. The aim is to preserve a unique portion of Nelson's land and water resources which is largely unmodified, and contains some extremely important plant communities such as around Dun Mountain, and areas of high ecological significance such as the Boulder Bank. It also contains important cultural and geological sites and features, such as argillite quarries used by Māori, plus some old mining sites.
- **Coastal Marine Area** – A Coastal Marine Area where the natural character is preserved and enhanced and inappropriate subdivision, use, and development do not occur (NZCPS).

Zone specific objectives that relate primarily to growth are outlined below.

Residential objectives include RE1, RE2, RE4, and RE5. These objectives seek a diversity of living styles in a form that maintains and enhances significant public views and natural features and landscapes that contribute to Nelson's character and setting. Specific reference is made to the outcomes within Marsden valley which provides for a range of densities that will not adversely affect rural and landscape character. Plan Change 14 also introduces policy RE1.2A which provides further guidance on the form and location of higher density development, being in close proximity to services, shops, transport routes, open space and other urban amenities.

Objective IC1 indicates that a compact and convenient pedestrian oriented environment within the City Centre, supported and complemented by a predominantly vehicle oriented City Fringe of self contained sites is desirable. Plan Change 21 amended this objective to clarify that the role of the City Fringe is to be more vehicle orientated than the City Centre but not necessarily predominantly vehicle orientated. PC21 also expanded the urban design provisions and removed the parking controls from the eastern city fringe.

According to objectives SC1 and SC3 Suburban Commercial centres will act as community focal points and enable the community to meet their needs while the Marsden Valley Suburban Commercial zone, in particular, will be a centrally located quality urban environment.

Objective IN1 emphasises that natural and physical resources should be used efficiently in the Industrial zone. The policies go on to emphasise the need for non-industrial activities to be discouraged from entering the Industrial zone due to industrial land being a scarce resource in Nelson. The exceptions are retail activities that are of a scale too big to locate in commercial areas or are activities that support the industrial areas in which they are located such as the airport of the port.

Open Space and Recreation zone objectives OS1 and OS2 highlight the need to maintain the social wellbeing and health of the community through the maintenance (quantity and quality) of existing open space while providing for the changing needs and aspirations of the community. Policies recognise the amenity provided by open space, particularly the city backdrop, and the need for activities to fit in with surrounding uses.

Rural objectives RU1 and RU2 seek that land should be used in a manner that protects rural land and resources for future generations and maintains or enhances an environment dominated by open space and natural features. Policies and explanations go on to clarify that rural intensification has been provided in areas with limited productive potential and to provide a transition from residential zoning. Limited extensions to the residential area are expected by the plan in the northern rural area but this, along with rural intensification, is not anticipated until Council has developed a strategic plan for the area. A low level of rural intensification is envisaged in the coastal environment (between the coast and the first ridgeline to the landward side of the coast) and will largely be limited to the existing settlements of the Glen and Cable Bay.

The Conservation zone objective CO1 requires the retention of a largely unmodified landscape backdrop to the district. Policies emphasise the need to maintain the appearance of the backdrop when viewed from urban areas, the coast or from the State Highway and the overall landscape cohesion and pattern of the Conservation zone generally through controlling the location of structures and changes to natural landforms and vegetation.

Performance Indicators

The NRMP contains a wide range of performance indicators relating to growth (primarily DO13Ae, DO14e, DO15e, DO16e, REe, ICe, SCe, INe, OSe, RUe, CMe, and COe). A review of these highlights some key indicators that are either emphasised across a number of objectives or are unique to monitoring the success (or otherwise) of achieving these objectives. These performance indicators can largely be measured utilising GIS, census, transport, landscape, and building consent data as summarised below:

- change in contours,
- location of development in relation to services,
- traffic counts,
- travel distances,
- increase in cycling, walking, and public transport usage,
- increased connectivity,
- proximity of growth to community services,
- location and density of housing/development types (across the city and in different zones),
- increased diversity in housing, employment and community facilities ,
- maintenance and enhancement of open space (including greenbelts and the city backdrop),
- maintenance or reduction of the urban environmental footprint, maintain current levels of open space as determined by Ratio of parks per population,
- the spread of their location throughout the city and change in density of built structures in open space and rural environments,
- types of activities occurring in zones (non industrial activities in industrial zones and non-residential activities in residential zones,
- the rate of increase in residential activities in Inner City and increased activities in the centre rather than fringe, and
- changes in availability of land via vacant land surveys.

NRMP RULES

Below is a summary of the key rules that apply to how Nelson grows and develops.

Summary of Subdivision Controls:

Zone	Lowest consent Category	Minimum site size	Conditional Upon	Otherwise
Residential	Controlled	400m² Standard 300m² High Density 1000m² average and 850m² minimum Low density Stoke 600m² Low Density and Port Effects Control Overlay	Complies with Land Development Manual and design standards, minimum floor levels, not in an overlay, and provision of esplanade reserve, and area specific requirements for Stoke, Ngawhatu, and Marsden.	Restricted discretionary if complies with App 14.2 or Comprehensive Housing Development (3 or more integrated residential units) otherwise discretionary Airport and Port Effects overlay < 600m² is Non complying Prohibited in Tahunanui Slope Risk Overlay
Rural	Controlled	15ha Rural 3ha for Lower Density Small Holdings area 1ha Average and 5000m² minimum in Higher Density Small Holdings or 2000m² Marsden Valley/ Ngawhatu	Complying building site, meeting Land Development Manual standards, provision of esplanade reserve and not in overlays	Generally discretionary Non-complying in Nelson North Prohibited if for Papakainga development
Inner City	Controlled	N/A	Complies with Land Development Manual and design standards, minimum floor levels, not in heritage overlay, and provision of esplanade reserve	Discretionary if complies with Land Development Manual and connected to water supply otherwise Non-complying
Suburban Commercial	Controlled	N/A	Complies with Land Development Manual and design standards, minimum floor levels, not in service or heritage overlay, and provision of esplanade reserve	Discretionary if complies with Land Development Manual otherwise Non-complying
Industrial	Controlled	N/A	Complies with Land Development Manual and design standards, minimum floor levels, not in service or heritage overlay, and provision of esplanade reserve	Discretionary if complies with Land Development Manual otherwise Non-complying
Open Space	Discretionary	N/A	N/A	Discretionary
Conservation	Discretionary	N/A	N/A	Discretionary
Coastal Marine Area	Controlled	N/A	Only for protection of marine Areas of Significant Conservation	Non-complying

Summary of Key Permitted Activities:

Zone	Activities	Height	Yards	Coverage
Residential	Residential Home occupation	Daylight Building height 7.5m	front yard 33% of 4.0m with 1.5m minimum side and rear 1.5m > 12m total	Generally: 40% Low Density: 30% South St Heritage Precinct: 60%
Rural	Boarding of cats Industrial or Commercial activity < 300m^2 Activity does not include intensive commercial livestock farming Papakainga Development	12m	10m if >40m^2	2500m^2 impervious surfaces
Inner City	Residential activities above ground floor on scheduled frontage. City Fringe – restrictions on type of retail with larger formats restricted to vehicle access to the ring road or within 50m of ring road	Daylight on Residential and open space zone Daylight on the ring road and on parking squares Not penetrating Church Hill view shaft (app 8) 15.0m generally Minimum facade height of 8.0m on ring road Intensive Development Area: 20.0m and 12.0m rest of Fringe	Building setback 3.0m diagonal on corner site City Fringe – Building setback 3.0m from Residential boundary	City Fringe: 5% landscaping unless building built to road Large building < 2500m^2
Suburban Commercial	Not boarding of animals, storage of waste materials, drying of animal products, vehicle manufacturing and associated works	Daylight on Residential Zone 8.0m 10.0m Stoke and Tahunanui 21.0m Leisure Area	Building setback 3.0m from Residential boundary	5% landscaping unless building built to road Gross Floor area < 800m^2 generally or Stoke < 1600m^2
Industrial	An ancillary residential unit or office Restricted retail activities	Generally 12.0m 15.0m in Nayland and Saxton Recession planes	3.0m from residential zone boundary 2.0m from major roads Nayland Rd setbacks	
Open Space	Activities permitted by Schedules including those provided in Reserves Management Plans Caretaker accommodation meeting residential zone standards	Daylight adjoining residential zone boundary Generally 7.5m Regional reserves:18.0m Neighbourhood parks: 3.0m for structures and 4.5m for service buildings	No Minimum allowance	No Minimum allowance
Conservation	Maintenance of structures Temporary structures	No minimum allowance	No minimum allowance	No minimum allowance

Zone	Activities	Height	Yards	Coverage
Coastal Marine Area	Limited: Outfall Structures Mooring anchor blocks Temporary structures Maintenance of structures Removal of structures and accumulated sediment Industrial zone permitted activities Minor alterations to buildings in Wakefield Quay	No minimum allowance	No minimum allowance	No minimum allowance

The **Open Space and Recreation** rules provide for a range of permitted activities depending on the type of open space zoning. Generally all open space areas provide for service buildings, aerials, informal recreation, and activities provided for in the reserve management plan with the exception of Neighbourhood parks which do not provide for aerials and do not typically have reserve management plans. Regional Parks generally provide for the widest range of activities (including bazaars, fairs, galas, exhibitions, ceremonies, outdoor sales of programmes, refreshments and souveniers and in particular regional, national and international sporting and other events and tourmaments) followed by City Parks, Sportsfields, and Horticultural Parks. Cemeteries have a focus on funeral services while camping grounds have a focus on camping and short term living accommodation. Whakatu marae has a particular focus on Papakianga housing and Albion square provides for existing office activities.

There are also a range of bulk and location standards that buildings and structures need to meet along with general appendicies relating to parking, access, signs, and hazardous substances and relevant overlays. Development meeting these standards are generally permitted and when they are not met are typically discretionary. All subdivision is Discretioinary and heritage provisions are consistent across the plan. Vegetation clearance, soil disturbance, and earthworks are typically managed as permitted activities or restricted discretionary activities.

The rules in the **Residential zone** control a number of bulk and location matters including yards, living courts, site coverage, height, daylight, and signs where development is either permitted or Discretionary. Non-residential activities are not permitted other than home occupations. Subdivision in the Residential zone is a controlled activity where minimum density standards are meet apart from subdivision occurring in an overlay or where other area specific controls apply. Otherwise subdivision is generally Discretionary. Plan Change 14 makes Comprehensive Housing Development subdivision Restricted Discretionary activity within identified High Density Areas in The Wood and Stoke.

Activities that are not residential in nature or create off site effects such as noise, light spill, or vibration, or require building within the vicinity of the coast are generally discretionary.

The rules in the **Inner City zone** also control bulk and location as well as building design. Buildings are required to be built to the road, meet minimum and maximum height limits, daylight controls, provide landscaping, and provide verandahs. Buildings on the ring road, Montgomery, Buxton, and Wakatu squares require design assessments. Activities are generally permitted apart from residential activities on the ground floor within the inner city or where they do not other building controls. Discretionary

activity consent is required where the above standards are not met or where buildings or precincts have heritage value. Like the residential zone, where development creates off site effects such as noise, light spill, or vibration, or is located within a range of overlays a discretionary activity consent is required. External appearance of large buildings is permitted or controlled.

In the **Inner City Fringe** buildings are required to be set back from residential zones and retail activities are restricted by size form and type either as a permitted activity, controlled activity or discretionary activity. Large format retail is encouraged to be located on the ring route or within 50m as a controlled activity.

Activities in the **Suburban Commercial zone** are relatively unrestricted apart from boarding of animals, processing of animal products, storage of waste materials and automotive manufacturing and repairs such as panel beating which require consent as a discretionary activity. Bulk and location rules control height, verandahs, building set backs and daylight access for residential areas, outdoor living courts for residential activities, and landscaping provision. Development along Wakefield Quay is also controlled. Where these standards are not met consent is required as a discretionary activity.

Building within the vicinity of the Airport and Port are non-complying where they do not meet acoustic design standards. Subdivision is generally a controlled activity where standards are met apart from in heritage areas where subdivision is discretionary.

Industrial zone provisions permit residential and office activities where they are ancillary to industrial activities. Limited retailing is provided for where activities are ancillary to industrial activities or are less than 100m^2. Activities requiring a coastal location or ancillary to airport activities are permitted in the Port Industrial Area and Airport respectively.

There are also a range of bulk and location standards that buildings and structures need to meet (height and setbacks from roads and zone boundaries) along with general appendicies relating to parking, access, signs, and hazardous substances and relevant overlays. Development meeting these standards are generally permitted and when they are not met are typically discretionary.

Activities at the Marina are also specifically restricted to accord with schedule M that provides for boating activities and restaurants and where discharges are controlled.

Subdivision is a controlled activity where Appendix 10,12, and 14 standards are met or alternatively a discretionary activity consent is required. Subdivision in a heritage overlay is discretionary activity.

Residential units in the airport overlay, airport engine testing, visible outdoor storage, noise exceedance, and storage of radioactive material in the Coastal Environment Overlay, the production of hazardous substances that are not stored correctly, and radio frequency exposure levels higher than NZ standards, are non-complying activities.

A limited range of development is permitted or controlled in the Conservation zone such as huts and tracks but generally development requires consent as a discretionary activity. All subdivision is a discretionary activity. Clearance of indigenous vegetation and construction of in-stream dams that are not for urban water supply and not in the Roding river are Non-complying.

The **Rural zone** provides for a range of uses as permitted activities including the boarding of cats and commercial and industrial activities less than 300m^2 in area and other activities excluding intensive commercial livestock farming. Activities generally need to be 30m from any watercourse. Papakianga housing is generally provided for in the rural zone although subdivision of Papakianga housing is a prohibited activity.

There are also a range of bulk and location standards that buildings and structures need to meet along with general appendicies relating to parking, access, signs, and hazardous substances and relevant overlays. A 2500m^2 impervious surface limit also applies. Development meeting these standards is generally permitted and when they are not met is typically discretionary.

Development in the rural area that is closer than 450m to a quarry is a discretionary activity. Activities on the Flaxmore, York, and Marsden quarry along with Marsden Valley and Marsden Hills areas are provided for via a range of area specific provisions.

Subdivision meeting density standards in the rural area is generally a controlled activity and where this is not met subdivision is a discretionary activity. Subdivision in the Nelson North area (between Glen Road and the Whangamoa Saddle) is a non-complying activity where density limits are not met by virtue of Plan Change 05/01. Subdivision in the Heritage, Natural hazard, and Conservation overlay areas is a discretionary activity and a restricted activity in the Coastal Environment Overlay.

A range of further guidance is also provided in the appendicies to the plan for matters such as:

- heritage,
- natural environment and landscape overlays,
- transport and engineering standards,
- bulk and location,
- amenity matters including design, noise, signage,
- hazardous substances, and
- freshwater standards.

These standards help form Nelson's future growth and are discussed in further detail in relevant topics below. This package of rules helps to effectively deliver the objectives of the NRPS and NRMP.

MONITORING INFORMATION

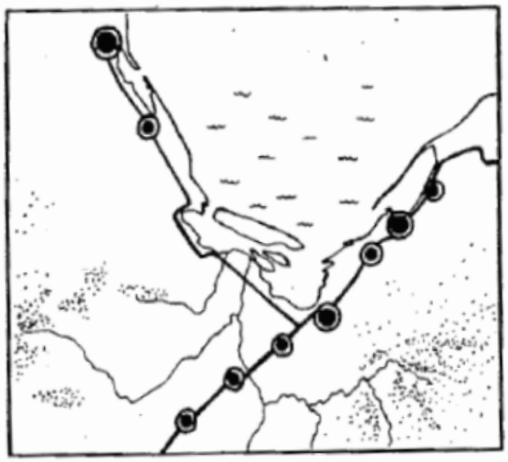
As noted there are a range of performance indicators and measures that are useful to gauge whether resource management plan objectives are being achieved. A synopsis of available monitoring information is provided below.

Growth Assessments

As noted above NRPS policies and methods indicate that an assessment of the costs and benefits of urban expansion, involving consultation with the community, would be undertaken prior to District plan changes taking place. A number of growth studies have been carried out preceding the notification of the NRMP and through its development.

The 1977 Nelson Urban Growth Strategy looked at the wider Nelson/Tasman region and identified the preferred pattern of settlement as being a combination of consolidation within Nelson City, together with major growth at Richmond and modest growth at both Haven and Motueka, as encompassed by the string of beads concept outlined below:

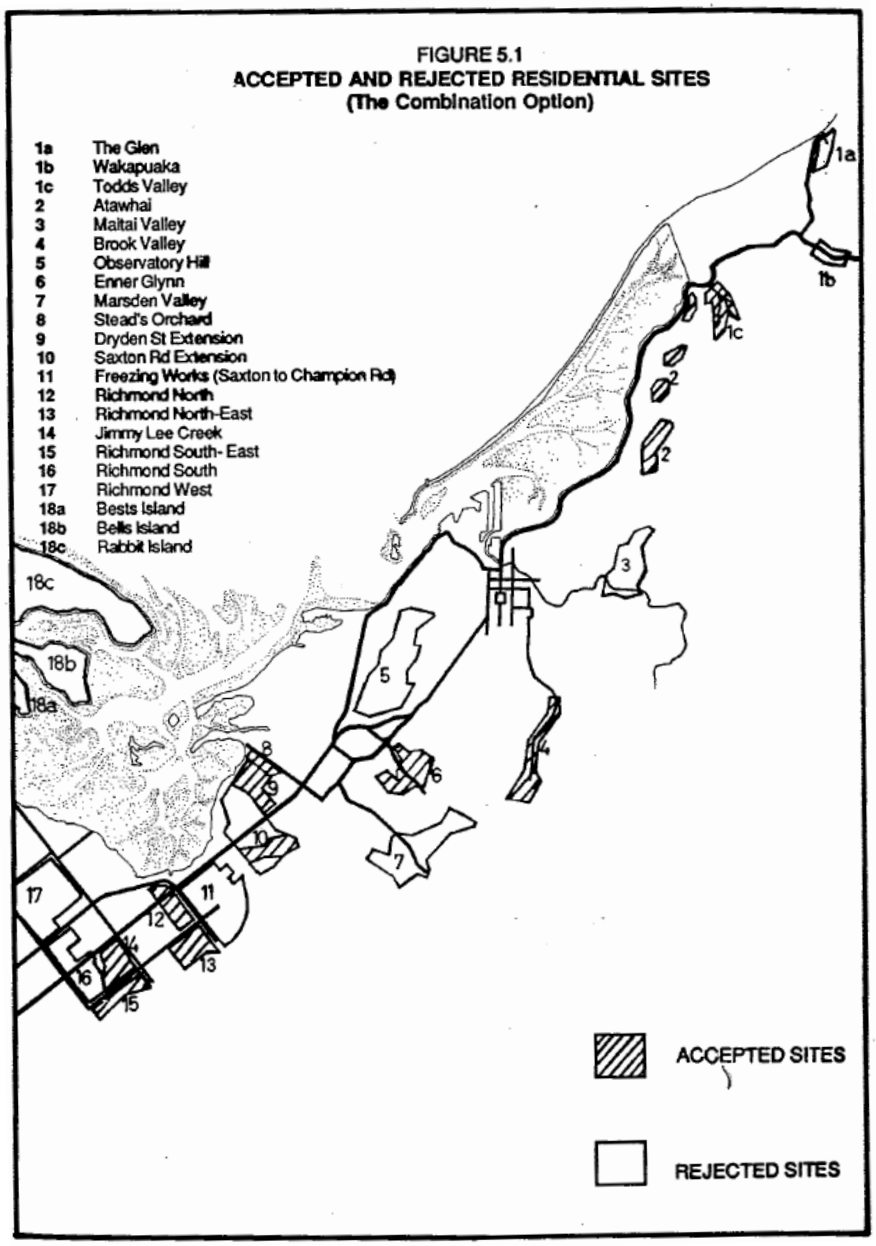
FIGURE 2.1
'STRING OF BEADS' CONCEPT



Source: NUGS 1977

For Nelson this included consolidation of development on vacant residential land and Observatory Hill, extending northwards at Atawhai and the Haven Valleys, and the extension up the Maitai, Brook, and Marsden Valleys and at Enner Glynn. Additional industrial land was to be provided in the vicinity of Richmond while the space between Richmond and Stoke was to be kept in rural production and maintained as a greenbelt.

The Nelson Urban Growth Strategy 1986 (RAD 1115933) assessed population structure and patterns, trends in the housing market, urban employment and rural development, and available residential and industrial land. A technical evaluation was done on 22 residential sites and 3 industrial sites with recommendations highlighted in the maps below:



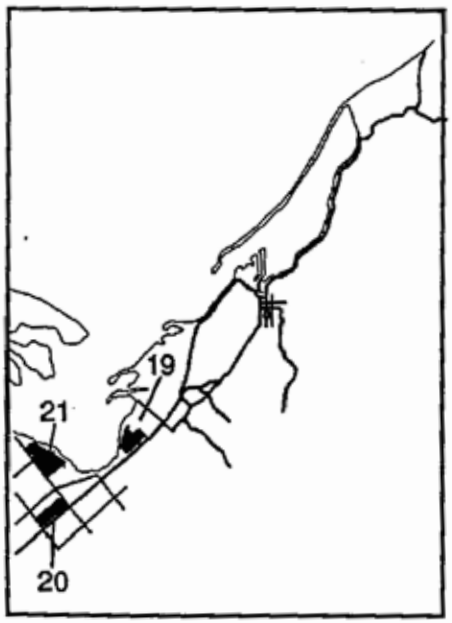
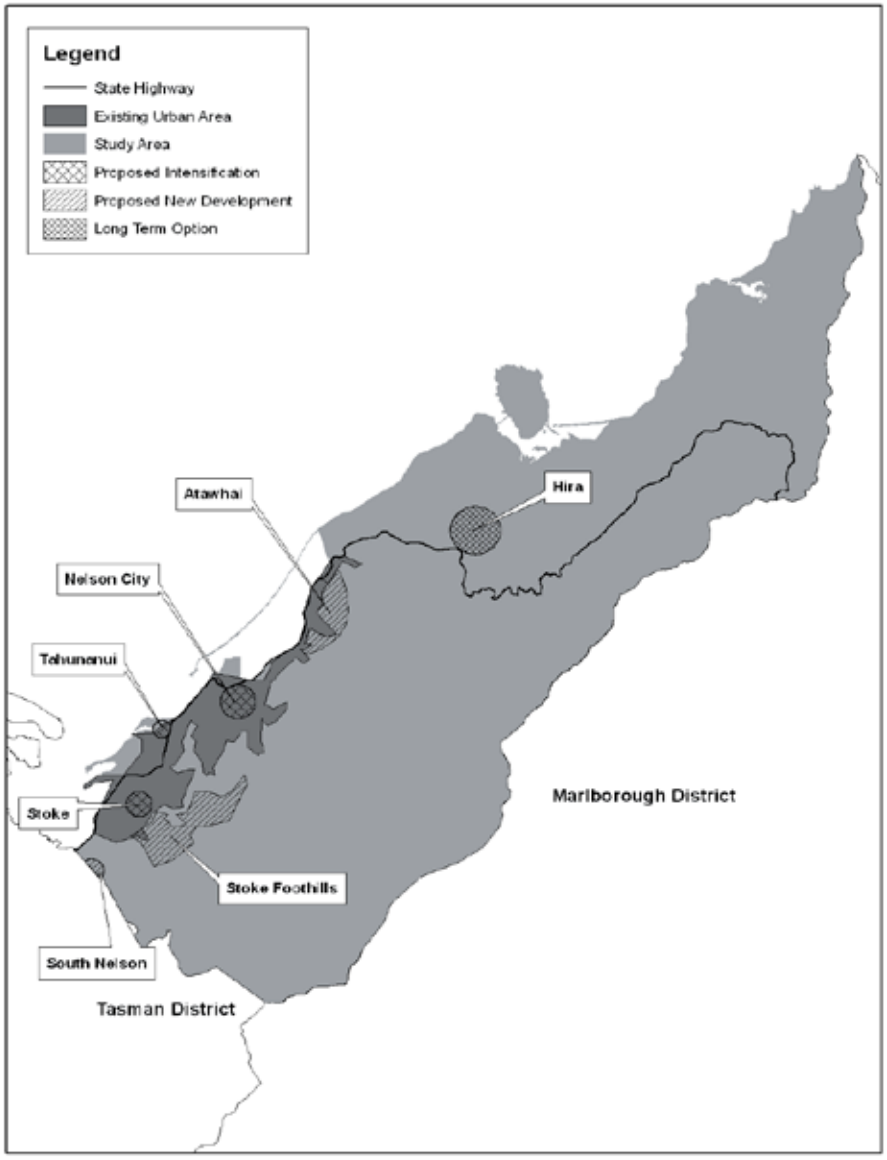


Figure 6.1 Potential Industrial Sites

This is reasonably consistent with NUGS 1977 apart from discounting the Maitai and Marsden Valleys and Observatory Hill as growth areas due to a better understanding of landuse constraints such as geology. Industrial growth was identified at Saxton and in Richmond.

The Nelson Urban Growth Strategy 2006 (RAD 218085) solely focussed on Nelson City and primarily on residential growth. The growth concept is represented below:

Figure 2: Preferred Growth Options NUGS 2006



This concept relies on intensification of Stoke, Tahunanui, the Central city and along transport corridors and open space areas along Waimea Road with new development in Atawhai, Nelson South, and in the Stoke Foothills. Importantly landscape values were to be retained from Saxton Field to the Bryant Range with the retention of "front faces" overlooking Stoke along with maintenance of landscape values in Atawhai. Existing zoning was to be maintained in the Brook and in the Maitai. Hira was identified as a long term growth area (post 2026). The Nelson Urban Growth Strategy 2006 was preceded by a report looking at growth options called Nelson Urban Growth Strategy 2004 – Growth Options Consultation Document.

Following the development of the Nelson Urban Growth Strategy 2006 a number of plan changes have recently occurred in Marsden Valley (Plan Change 13), Enner-Glynn (Plan Change 17),

and Nelson South (Plan Change 18). The Nelson North plan change was also notified as a holding pattern for rural subdivision around the Hira area.

These plan changes partially implement the growth concept outlined in the Nelson Urban Growth Strategy although the overall yield is less and anticipated intensificaton outcomes have not been achieved.

The Nelson Richmond Intensification Study is a follow up study from Nelson and Richmond growth strategies, such as the Nelson Urban Growth Strategy 2006, that seeks to better define how intensification can be promoted.

The benefits of intensification are described as:

- Intensification offers efficient use of infrastructure where there is existing capacity.
- Intensification is an efficient use of scarce land resources.

There is a large body of national and international research supporting intensification as being more sustainable and good planning practice.

Intensification is in line with the trend to smaller households and supports public transport options.

The key objective of this project was to identify what the councils should do to enable and encourage urban intensification. Quality intensification can provide a greater diversity of housing and an opportunity for more affordable housing options. Where intensification is focused around amenity and transport nodes, the urban environment can promote alternatives to private car transport by linking work, leisure and living places. Intensification, as part of a broader urban renewal strategy, can provide opportunities to improve the vitality of local communities.

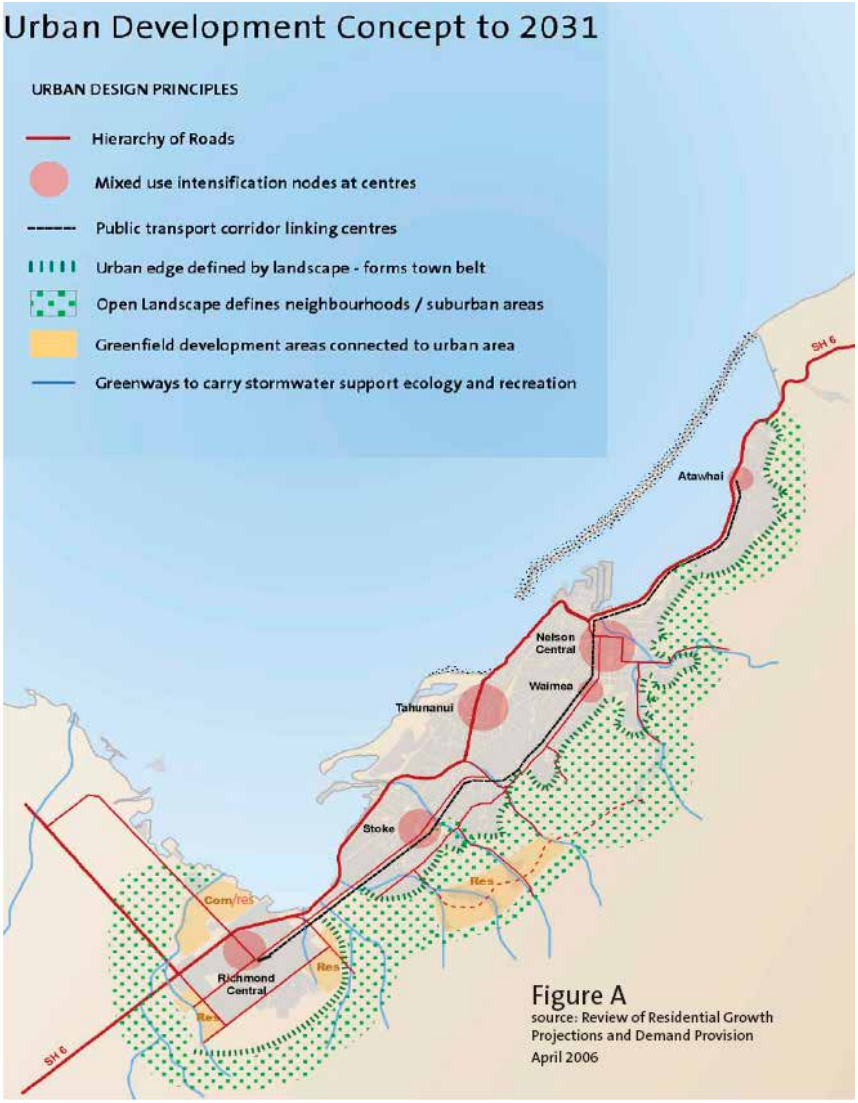


Figure A
source: Review of Residential Growth Projections and Demand Provision April 2006

As part of the study, further investigation was recommended to be undertaken to ascertain the feasibility and extent of intensification (from currently lower to medium densities). It is important to recognise that only relatively small parts of the urban areas will be suitable and it is important that lower density housing is maintained to provide this type of living environment for the many people who value it.

The main focus for intensification was the City centre, Tahunanui, Stoke and along main transport corridors as depicted in the Urban Development Concept, left.

Plan Change 14 was also introduced to provide better urban design guidance for subdivision and comprehensive housing development.

Nelson Development Strategy

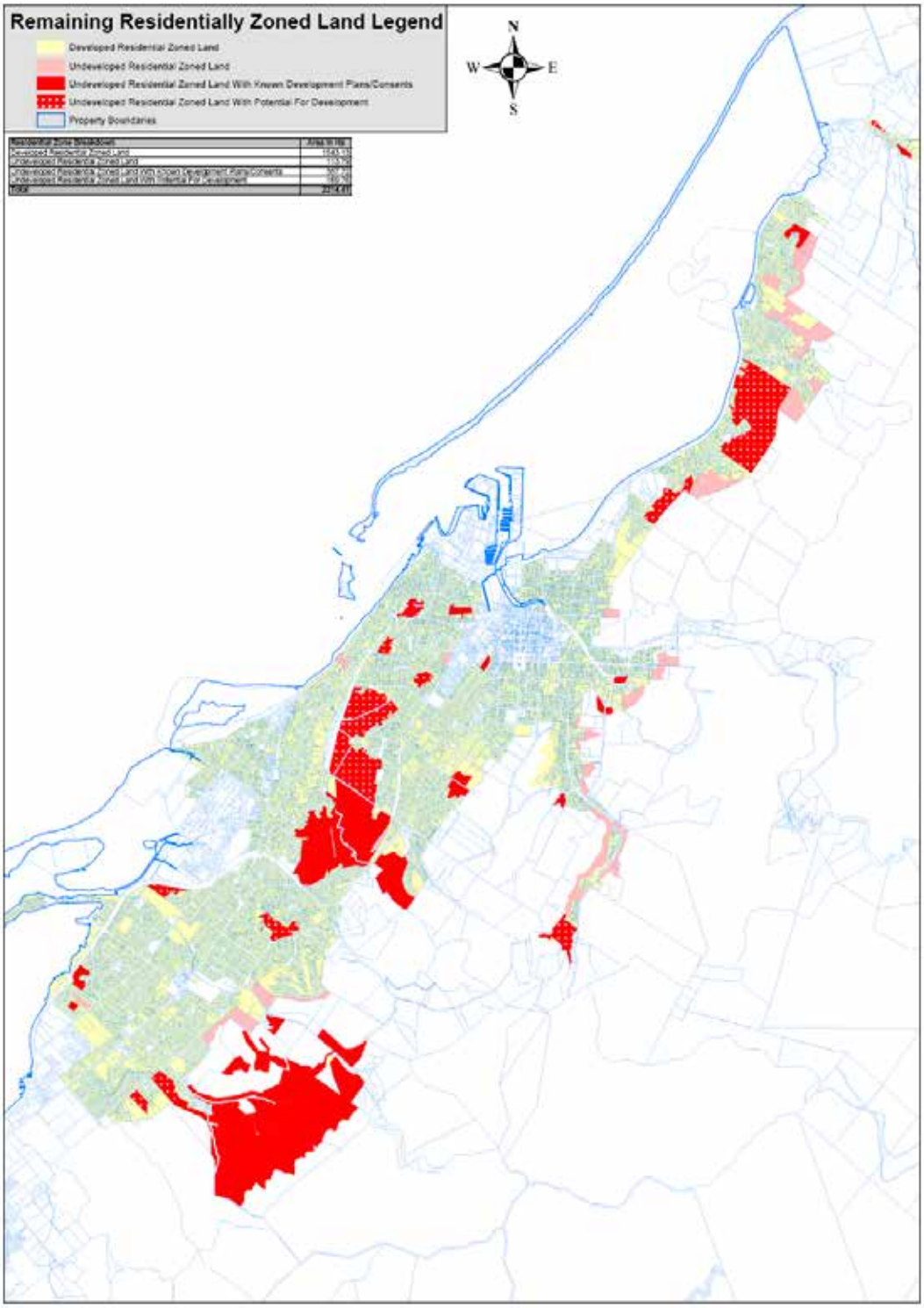
Council is working on a strategic plan that will help direct Nelson's development over the next 30 – 40 years. The Nelson Development Strategy will provide more detail on how the city's services and infrastructure will be delivered. In the medium term it will set the priorities for meeting the servicing needs for growth, redevelopment and existing capacity and service level deficiencies across the whole City. The Strategy will set out when and where investment in works, reserves, services and plan changes would occur over the following ten years. Such a strategy will assist Council to get better value from its spending by integrating its work programmes across infrastructure, community services and planning.

It would also help the community and Council to make spending decisions across all council activities to achieve the community's goals.

The Nelson Development Strategy was deferred from 2011/12 financial year to 2012/13 due to resourcing issues.

Nelson Tasman Gabites Porter Model update 2009

The Nelson Tasman Gabites Porter Model is a transport model that builds on the Nelson Urban Growth Strategy 2006 data that has been revised with yields base on updated estimates from plan changes and actual subdivision plans including the areas identified on the following map:



RAD 643580

The report utilises LTP 2009-19 population projections that suggest the City will grow by approximately 1150 people every five years (population of 44300 in 2006, 47185 in 2016, 50302 in 2026, and 51937 in 2036). Given available and planned capacity it is estimated that projected growth can be accommodated out to 2036 through a mixture of intensification and expansion identified in the map prevous page. Based on these capacity figures in the Gabities Porter Model, it is estimated that approximately 92% of growth will be accommodated within the existing urban area, 7% will be accommodated within future urban areas such as Nelson South (Plan Change18), and less than 1% will be located in existing rural areas.

Transport modelling

In October 2008 Parsons Brinkerhoff produced a report entitled Nelson Public Transport Review (RAD 701862) that assessed residents future transport needs and to recommend a new passenger transport network to 2016. The report included details of the location and scale of population and employment growth to 2016 and projected journey to work patterns based on the earlier modelling of Gabities Porter. The Parsons Brinkerhoff report breaks the Richmond/ Nelson area up into transport zones which are an amalgam of Census area units depicted below:

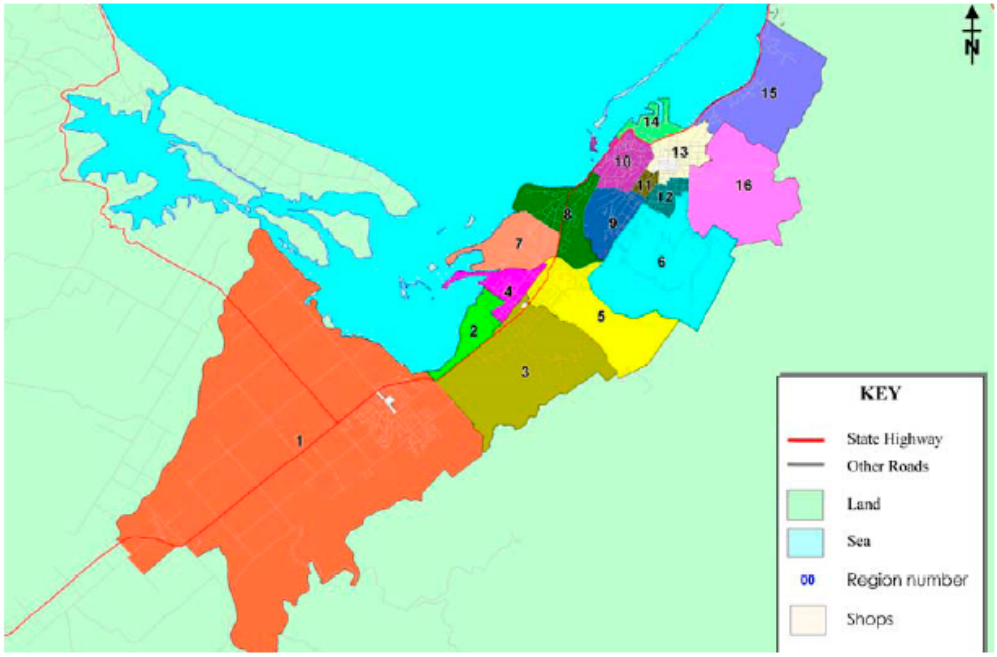


Figure 3-1 Aggregated Travel Zones

The regions include:

1. Richmond and surrounds
2. Stoke
3. Saxton (east)
4. Nayland/North Stoke
5. Maitlands/Enner Glynn
6. Grampians/The Brook
7. Airport/Annesbrook
8. Tahunanui/Moana
9. Toi Toi
10. Britannia Heights/Washington Valley
11. Nelson South (west)
12. Nelson South (east)
13. Nelson CBD
14. Port Nelson
15. Atawhai
16. Maitai/Atmore

Figure 3-4 of the Parsons Brinkerhoff report shows population and employment projections by transport zone to 2016.

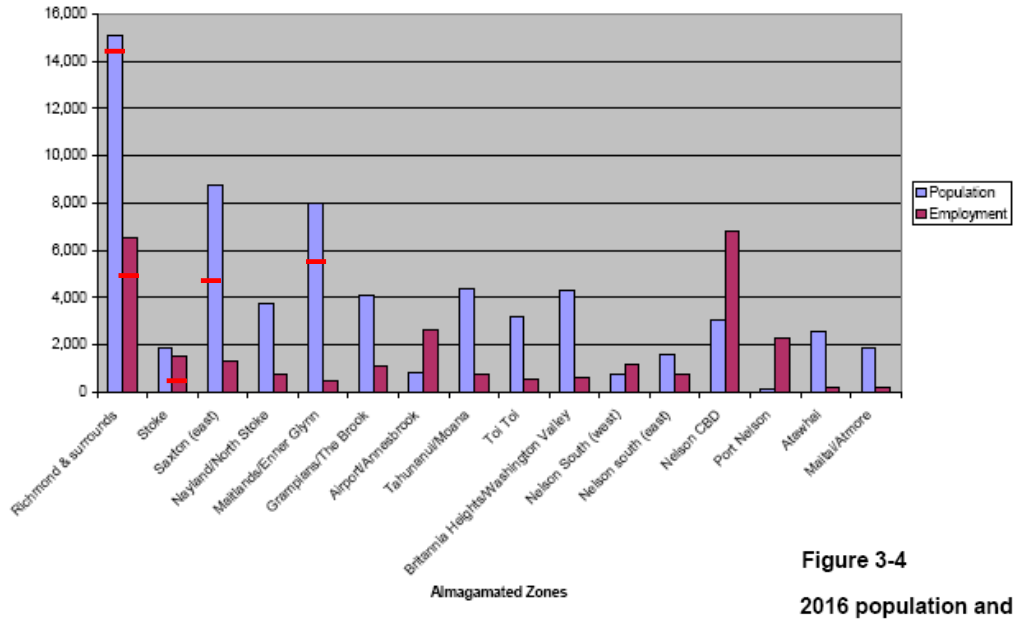
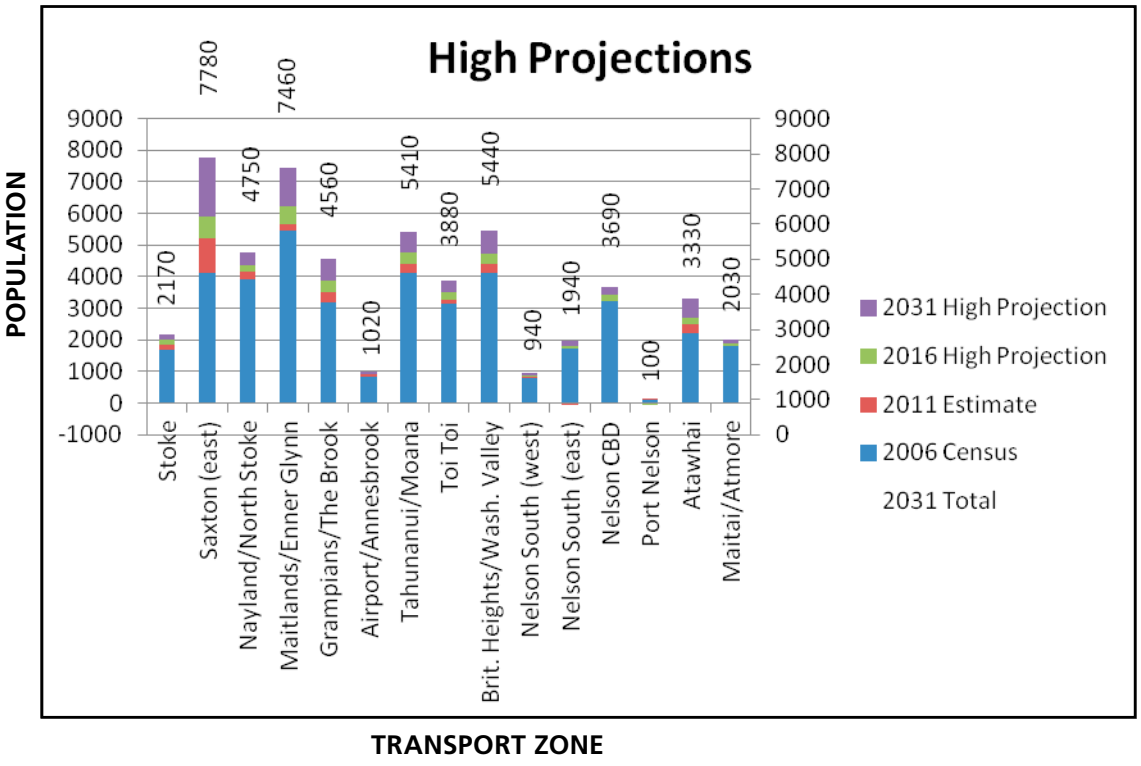


Figure 3-4

2016 population and employment

The Parsons Brinkerhoff report estimates that the overall population of the study area is expected to grow by 8000 people (2006-2016) and would be focussed in the south at Saxton (4500), Enner Glynn (2500) and Richmond (500). Employment growth would be more dispersed with 5000 additional jobs anticipated between 2006-2016 and the majority of jobs would located in the three southern transport zones with a focus around Richmond and existing industrial areas in Nelson at Saxton, Airport, and the Port. Note – the red lines on the graph above show approximate 2006 population and employment numbers.

Below is a graph showing Statistics New Zealand population estimates and projections for the same transport zone areas.



2011 Statistics New Zealand estimates (high) indicate that the population in Saxton and Enner Glynn is approximately 5000 (increase of approximately1000 people 2006-2011) and 5500(increase of approximately 100 people 2006-2011) people respectively but they are unlikely to reach the Parsons Brinkerhoff projections of approximately 8000 by 2016. The majority of other areas have already achieved the 2016 Parsons Brinkerhoff projections apart from the Grampians/ Brook area which would need to grow by another 500 people between 2011 and 2016. These Statistics New Zealand estimates are more in line with the Gabities Porter projections of 1150 people per five years outlined above.

State of the Environment Reports

The 2004 State of the environment report indicated the following:

Residential land – The increased population by year 2021 would need up to an additional 5,100 dwellings. If the current trend continued to the year 2051, 8,600 more dwellings than present might be required. In 2003 there was sufficient residential-zoned land to realistically supply an additional 2,250 dwellings, or 10 years supply based on average development rate similar to the past three years. The average household size of 2.5 people per house is also reducing, suggesting more small housing units are needed.

- 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.

Industrial land – 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.

Commercial land – 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.

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.

Council notified a plan change to provide an interim solution by tightening the provisions for rural residential subdivision in Nelson North.

Sustainability Stock take

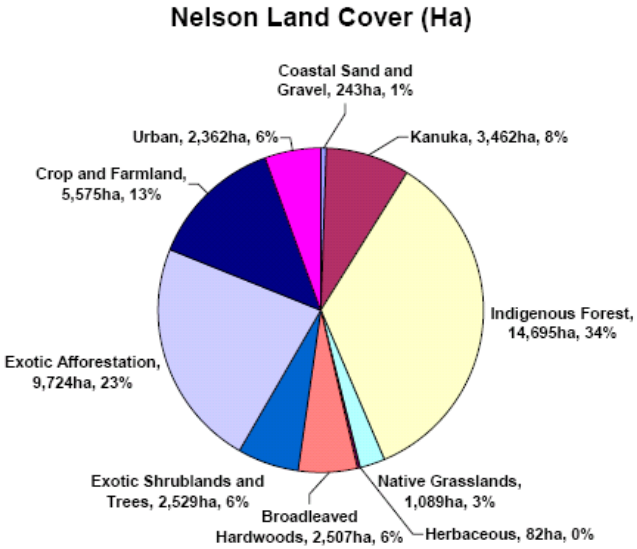
Consumption: One way to measure consumption is with an ecological footprint, which measures consumption of a given geographic area, compared with its ability to produce goods. The Centre for Ecological Economics measured Nelson's ecological footprint and found that at 76,901 hectares, it exceeds the available land area in Nelson by 41,930 hectares or 2.18 times. As a result, Nelson is reliant on other regions and countries for its lifestyle. However, Nelson is also part of Tasman Bay and the South Island, this wider region is not in deficit, and is a surplus provider of goods. As such, the ecological footprint can provide an incomplete picture of consumption, nevertheless, the point remains that Nelson's reliance on others places it at risk from future global changes.

Population: Although Nelson's population is increasing, the biggest challenge for Nelson relates to the changing demographics of the populations, with the largest increase in those aged over 65. Such changes can have a range of impacts on a community, one example is homeownership. As Nelson's population ages and their children leave home, houses once fully inhabited become mostly empty. Inefficient use of housing stock can result in increased house prices, a housing shortage and a pressure to build new homes.

The Nelson Biodiversity Strategy Technical Report 2006 (RAD 467041)

Nelson's ecological footprint has been calculated along with those for all regions in NZ and reported by the Ministry for the Environment (Ecological Footprints of NZ and its regions). In this study the per capita footprint of NZ citizen's ranks as fifth highest in the world just behind Australia and in other studies we consistently rank in the ten highest. Amongst NZ regions Nelson has the lowest per capita footprint of 1.86ha per person.

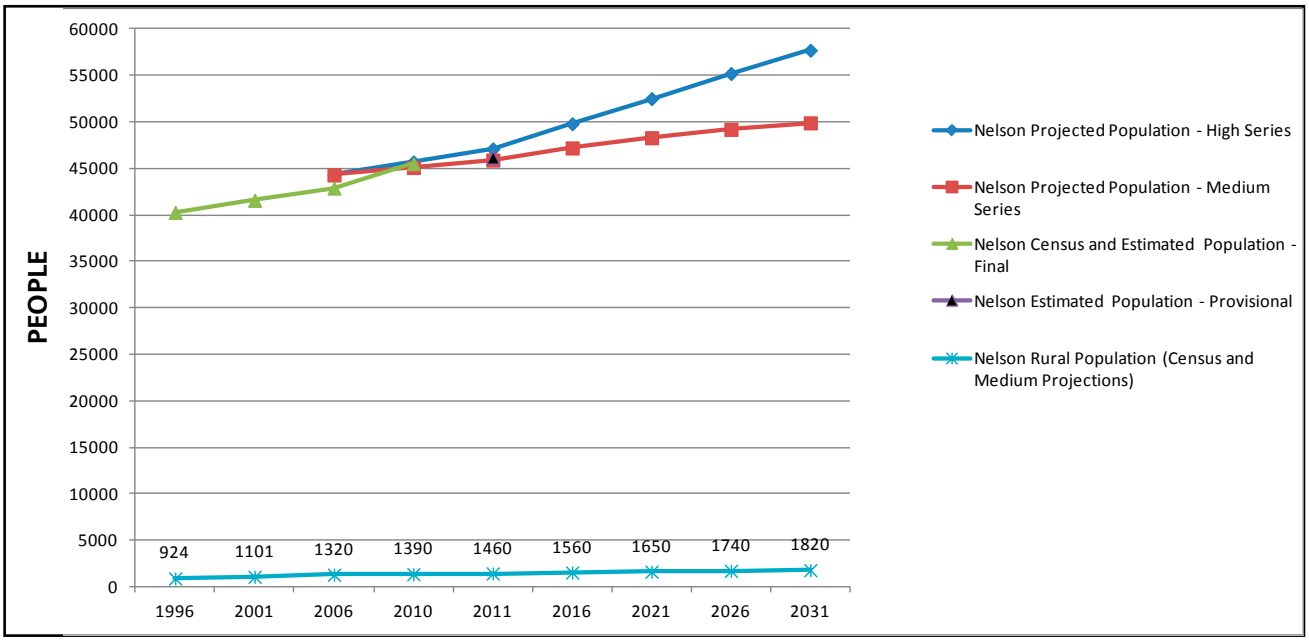
The NZ Land Cover Database 2, has been used to calculate the 2006 cover of the land area within the Nelson City boundary (approximately 40000 ha). Only 6% (2362ha) of the land area of Nelson City is an urban environment of houses, factories, shops and parks. Native forest covers 34% of the land area of the city, with regenerating kanuka on hill slopes covering 8% of the total city area. In addition, areas of gorse and other exotic woody vegetation (6%) could regenerate into native forest depending on the interplay of fire, land disturbance and weeds and pests. Most of the remainder has been developed as crop and farm land (13%) and as exotic production forest (22%).



This data provides a baseline for measuring the extent of open space (areas free of urban development) across the city. The NZ Land Cover Database 3 is being developed in 2012. A comparison between the two datasets will be useful in assessing the unmodified nature that Rural, Conservation and Open Space and Recreation zone objectives anticipate.

Review of Census Data

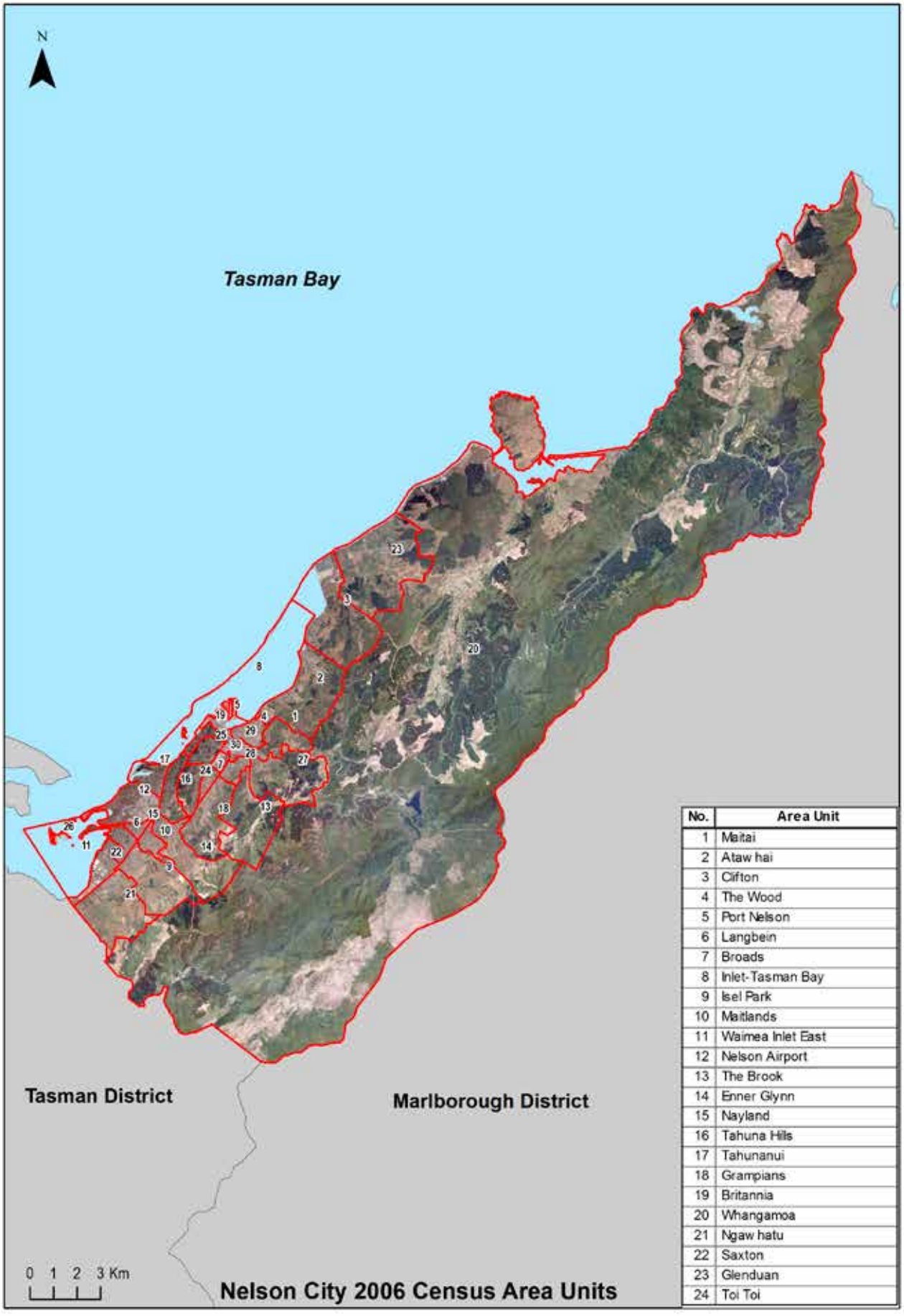
Population Growth and Location



Between 2011 and 2031, Statistics New Zealand predict that the population of Nelson will increase by between approximately 4,000 (medium projection) and 10,000 (high projection), which is similar to the current population of the wider Tahunanui area or the wider Tahunanui and Stoke areas combined.

The graph above also includes the growth in the rural population (Whangamoa and Glenduan CAU's) which is predicted to grow by approximately 360 people by 2031.

A map of census area units is provided below:

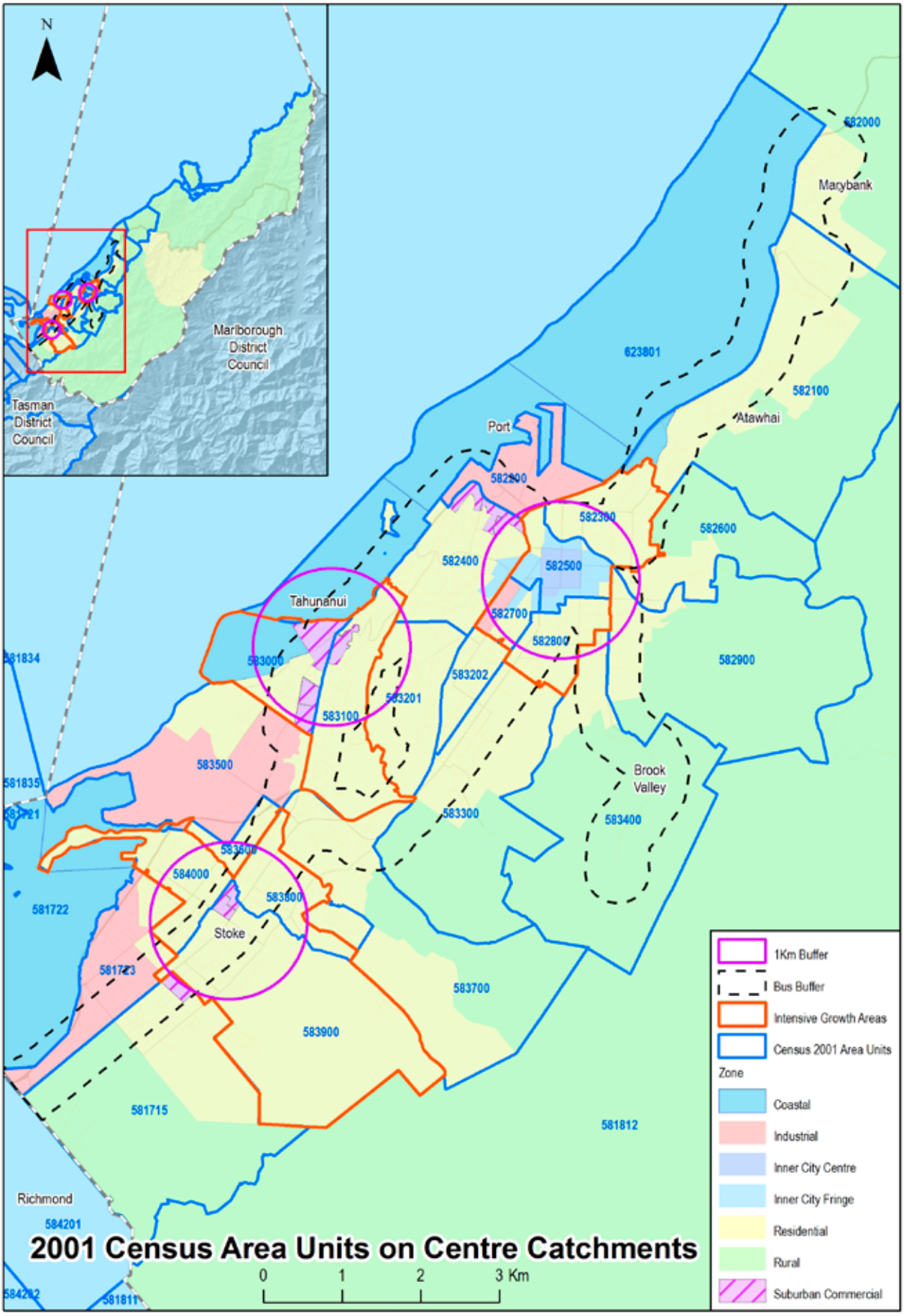


No.	Area Unit
1	Maitai
2	Ataw hai
3	Clifton
4	The Wood
5	Port Nelson
6	Langbein
7	Broads
8	Inlet-Tasman Bay
9	Isel Park
10	Maitlands
11	Waimea Inlet East
12	Nelson Airport
13	The Brook
14	Enner Glynn
15	Nayland
16	Tahuna Hills
17	Tahunanui
18	Grampians
19	Britannia
20	Whangamoa
21	Ngaw hatu
22	Saxton
23	Glenduan
24	Toi Toi

The table below contains Statistics New Zealand population data that shows how different parts of the City (by Census Area Unit) are projected to grow. Ngawhatu (or the greenfields area to the south of Saxton Field) has had, and is projected to have, the most significant growth and Bronte is projected to have the most negative growth between 1996-2031. Of note the rate of rural growth at 2011 (see Whangamoa and Glenduan CAU's) appears to have slowed since 2001-2006 peaks (a total increase of 219 people as compared to 140 2006-2011 and 177 1996-2001) and is projected to slow further to 2031. A total of approximately 900 additional people is projected between 1996-2031 in these rural areas, an increase of only 360 people on 2011 figures.

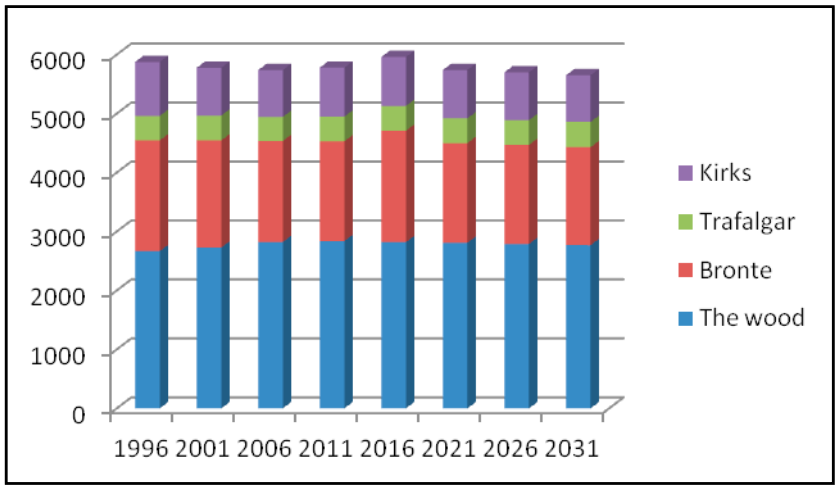
CAU	1996	2001	2006	2011 P	2016 P	2021 P	2026 P	2031 P		Absolute Change	Percentage Change
Ngawhatu	636	972	1344	2010	2280	2530	2770	3000		2364	472%
Enner Glynn	2718	2796	3075	3290	3490	3670	3850	4020		1302	148%
Atawhai	1953	2154	2208	2440	2600	2750	2870	2980		1027	153%
Saxton	990	1347	1698	1920	1920	1900	1880	1840		850	186%
Whangamoa	558	675	870	980	1060	1140	1220	1290		732	231%
Grampians	1881	1986	2034	2230	2340	2440	2520	2600		719	138%
Washington	2718	2718	2772	3040	3180	3280	3350	3410		692	125%
Isel Park	2805	2691	2766	2980	3120	3250	3370	3480		675	124%
Tahuna Hills	2058	2061	2127	2360	2460	2550	2640	2700		642	131%
Maitlands	2247	2412	2385	2420	2460	2500	2540	2570		323	114%
Langbein	3027	3042	3192	3310	3300	3300	3290	3270		243	108%
Nayland	663	657	735	860	860	860	870	870		207	131%
Broads	1509	1539	1560	1650	1680	1690	1710	1700		191	113%
The Brook	1170	1185	1164	1300	1330	1340	1350	1340		170	115%
Glenduan	366	426	450	480	500	510	520	530		164	145%
The Wood	2667	2730	2823	2840	2820	2810	2790	2770		103	104%
Nelson Airport	798	849	843	880	880	880	880	880		82	110%
Port Nelson	45	90	99	100	100	100	100	100		55	222%
Trafalgar	417	423	408	420	420	420	420	430		13	103%
Tahunanui	2004	1986	2001	2050	2050	2030	2020	2000		-4	100%
Toi Toi	1590	1665	1596	1610	1620	1620	1600	1570		-20	99%
Clifton	1095	1098	1086	1130	1120	1110	1080	1040		-55	95%
Atmore	1314	1278	1215	1200	1200	1200	1210	1200		-114	91%
Kirks	915	810	795	830	830	820	810	790		-125	86%
Maitai	660	603	597	610	590	570	550	520		-140	79%
Britannia	1464	1440	1338	1260	1280	1290	1290	1280		-184	87%
Bronte	1878	1815	1713	1690	1690	1690	1680	1660		-218	88%

The Map below shows 1 Km circles (a 10 minute walk) around the CBD, Tahunanui, and Stoke. Census Area Units that most closely align with these 1Km circles are shown with a red outline.

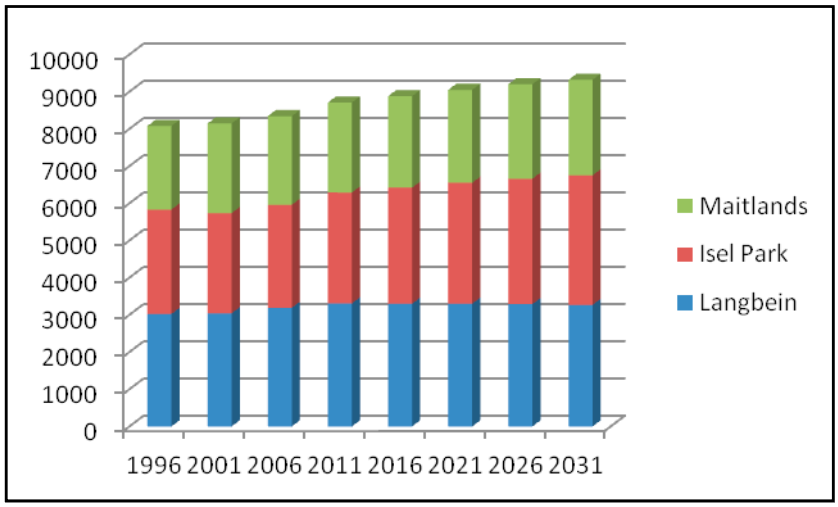


The following graphs show how CAU's aligned to Nelson's main centres have grown and are currently projected to change with Tahunanui and Stoke increasing by approximately 500-1000 people each between 1996-2031 and the population in the CBD projected to peak in 2016.

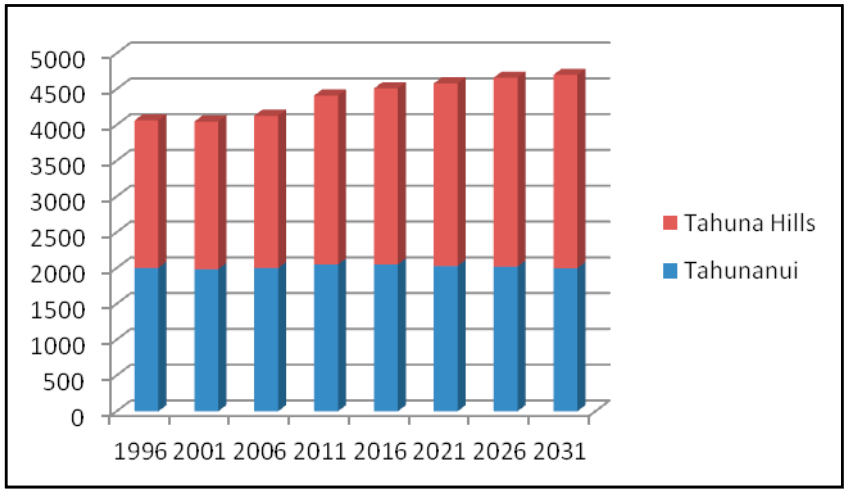
CBD Population Growth:



Stoke Population Growth:



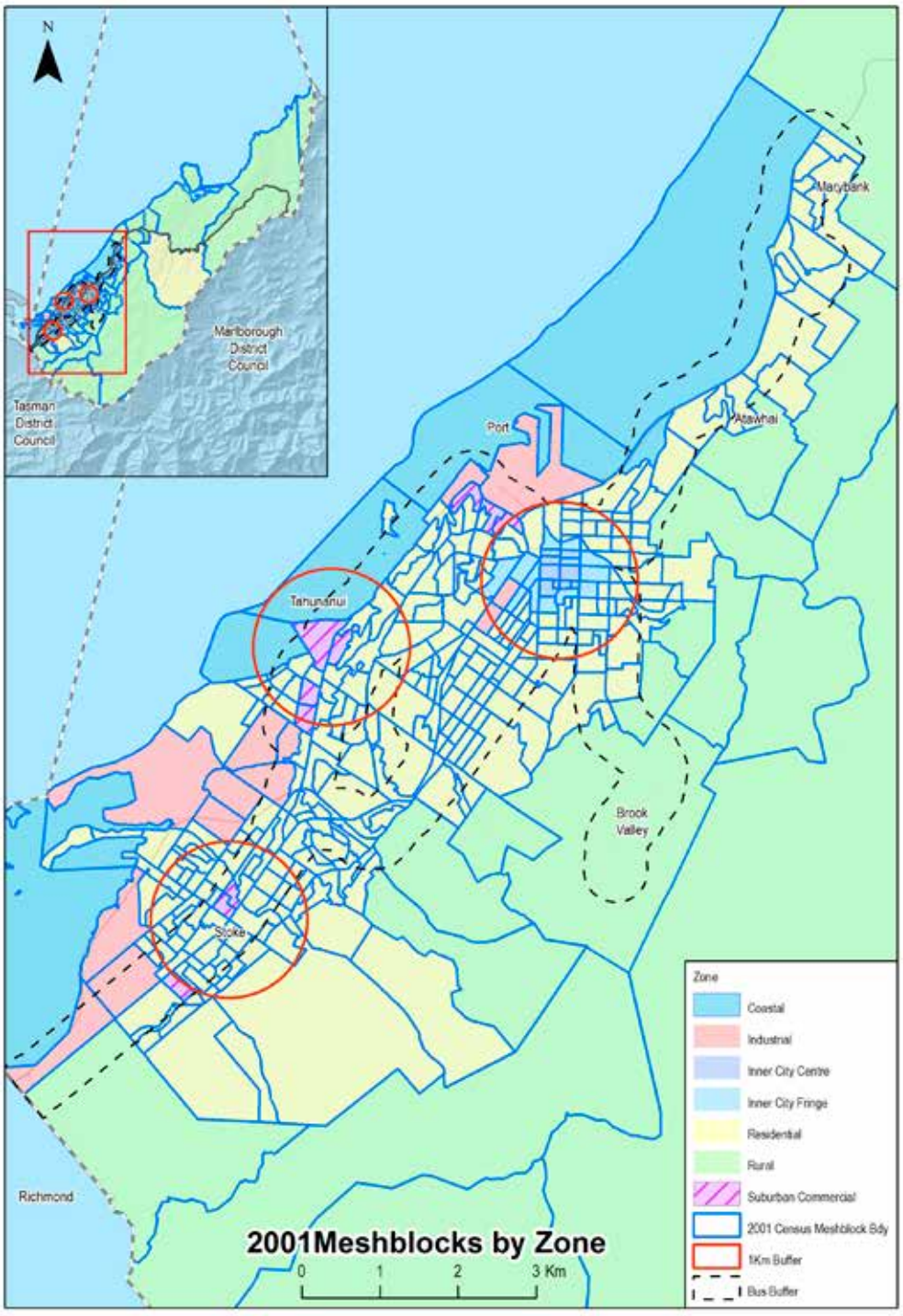
Tahunanui Population Growth:



Employment Growth and Location

Zone specific objectives of the NRMP seek that appropriate activities are located in appropriate zones. For example commercial activities should be focused in the Inner City and Suburban Commercial areas, Industrial areas should be set aside principally for industrial activities, and Open Space, Rural, Conservation and Coastal areas will have a lower density of development. Statistics New Zealand has provided business demography data from 2000-2010 based on employment by Industry type at meshblock scale. In order to aid in determining whether the intended types of employment are occurring in the anticipated zones this data has been collated by zone type (Rural, Coastal, Residential, Inner City Centre, Inner City Fringe, Suburban Commercial, Port Industrial, Airport Industrial, Saxton Industrial, and Inner City Industrial).

Below is a map showing how zones have been aligned to meshblocks:



The relevant data is provided in Appendix 1 on pages 85 and 86.

Overall this data suggests that development is generally occurring in the intended zone. However there has been a marked increase in:

- retail trade and administration support services in the Airport industrial area
- retail trade and education and training in the Saxton industrial area,
- the retail trade industry in the Inner City Industrial area (Vanguard Street), and
- the rental, hiring and real estate services industries, and the health care industry in the residential zone.

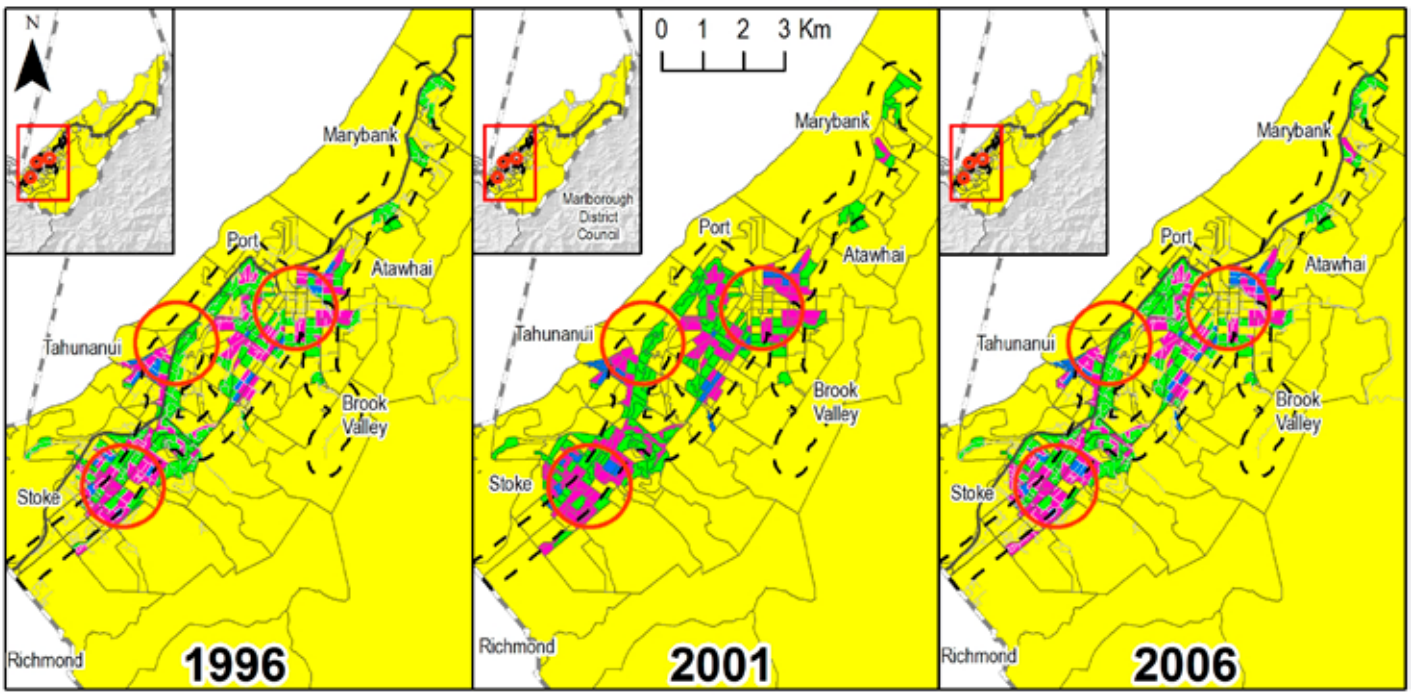
There has been a decrease in information media and telecommunications jobs in the Inner City Centre area.

While retail leakage into the industrial area may be of concern it is important to recognise that the Statistics New Zealand retail trade category includes a wide range of differing types of retail activity including Motor Vehicle and fuel, food, furniture and electrical goods, hardware and building supplies, clothing, department stores, pharmaceutical and other store based retailing. This along with the fact that census meshblocks do not perfectly align with zoning boundaries means that this data can only be used as a high level guide. Accordingly further detailed assessment is required, such as building consent analysis and floor area surveys to be definitive about the degree to which leakage is actually occurring on the ground.

Population Density

The density across different areas of the City can be measured by calculating the land area of Statistcis New Zealand meshblocks and dividing the household or employee numbers by the area of those meshblocks. The density map below shows that household density has not significantly increased between 1996 and 2006.

Dwelling Density

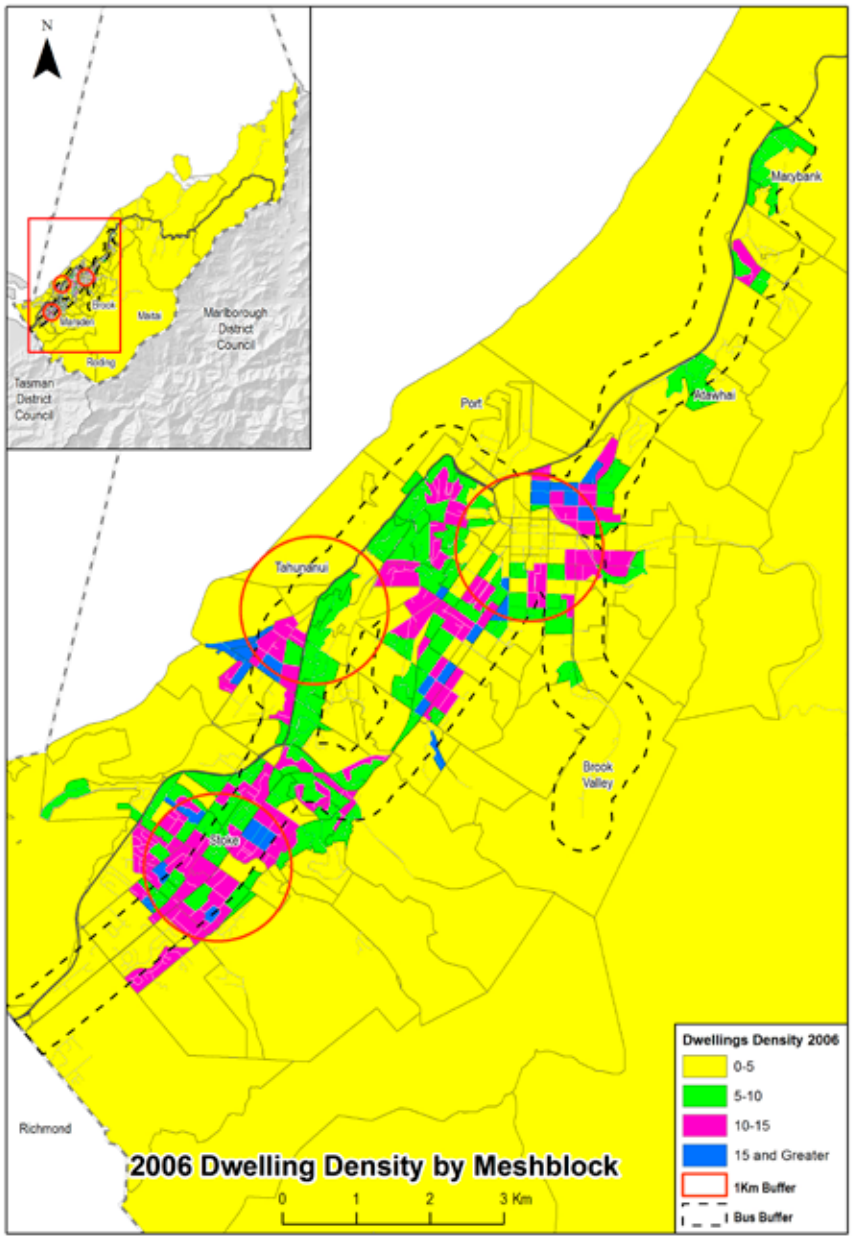


KEY – HOUSEHOLD DENSITY	
Yellow	0-5 households/ha
Green	5-10 households/ha
Pink	10-15 households/ha
Blue	>15 households/ha

Dimension of deprivation	Variable description (in order of decreasing weight)
Income	People aged 18-64 receiving a means tested benefit
Income	People living in equivalised* households with income below an income threshold
Owned home **Support** **Employment**	People not living in own home People aged <65 living in a single parent family People aged 18-64 unemployed
Qualifications	People aged 18-64 without any qualifications
Living space	People living in equivalised* households below a bedroom occupancy threshold
Communication	People with no access to a telephone
Transport	People with no access to a car

*Equivalisation: methods used to control for household composition.

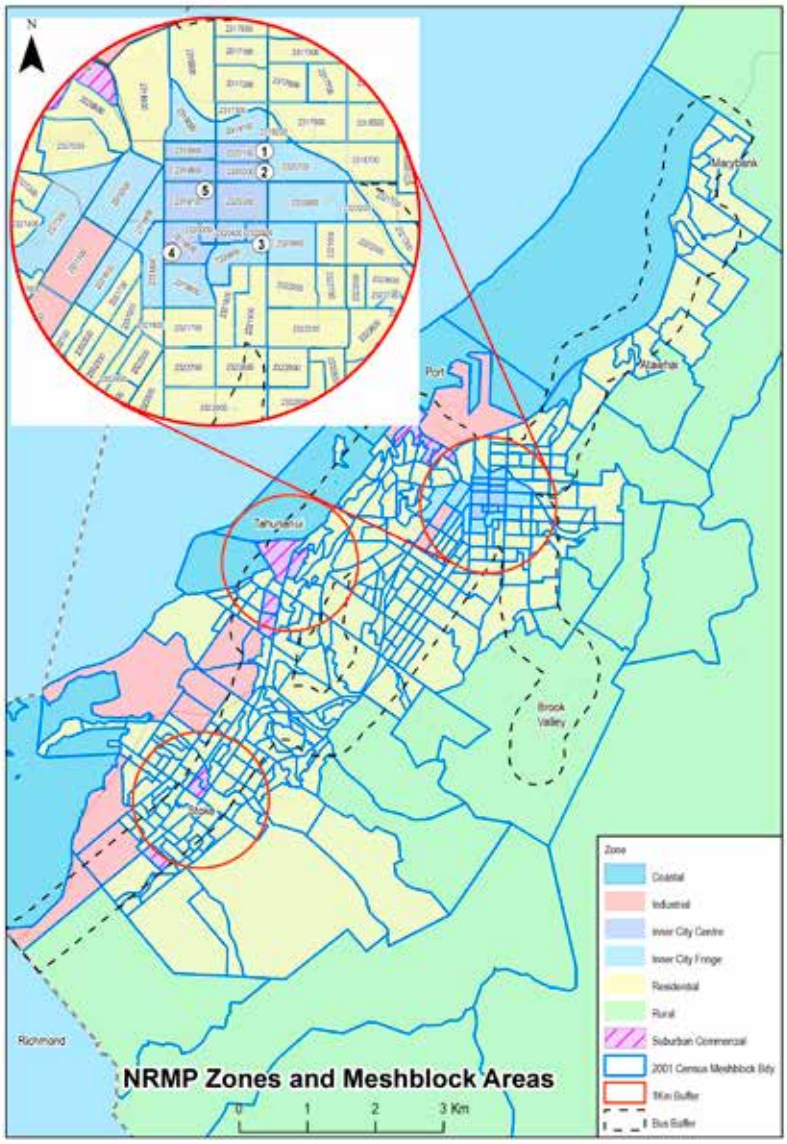
The Circles and dotted lines on the 2006 density map below show that the highest densities in the city (>15 households per hectare) are located within 1Km of Stoke, Tahunanui, and the central city centres, or within 400m of the bus route.



Employment Density

An analysis of 2006 employment densities (RAD1257304) shows that the highest employee per hectare ratios (e/ha) are in the CBD:

1. around the northern end of Trafalgar Street by Halifax Street (MB 2320100 is 143 employees/ha),
2. (MB 2320200 is 149 employees/ha)
3. in the southern end of Trafalgar Street to the south of Hardy street (MB 2320400 is 147 employees/ha) ,
4. on the eastern side of Rutherford Street and south of Selwyn Place West (MB 2319800 is 153 employees/ha), and
5. the area around Montgomery Square (MB 2319700 is 151 employees/ha).

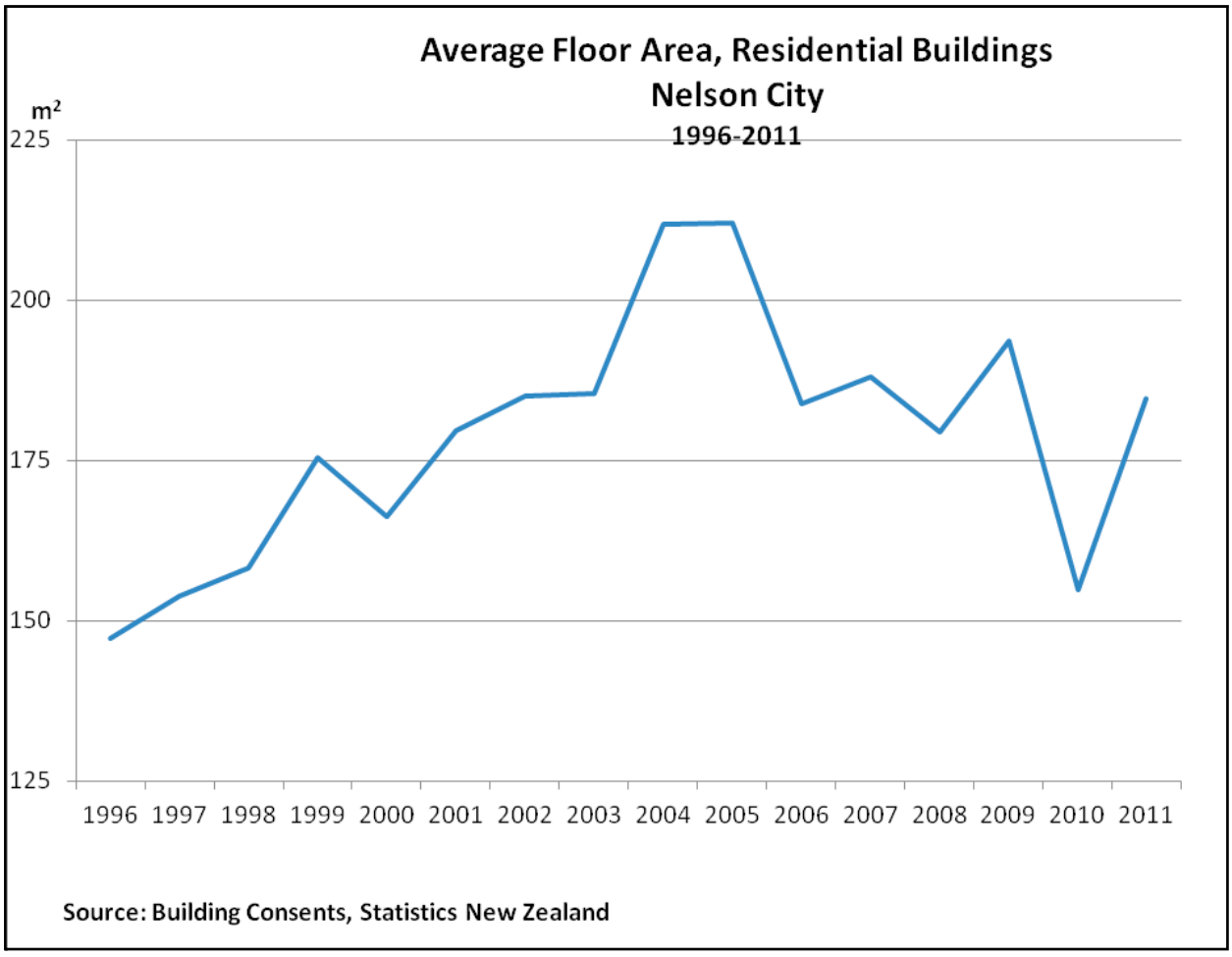


RAD 125385

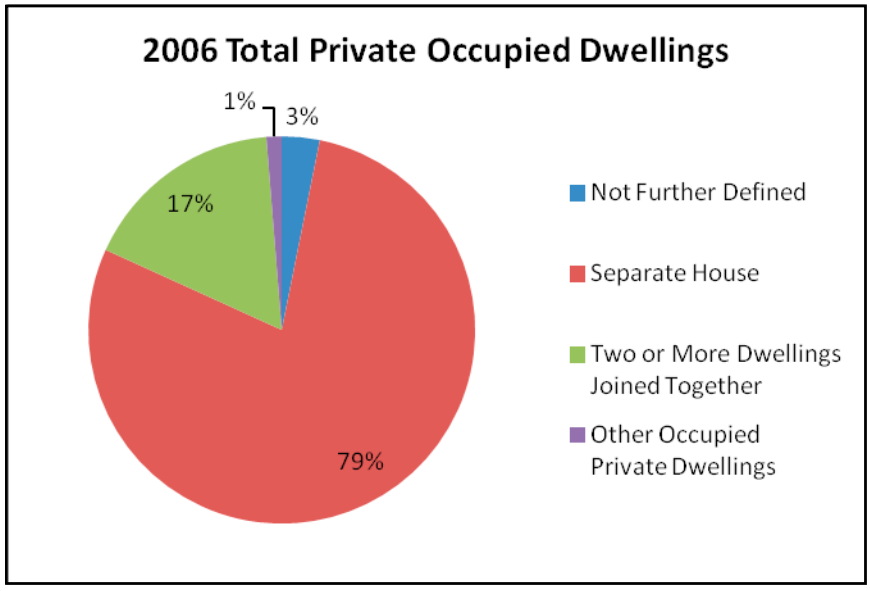
The Average density for the Inner City centre zone is 127 employees/ha (highest 153 as described above). The Average density in the Inner City Fringe is 36 employees/ha (highest is 78 employees/ha MB 231900 around Tahaki Street). The average density in Industrial areas is 11 employees/ha (highest is 55 employees/ha in MB 2331500 – Glouster, Vanguard,Parere, and St Vincent Street block). The Average density in the Suburban Commercial zone is 13 employees/ha (highest is 60employees/ha in MB2342800 Strawbridge square in Stoke)

The Transport section of this report indicates that, based on best practice public transport work, population and employment densities will almost have to double to make public transport more viable.

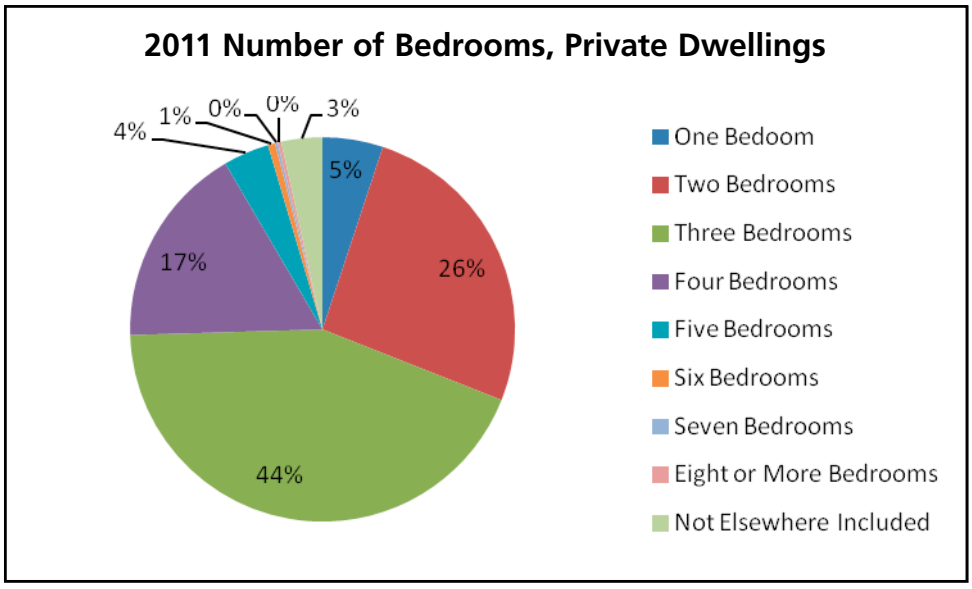
Dwelling Size and Type



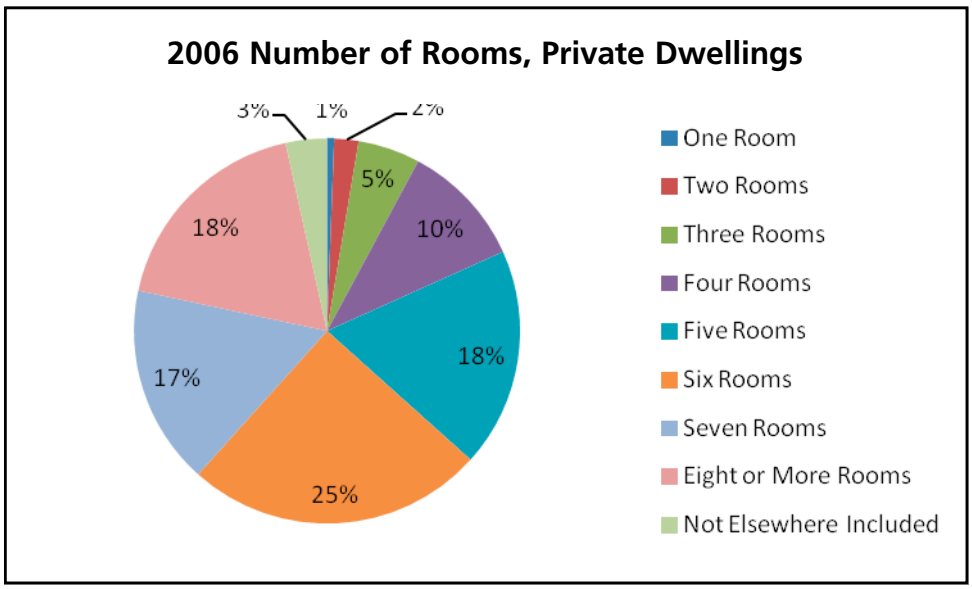
The graph above illustrates the variation in floor area of residential buildings over time ranging from approximately 150m² in 1996 to approximately 215m² in 2004, and a further reduction to approximately 185m² in 2011.



The types of housing have changed very little between 1996 and 2006 with the vast majority being free standing dwellings (80% in 1996 and 79% in 2006).



The number of bedrooms in private dwellings has also remained relatively steady between 1996 and 2011.



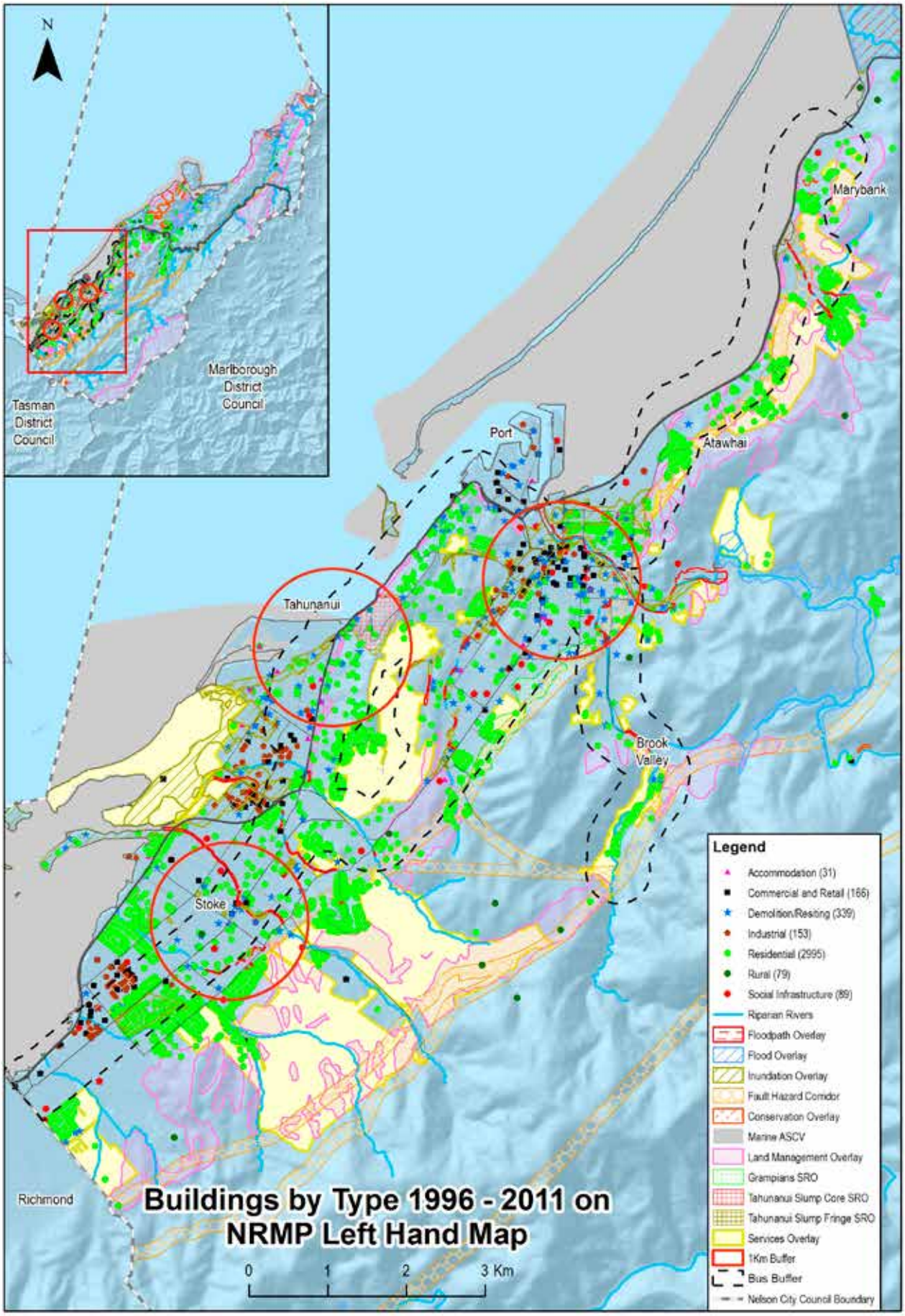
The total number of rooms has increased between 1996 and 2006 as houses with six or more rooms increasing from 51% to 60%.

Overall a wide range of housing types have been provided over the period between 1996 to 2011. Average floor areas appear to mirror the Home Mortgage Affordbility Index on page 79. As floor areas become bigger housiing appears to be less affordable and vice versa.

Review of Building Consent Data

A review of building consent data from between 1996 and 2011 shows that the majority of new houses consented were around the urban periphery.

NRMP and NRPS objectives and policies also seek that various sensitive environments are protected. The maps below show the location of consented buildings between 1996-2011 overlaid on the NRMP Left Hand Maps and other updated landscape, natural area, and transport layers. This shows the degree to which development has occurred in these sensitive areas since the NRMP was notified. These maps will be discussed in further detail under other sections of this report looking at those sensitive environments individually.

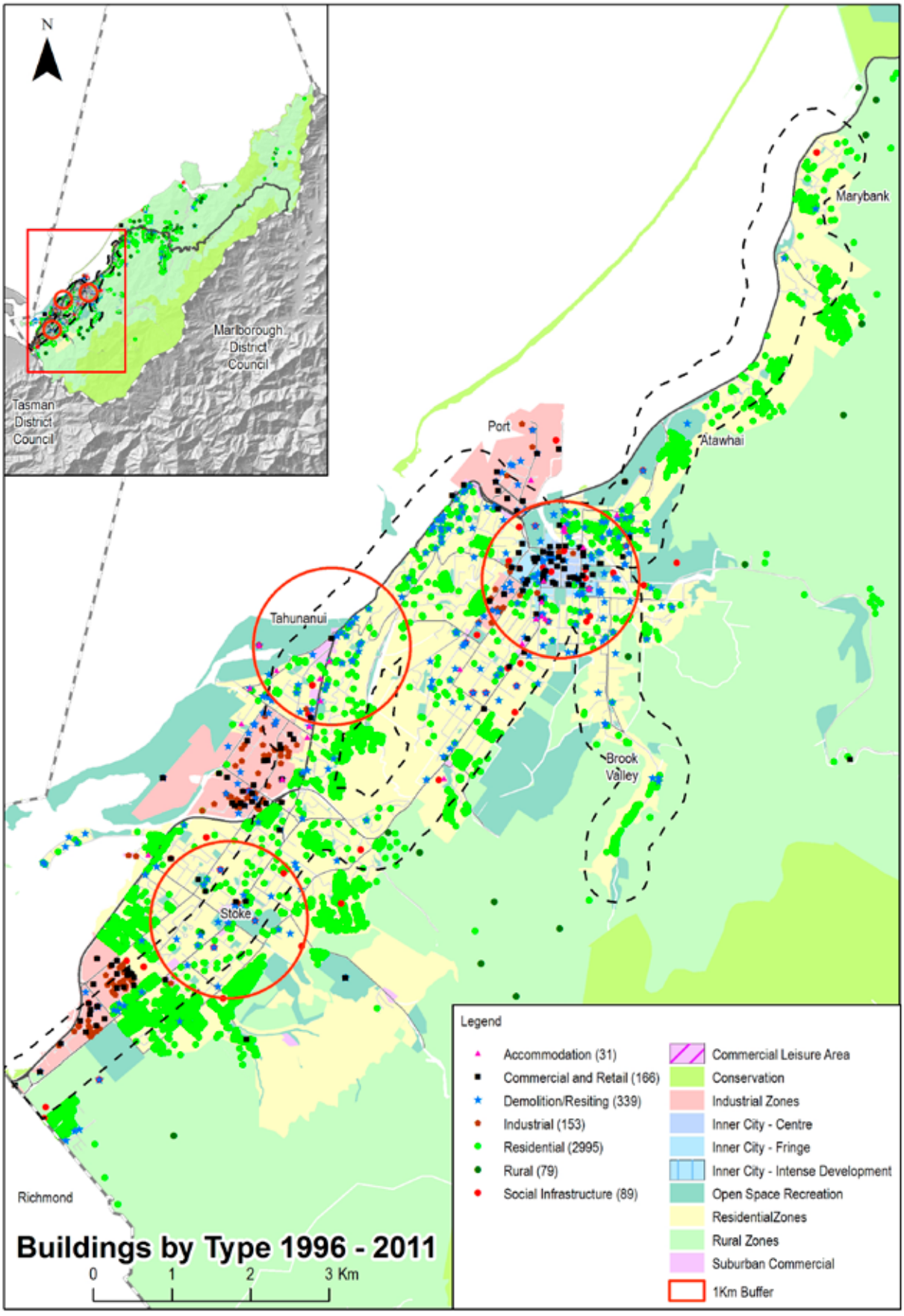

N
Marlborough District Council
Tasman District Council
Marybank
Port
Atawhai
Tahunanui
Brook Valley
Stoke
Richmond
Buildings by Type 1996 - 2011 on NRMP Left Hand Map
0 1 2 3 Km
Legend
Accommodation (31)
Commercial and Retail (166)
Demolition/Resiting (339)
Industrial (153)
Residential (2995)
Rural (79)
Social Infrastructure (89)
Riparian Rivers
Floodpath Overlay
Flood Overlay
Inundation Overlay
Fault Hazard Corridor
Conservation Overlay
Marine ASCV
Land Management Overlay
Grampians SRO
Tahunanui Slump Core SRO
Tahunanui Slump Fringe SRO
Services Overlay
1Km Buffer
Bus Buffer
Nelson City Council Boundary

The table below identifies the proportion of building consents issued for buildings located within these NRMP Overlay areas and other landscape, natural area, and transport layers identified in later sections of this report.

NRMP Overlays and other areas	Number of Consents	Demolition	Total Consents %
Coastal Environment	**179**	30	5%
Landscape	**297**	9	8%
Land Management	**407**	17	11%
Fault Hazard	**267**	20	7%
Flood Hazard	**409**	72	11%
Services	**1408**	19	37%
Area of Significant Coastal Value	**9**	1	0%
Slope Risk	**58**	10	2%
Airport and Port Noise	**225**	45	6%
Esplanade River	**12**	6	0%
1Km Centre Catchment	**767**	153	20%
400m Bus Route Catchment	**2096**	252	54%
Archaeological	**11**	0	0%
Heritage Buildings, Places, or Objects	**88**	23	2%
Heritage Woodland	**4**	2	0%
Heritage Precincts	**39**	9	1%
All consents	**3852**		

Of note a significant number of consents were granted in Heritage areas (building and demolition), Boffa Miskell landscape areas, and along bus routes.

The following map shows building consents issued between 1996-2011 by type (residential, industrial, commercial etc) and location (zone) to determine the extent to which expected activities are generally occurring in the areas anticipated in the NRMP.

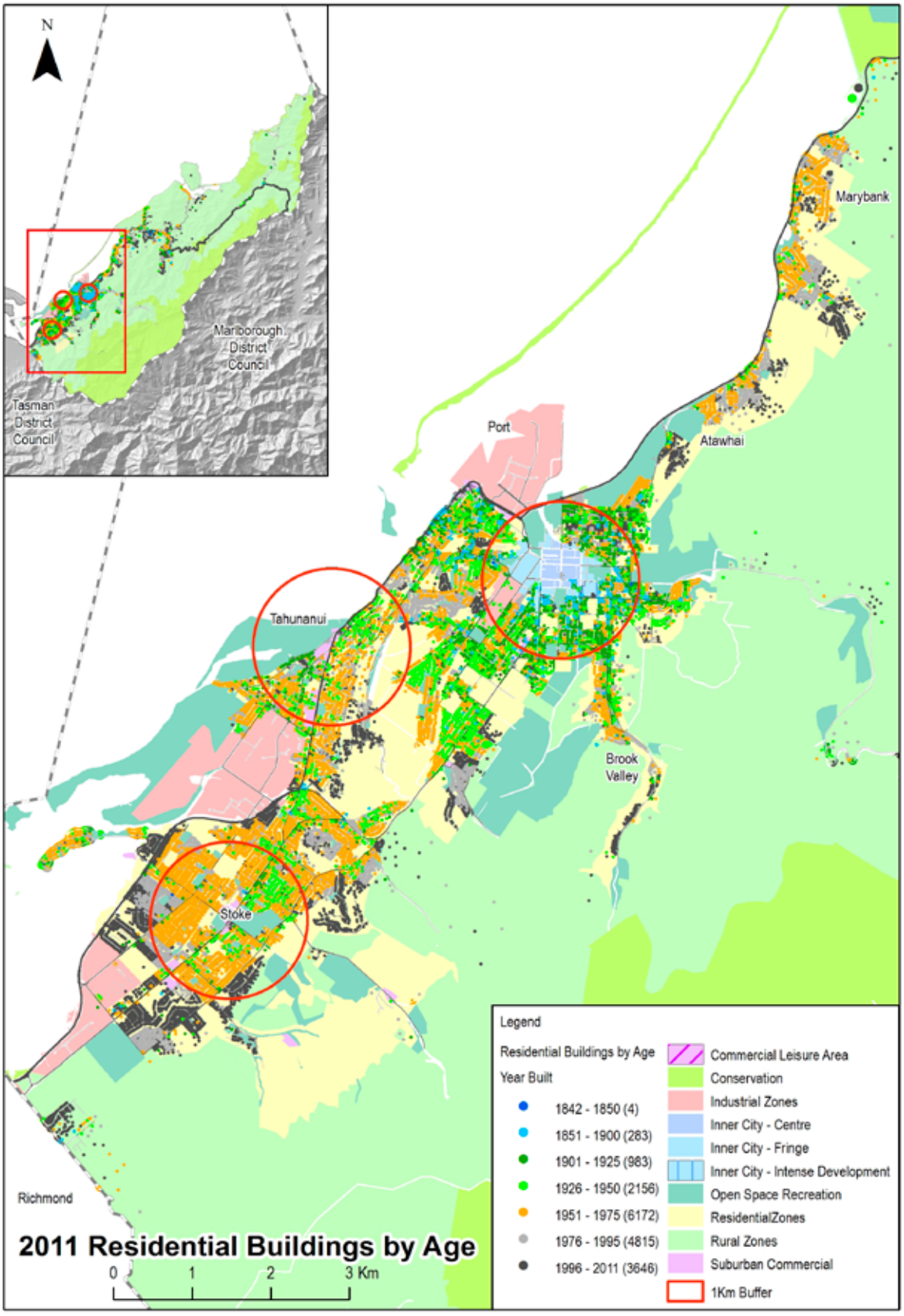


Building Consents By type for Buildings Between 1996-2011														
Building Consent Type	NRMP ZONE													
	Leisure Area	Conservation	Inner City Centre	Inner City Fringe	Inner City Intense Dev.t Area	Industrial	Nayland Industrial Area	Residential	Open Space	Rural	Rural Higher Density	Rural Lower Density	Suburban Commercial	Total
Accommodation			1		1	3		22	2				2	31
Commercial and Retail			44	25		46	22	10	6	2		2	9	166
Demolition	4		18	20	7	44	4	193	11	12		13	13	339
Industrial			3	7		86	45	1	4			1	6	153
Residential	9	1	3	3	4	18		2599	8	215	8	119	8	2995
Rural								1	1	40	1	33		79
Social Infrastructure			3	3	4	4	2	48	8	12		4	1	89
Total	**13**	**1**	**72**	**58**	**16**	**201**	**73**	**2874**	**40**	**281**	**9**	**172**	**39**	**3852**

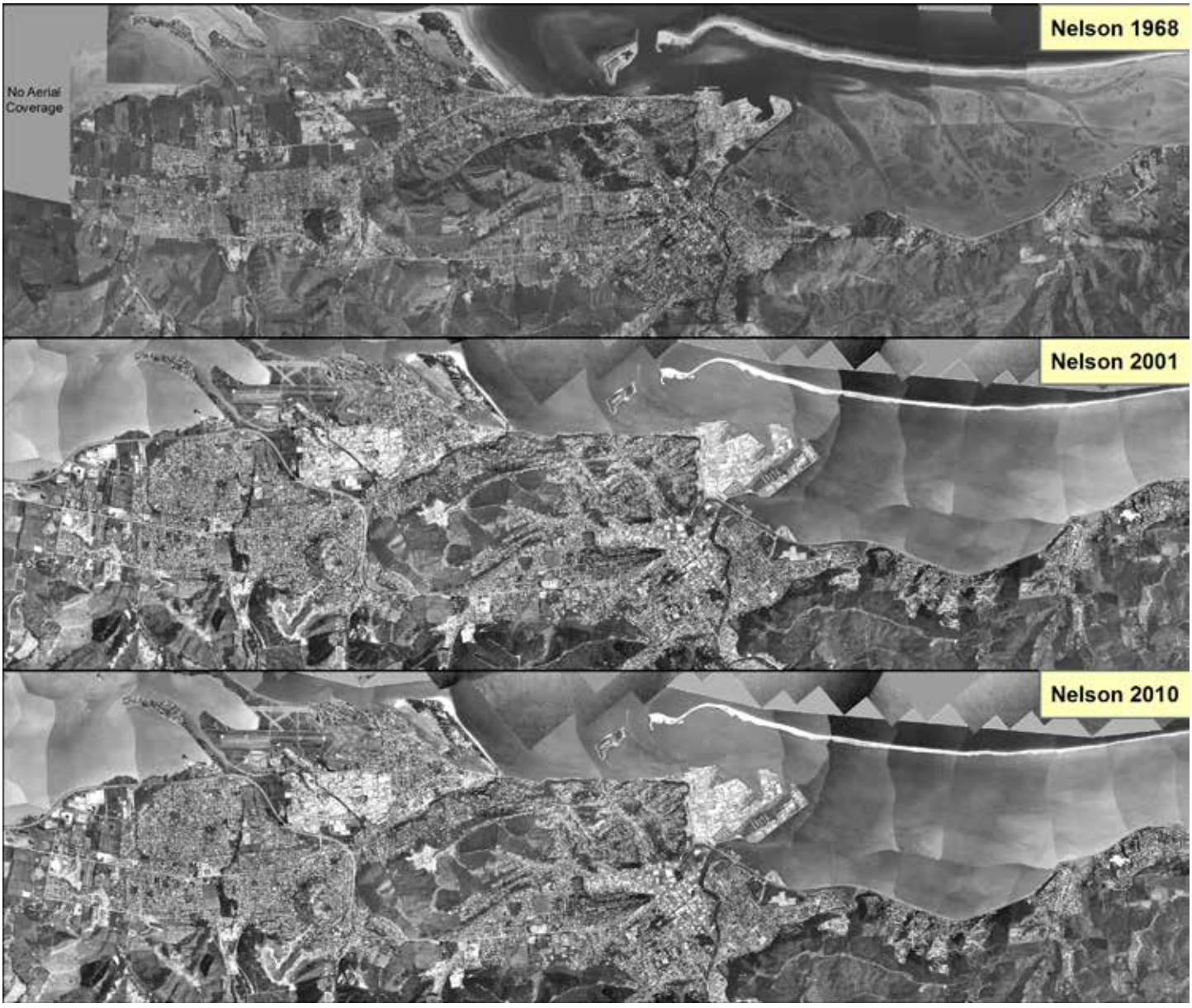
The table above indicates building consents by type by NRMP zone. Generally activities are located within the zones anticipated within the NRMP apart from the Industrial zone where almost one quarter of the building consent development in the Industrial zone is commercial or retail. In fact there is as many commercial and retail development consents being issued in the Industrial zone (68) as in the Inner City zones (69).

Review of Valuation Data and GIS Maps

The map below (RAD 1258373), is generated by looking at the age of current buildings (2011), and shows where growth has actually occurred during similar time periods to the Nelson Urban Growth Strategies and during the duration of the NRMP, which was notified in 1996.

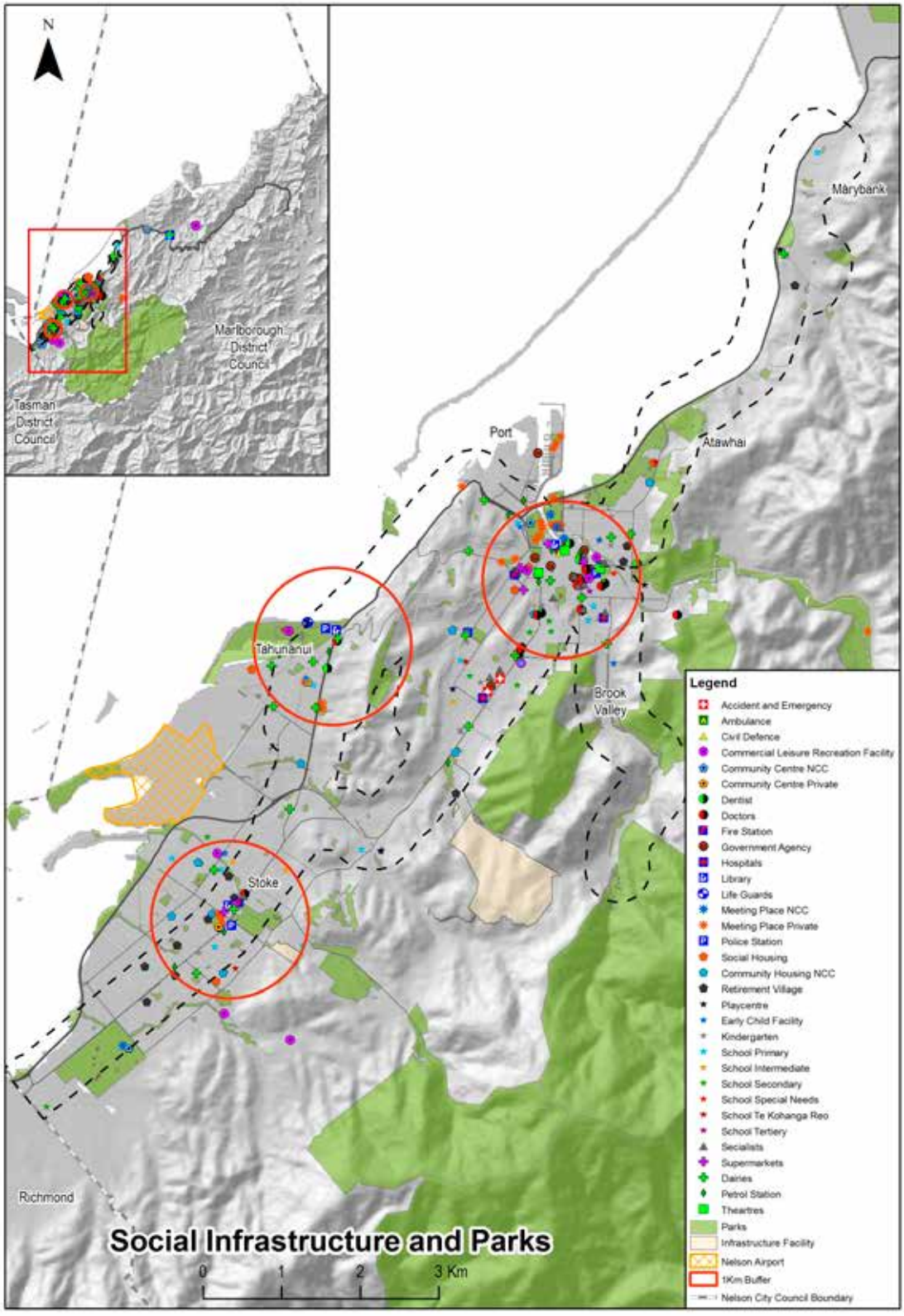


Between 1976 and 1995 most growth appears to have occurred around the periphery of the city in Stoke, the Brook, Atawhai, and around Hira along with intensification in the Wood and Tahunanui. A similar pattern is revealed in a review of the 1996-2011 data but development is occurring further out towards the periphery of the city and in the Saxton area. These patterns are further reinforced by a review of Historic Aerial Photographs following:



Community Services (RAD1267153)

The map below shows the location of key community services across Nelson. Also mapped is a 400m catchment on the bus route and a IKm Circle around Stoke, Tahunanui, and the City Centre. These areas represent places that are anticipated to contain the majority of housing in the urban parts of Nelson. As can be seen from the map the majority of community services are located close to housing areas. The main exceptions to this include a commercial leisure facilities in Ngawhatu and Cable Bay Road, and the community facilities (shops/community centre/ education) at Hira and Wakapuaka.



Deprivation Index

NRMP policies and objectives also seek that intensification will improve the quality of housing in intensification areas and a diversity of housing choice. Resource Management reforms are also looking at housing affordability. The deprivation index combines nine variables from the 2006 census reflecting eight dimensions of deprivation including Income, house ownership, employment, qualifications, and access to infrastructure and living space.

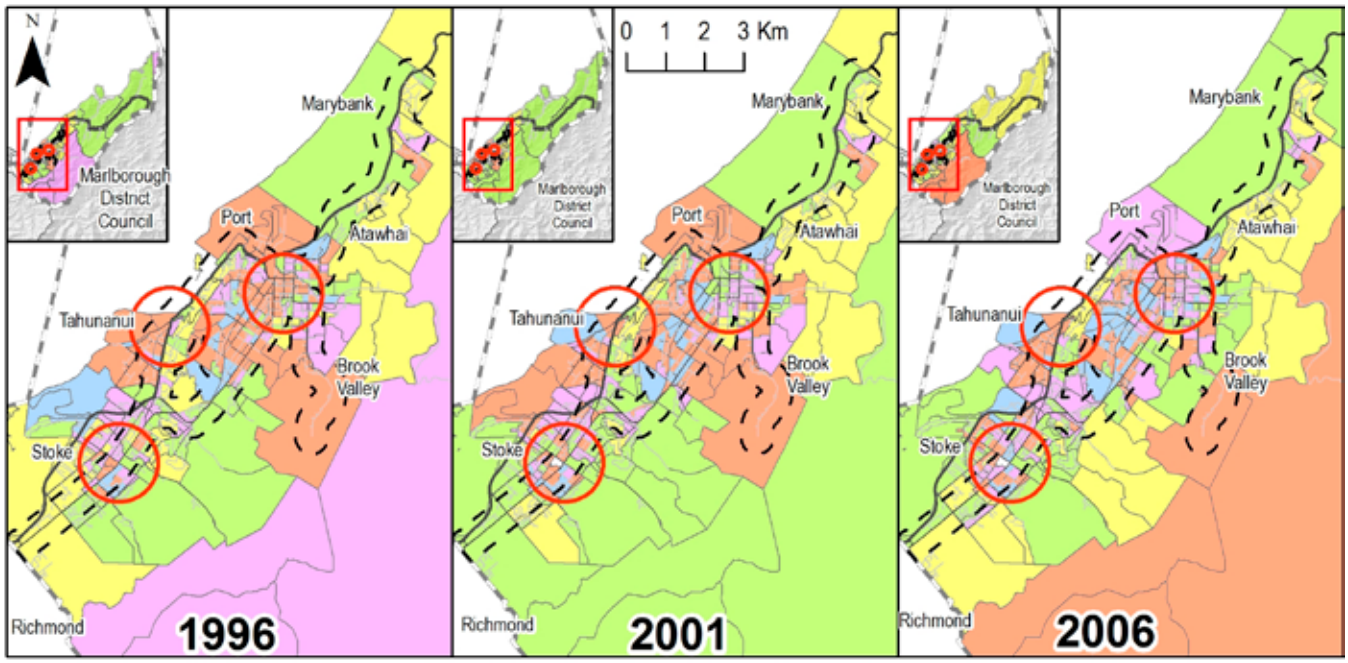
Dimension of deprivation	Variable description (in order of decreasing weight)
Income	People aged 18-64 receiving a means tested benefit
Income	People living in equivalised* households with income below an income threshold
Owned home **Support** **Employment**	People not living in own home People aged <65 living in a single parent family People aged 18-64 unemployed
Qualifications	People aged 18-64 without any qualifications
Living space	People living in equivalised* households below a bedroom occupancy threshold
Communication	People with no access to a telephone
Transport	People with no access to a car

*Equivalisation: methods used to control for household composition.

While deprivation is not a direct measure for housing quality, people's level of deprivation will impact on people's ability to afford quality housing.

A review of the deprivation index over time shows whether areas have become less deprived over time (1 represents the 10% of meshblocks in NZ that are least deprived).

The following Maps (RAD1258376 – 1996, RAD 1258377 – 2001, and RAD 1258378 – 2006) provide a comparison over time:



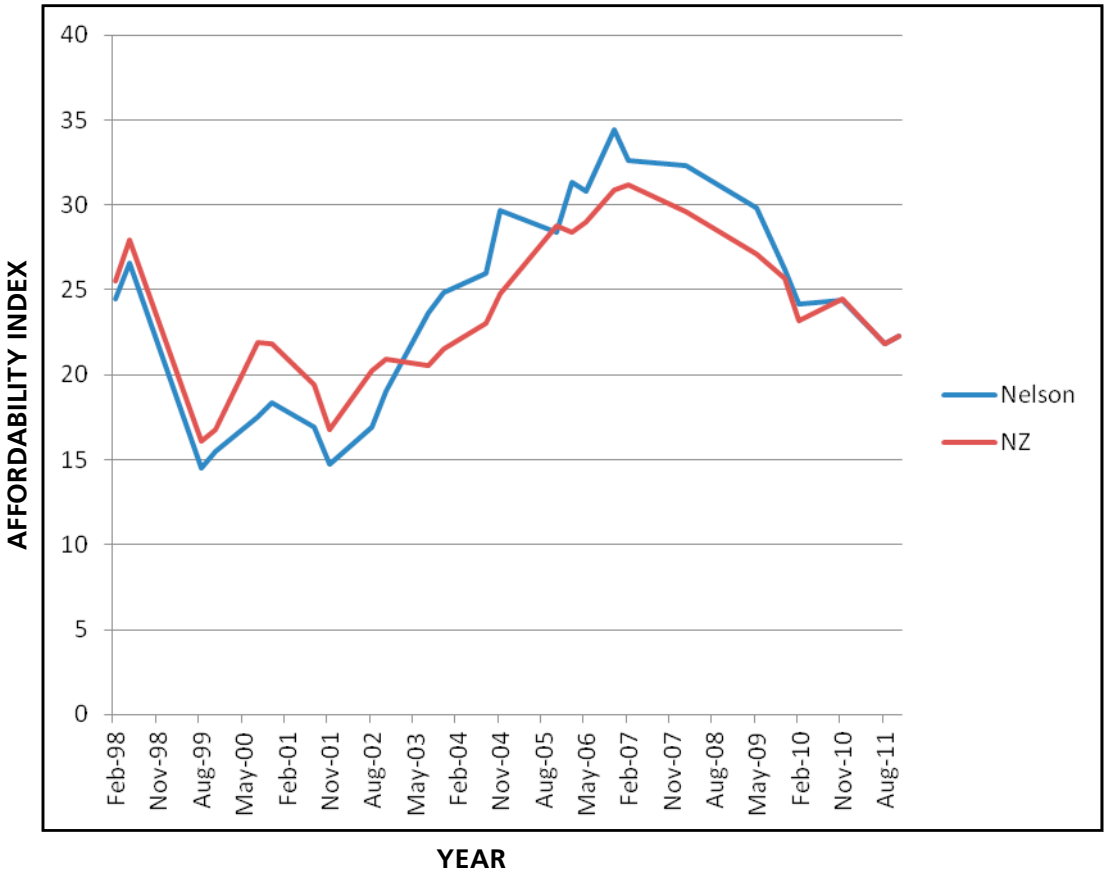
Deprivation Index by Meshblock

KEY – Deprivation Index by Meshblock	
Yellow	1-2 Least Deprived
Green	3-4
Purple	5-6
Orange	7-8
Blue	9-10 Most Deprived

There has not been a significant change in deprivation across different parts of the city between 1996-2006 apart from the land within the vicinity of the Airport which has gone from deprivation of 9-10 in 1996 to 3-4 in 2006 and the land within the vicinity of Nelson Boys College which has gone from a deprivation of 7-8 to 3-4. The remainder of the city has either stayed the same or moved up or down the deprivation index by no more than one scale.

Home Mortgage Affordability Index

Massey University produce a report that looks at the affordability of housing nationally. This is based on the average house price, weekly income, and current interest rates (average house price/ weekly income, X interest rate). The results between 1998 and 2011 are graphed below:



This indicates that Nelson's housing affordability is similar to the NZ average. It may be possible to determine the ranges of housing affordability within Nelson by utilising the Massey University methodology but at a Statistics New Zealand meshblock level. This may then help to determine whether housing is more affordable in different parts of the city such as intensification or greenfields areas.

Nelson City Council Social Wellbeing Policy

The social wellbeing policy had the following to say about housing affordability:

"There are many definitions of housing affordability, but for the purposes of this discussion, the following definition (Housing New Zealand, 2005) has been used. "Affordability typically becomes a concern where the housing costs of households in the lower 40% of the income distribution exceed 25% to 30% of their income." Housing affordability has been a major issue in Nelson since the 1990s, with house prices rising 70% between 2002 and 2004. Nelson regularly features in the top three least affordable housing regions of New Zealand. In March 2010 Central Otago Lakes remained the least affordable region with an index of 131.6% of the national average. Next was the Auckland region at 122.0% followed by Nelson/Marlborough at 105.2%. There is a strong rental market in Nelson, with increasing numbers of residents renting rather than buying. Home ownership levels dropped from 72.3% of all private households in 1996 to 68.6% in 2006. The rental market in Nelson is made up of ownership by a private person or business 85.3%, Housing New Zealand Corporation 10.7%, Local Authority or City Council 2.8% and other state landlord (3) 1.0%. Some of the lowest cost rental properties in Nelson are acknowledged to be substandard.

Consultation on affordable housing with key stakeholders and providers suggests there is also an attitudinal issue regarding housing in Nelson. Several agencies interviewed cited instances of people "needing" turn-key properties and a move away from the idea of starting at the bottom in a lower quartile home and working your way up. It is also becoming more common for several individuals or families to come together to rent or buy a better standard of home. Increasingly parents are giving their children a step up by paying the deposit on a first home.

How Nelson is profiled was also stated as playing a role in housing affordability. Nelson is not currently portrayed as urban dwelling in a recreational area, but as 'a lifestyle' region and many of those moving to the region have an expectation of large properties on large sections and are not satisfied with the range of properties that fit their budget.

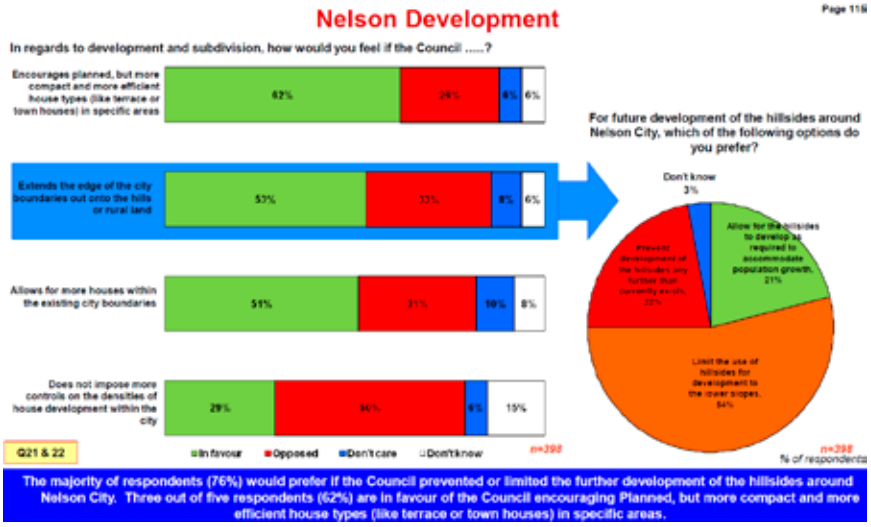
The ageing population will also affect housing needs, with declining numbers expected in all age groups except those 65 yrs and over. Average household size is projected to drop from 2.4 in 2006 to 2.1 by 2031 with a projected increase in one person households. (3.2% increase between 1996 and 20067). More housing will be needed with projections ranging from a low estimate of 1800 to a high estimate of 7300 by 2031.

House size also has a bearing on housing affordability. There are currently more, larger dwellings being built, with average values of new consented dwellings rising sharply. In addition fewer smaller (more affordable) houses are being built with prices of smaller houses remaining higher as a consequence."

Resident Surveys

A number of resident surveys have been carried out between 2005 and 2010 that have looked at city growth and development issues.

In 2010 the majority of residents (76%) prefered Council to prevent or limit the further development of the hillsides around Nelson City. Three out of five respondents (62%) were in favour of the Council encouraging planned, but more compact efficient house types (like terrace or town houses) in specific areas.



The AC Neilson Survey (2005) indicated that Council had the level of control for buildings about right although the majority of respondents (615) wanted more control over retail and commercial buildings with an emphasis on the Central City (67%) and Central City Fringe (60%). Between 2002 and 2005 there was a significant increase (20-29%) who felt the main shopping area should be located within the city centre, particularly those residents within the Central City. Residents in Nelson south favoured a more relaxed approach to allowing retailing activities outside the City Centre. Between 2000 and 2005 respondents have consistently indicated that encouraging public transport, a range of activities, beautification projects, and provision of additional parking are priorities to make the city centre an attractive place for retail and other commercial activities. Buildings in public use were consistently seen as a priority for heritage protection between 2000-2005. While the majority of residents were satisfied with future housing options one in four were not. Of those dissatisfied, 84% were concerned about the cost of housing. Approximately four out of five residents were satisfied with the quality of gardens and trees in Nelson.

Plan Changes

There have also been a number of plan changes and growth related studies that provide useful monitoring information.

The s32 for Plan Change 14 indicated that: "Nelson has limited land left for residential subdivision, with the remaining located predominantly on hillsides. This provides a window of opportunity for managing growth in terms of good urban design. In 2010 it was estimated that there was 17 years of supply of existing zoned residential land available for development (at 230 HUDs per year including Marsden and Enner Glynn Structure Plans as well as land that has subdivision consent but has not yet been developed). The average density of dwellings for that remaining residential land is expected to be approximately five units per hectare due to topographical and geotechnical constraints.....It is important that the land left is developed according to good urban design principles... By increasing the numbers of people living in existing areas and by better managing the way in which new areas are developed, this finite resource can be used more efficiently. There was an average of 2.56 people

per household in Nelson (declining at 0.05 per five year period) and the population is aging (over 65 years expected to double in the next 20 years). Both these figures show that demographics are expected to change in favour of population groups who are inclined to require smaller housing units in areas close to community facilities."

Plan Change 14 itself introduced objectives policies and rules that sought changes to design standards, engineering performance standards, the roading hierarchy, public interface, the services overlay, residential parking standards and comprehensive housing development controls to enable a quality and more compact and connected urban structure and form.

Plan Change 21 also provides for a more compact form of growth by reducing carparking requirements within the inner city particularly, and across the city generally. This is discussed further under the Transport section of this report.

CATAL Developments Limited lodged a private plan change (06/01) with Council in 2007. The plan change became operative in 2008. The private plan change proposed to amend the existing Industrial zone retailing rule INr.21 to provide for large format retail and trade outlets of no less than 500m^2 and associated activities to a maximum of 30,000m^2. This allowed for out of centre retail in the Stoke industrial area. The retail assessment associated with the application showed that this would not create a significant impact on in centre retail areas or significantly impact on the scarcity of Industrial land. The decision signalled that there was approximately 50ha of industrial land available in Nelson-Richmond in 2007 providing a supply for between approximately 9-15 years.

Plan Changes 13 and 17 provide for additional growth in the Marsden Valley and Enner Glynn and Upper Brook Valley. The s32 reports for these plan changes identifies that the development yield is lower than that anticipated within the Nelson Urban Growth Strategy 2006 due to a more detailed constraints analysis required as part of the plan Change process.

Plan Change 18 was also foreshadowed in the Nelson Urban Growth Strategy 2006 as well as the joint structure plan for the Nelson South Richmond East area developed in conjunction with Tasman District Council in 2007. The character of the Nelson south area had changed as a result of a number of notified subdivision consents. The Plan change was seeking to manage this residential development on the edge of the urban area.

Plan changes have not typically had regard to NRPS objectives relating to growth.

Summary – Growth

The NRPS and NRMP objectives and national policy direction (RMA, NZCPS, and NPS Freshwater) seeks the integrated management of growth and infrastructure in a manner that protects sensitive environments. The NRPS highlights the need to protect/avoid significant natural and physical resources and hazard areas. Furthermore urban intensification is a priority and urban expansion should only take place ahead of urban intensification following a thorough cost benefit assessment that considers whether the benefits to key natural, physical, and heritage resources outweigh the costs, and where future demand is determined and community expectations are met.

A range of zone and natural resource objectives seek different levels of protection in the NRMP.

- DO13A seeks quality urban design outcomes
- DO14 promotes subdivision and development that is appropriate to natural characteristics of the City and is consistent with the orderly and efficient use of land
- DO15 requires an urban form in which intensive development is not detached from existing urban areas and avoids or mitigates effects on ecological, recreational, cultural, community, and amenity values. Existing land allocated to urban zones is considered sufficient to cater for significant future growth
- DO 16.1 provides an umbrella objective in relation to zone specific objectives by recognising that the management of the natural and physical resources should respond to the varying resource management issues and the varying actual and potential effects of use, subdivision, development, and protection arising in different parts of the District.

These citywide objectives are supported by a range of zone based objectives that seek varying outcomes across the City. The policies then go on to establish the high level purpose for individual zones.

These objectives and policies are reinforced by rules designed to ensure that higher density environments within the urban area have a range of bulk and location controls to address amenity issues, while lower amenity areas such as the Industrial areas have more liberal bulk and location controls. Low density areas, such as the rural area, also have a more liberal range of bulk and location standards apart from the more sensitive areas which tend to have higher consent thresholds to ensure that effects can be appropriately managed.

To a large degree this framework is effective at achieving national, regional, and district objectives apart from the issues outlined below.

Objectives will need to become more outcome/target based to be more efficient and effective. For example rural character objectives require the maintenance and enhancement of an environment dominated by open space and natural features. What is unclear is how much growth can be accommodated in rural areas before this creates a significant issue or before this objective is no longer achieved. Having more outcome based objectives will make decisions about whether to grant or refuse consents more straight forward and therefore more efficient and effective, subject to adequate monitoring.

In the past community consultation and limited cost benefit analysis has largely taken place via a series of Nelson Urban Growth Strategies (1977, 1986, 2006) and the Nelson Richmond Intensification Strategy (2006). Urban expansion plan changes have not typically had regard to the NRPS policies and objectives in terms of considering the benefits of urban expansion over consolidation/intensification, as required. Furthermore, growth strategies have not been comprehensively implemented via NRMP plan changes.

Population projection information is available down to Census Unit Area scale but there is limited employment projection information available by area, other than by transport zone. Population projections indicate that the vast majority of population growth can be accommodated in the existing urban area and that there will be limited demand outside the urban area.

Historical data indicates that Nelson is slowly intensifying population and employment densities around centres and bus routes and close to community services (which are also typically locating in these areas). However, this intensification is not potentially occurring to the degree needed to adequately support public transport (households need to double from 15 households/ha to 30 and employment needs to increase from 120 employees/ha in the CBD and from 13 employees/ha in Suburban Commercial areas to 150) or accommodate future population growth as anticipated in the NRPS and Nelson Urban Growth Strategies.

There has also been a range of population and employment modelling completed to largely inform transport and infrastructure planning but there has been limited rural and employment (by type) capacity work. Consequently plan changes have been driven by landowner demand rather by a strategic approach to growth.

At the same time more housing is locating around the periphery of the urban area and in rural areas (particularly in Nelson North and Nelson South/Saxton), housing is considered unaffordable, a large number of buildings are locating in significant landscapes and heritage areas thereby potentially compromising these values. While activities are generally occurring within the zones anticipated a significant amount of development in the Industrial zone is of a retail and commercial nature (a similar number of retail/commercial consents are being granted in Industrial zones as in Inner City zones). According to residents surveys carried out in 2005 and 2010, and consultation undertaken as part of the Nelson Urban Growth Strategy 2006 these trends go against what residents want.

Based on limited data there is a shortage of industrial land in Nelson but on a regional scale there is sufficient supply in Tasman.

A snapshot of Nelson's land-cover and ecological footprint provided in 2006 and 2011 respectively shows that even though the urban area of nelson makes up a small component of land-cover Nelson's ecological footprint is in deficit, although when assessed across the south Island it is in balance.

A wide range of housing types, in terms of footprint and number of rooms, exist within Nelson although building size tends to mirror affordability (house size tends to increase as affordability improves).

Overall this monitoring information suggests that the integrated management of growth, infrastructure, and the protection of sensitive environments needs improvement if the key growth related objectives of the NRPS and NRMP are to be achieved. It is recommended that the Nelson Development Strategy consider these issues in an integrated manner, to be implemented via changes to the NRMP and NRPS.

Recommendations for Further Work

In the Short term:

- A comparison between the national Land Cover Data base 2006 and 2012 should be undertaken to gauge the extent of impact on significant natural areas.

The Nelson Development Strategy should:

- be informed by a detailed capacity study looking at residential, urban, rural population and employment matters
- consider further analysis of regional retail demand and supply
- consider the Integration between growth planning, water and transport management and the protection of significant natural (landscape and ecological) environments and hazard management
- Consider opportunities to improve housing intensification and affordability
- be implemented via plan changes.

In the Medium term:

- A further assessment of Nelson's ecological footprint should be undertaken to gauge progress
- Ensure that the short to medium NRMP work programme has an emphasis on intensification within the existing urban area.
- Explore opportunities to work with Tasman and Marlborough District Councils.

Appendix 1

Employees	Inner City Centre		Inner City Fringe		Suburban Commercial		Port Industrial		Airport Industrial		Saxton Industrial		Inner City Industrial		Residential		Coastal		Rural	
ANZSIC06 division	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
A – Agriculture, Forestry & Fishing	0	0	9	0	20	3	358	6	15	58	15	12	12	0	266	90	540	670	116	60
B – Mining	0	0	0	0											0	0			0	0
C – Manufacturing	117	120	98	78	93	88	1305	735	1265	587	355	270	80	151	311	693	0	15	21	44
D – Electricity, Gas, Water and Waste Services	0	0	3	0			12	3	15	15	0	0	6	12	12	6			0	0
E – Construction	25	15	43	35	42	30	65	60	418	558	6	223	87	128	242	426	0	0	15	68
F – Wholesale Trade	96	60	102	81	15	15	140	185	280	305	160	156	79	51	297	181	3	0	0	21
G – Retail Trade	699	708	744	972	331	315	71	75	53	212	9	223	178	207	599	671	3	0	23	24
H – Accommodation and Food Services	445	477	372	385	291	308	37	60	29	18	0	18	12	3	717	848	30	55	12	42
I – Transport, Postal and Warehousing	93	95	15	18	12	39	330	313	612	555	18	21	123	120	129	129	0	0	3	3
J – Information Media and Telecommunications	508	293	46	35	9	6	12	12	0	9	0	0	0	0	54	82	0	0	3	0
K – Financial and Insurance Services	250	280	37	39	0	12	12	6	0	0	0	0	0	0	27	60	0	0	0	0
L – Rental, Hiring and Real Estate Services	96	74	57	27	29	24	30	6	21	44	0	3	0	0	45	97	0	0	3	0
M – Professional, Scientific and Technical Services	337	413	206	280	3	38	35	180	48	39	0	21	33	34	342	585	0	0	0	6
N – Administrative and Support Services	65	54	33	226	0	132	90	210	6	329	140	100	108	87	249	373	0	0	0	43
O – Public Administration and Safety	275	383	288	398	0	0	70	45	12	35	15	9	18	29	42	66			0	6
P – Education and Training	99	76	348	269	54	29			170	156	0	219	0	3	860	1125	3	9	15	298
Q – Health Care and Social Assistance	177	169	1001	673	108	199	3	0	30	25	60	90	12	12	2064	3363	0	30	6	70
R – Arts and Recreation Services	6	12	52	138	0	6	9	9	18	46	9	55	3	0	116	144	9	12	12	12
S – Other Services	193	317	117	172	48	33	25	23	36	66	9	71	115	141	210	358	6	0	6	24

Businesses	Inner City Centre		Inner City Fringe		Suburban Commercial		Port Industrial		Airport Industrial		Saxton Industrial		Inner City Industrial		Residential		Coastal		Rural	
ANZSIC06 division	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010	2000	2010
A – Agriculture, Forestry & Fishing	12	7	5	6	5	4	52	14	5	9	6	8	6	3	158	111	79	36	72	93
B – Mining	0	0	1	0											1	2			0	1
C – Manufacturing	23	20	29	15	17	20	40	34	60	65	5	26	27	26	150	135	0	1	16	19
D – Electricity, Gas, Water and Waste Services	1	0	2	1			2	1	3	4	0	0	1	1	5	10			0	1
E – Construction	11	16	17	15	19	20	9	8	31	45	5	32	17	20	358	481	1	0	24	73
F – Wholesale Trade	16	13	26	18	5	9	32	33	38	51	2	25	17	12	85	94	1	0	7	13
G – Retail Trade	122	133	71	76	46	35	10	10	10	24	4	20	14	15	153	170	1	0	7	15
H – Accommodation and Food Services	47	50	26	35	32	32	5	9	5	4	0	2	3	3	116	153	3	3	9	14
I – Transport, Postal and Warehousing	9	10	6	7	5	6	21	16	25	33	3	9	10	9	129	115	0	0	5	7
J – Information Media and Telecommunications	7	5	5	2	3	1	1	2	0	2	0	1	2	0	13	27	1	1	2	0
K – Financial and Insurance Services	69	60	14	28	2	9	5	12	3	8	0	3	0	5	43	152	0	0	3	14
L – Rental, Hiring and Real Estate Services	139	139	92	117	57	68	28	19	28	47	7	30	20	31	367	708	1	0	21	74
M – Professional, Scientific and Technical Services	55	72	33	60	9	16	15	30	10	12	0	18	5	7	238	402	0	0	19	42
N – Administrative and Support Services	21	14	7	12	4	6	5	11	4	10	4	6	2	4	76	104	0	1	2	15
O – Public Administration and Safety	17	11	11	15	2	2	5	5	2	3	2	2	2	3	10	13			1	1
P – Education and Training	10	12	6	10	4	4			2	8	1	7	1	1	59	82	1	1	3	8
Q – Health Care and Social Assistance	17	31	57	54	19	20	3	0	1	4	1	3	1	3	156	239	0	1	4	15
R – Arts and Recreation Services	2	4	15	14	5	7	4	8	2	4	2	3	4	0	66	82	1	1	6	9
S – Other Services	54	48	42	40	20	22	8	8	16	23	5	12	45	36	114	149	1	0	6	12

AMENITY VALUES

NATIONAL POLICY DIRECTION

The RMA defines amenity values as "those natural and physical qualities and characteristics of an area that contributes to people's appreciation of it's pleasantness, aesthetic coherence, and cultural and recreational attributes". Amenity values therefore include a wide range of matters such as views, quality design, retention of special features, uncluttered open space and peace and quiet, and an absence of noxious elements and activities. Section 7 of the RMA requires Council to maintain and enhance amenity values in Nelson City. S16 and 17 of the RMA highlight specific duties to avoid unreasonable noise and activities that will have an adverse effect on the environment. Council's functions include the control of any actual or potential effects of the use, development, or protection of land (including the control of subdivision) along with the control of the emission of noise and the mitigation of the effects of noise.

The 2010 Report to the Minister for the Environment's Urban Technical Advisory Group (UTAG) recommended that RNA s6 be amended to explicitly recognise the built environment by addressing the quality of the design and planning as a matter of national importance, modifying the definition of environment to include the built environment and extending the definition of amenity values. This would be followed up by introducing an NPS on the built environment. In October 2011 the Government established a technical advisory group to review the principles (s6&7) of the RMA. Recommendations will be considered through 2012. The scope of work in the terms of reference includes whether s6&7 can be improved to give greater attention to UTAG recommendations in relation to s 6&7.

In March 2005 the Ministry for the Environment released the NZ Urban Design Protocol which provides a good practice guideline to achieve quality urban design. Nelson City Council, along with most Councils in NZ, became a signatory to the protocol in 2008 and is one of 186 signatories nationwide.

RMP'S POLICY DIRECTION

The objectives of the NRPS that relate to amenity are NA1.2 Amenity Values and DA2.2 Noise. These objectives seek the preservation or enhancement of amenity and conservation values and an environment in which unreasonable noise is avoided, remedied or mitigated.

The Draft 2008 NRPS growth objectives reference the need for residential, commercial and industrial development to sustain and enhance the quality of Nelson's environment and lifestyle.

The NRMP contains a number of objectives that are related to amenity. Signs objective DO8.1 seeks that outdoor signs should convey necessary information while avoiding or mitigating any adverse effects on public safety, convenience and access, or on the visual amenity of the district. Policies seek to minimise signs in recognition of the uncluttered nature of signage in Nelson, recognise character and amenity, and ensure location and design of signage appropriately considers traffic (including air) safety.

DO9.1 anticipates a landscape that preserves and enhances the character and quality of the setting of the City and in which its landscape components and significant natural features are protected. Policy DO9.1.4 emphasises the need to protect visual amenity values.

DO14.2 seeks the maintenance and enhancement of the amenity values of the built environment through the subdivision and development processes. Policy DO14.2.1 then goes on to stipulate that subdivision patterns should consider the range of future potential land uses and development potential of the surrounding area. Further guidance on the anticipated amenity values of the different parts of the City is provided via zone specific objectives and policies as described under the growth section of this report and below.

In living environments, residential objective RE3 seeks the maintenance and enhancement of significant public views, natural features and landscapes that contribute to Nelson's character and setting. Rural objective RU3 seeks to recognise and maintain local rural amenity including the noise environment.

Coastal Objective CM4 seeks to maintain and enhance the Coastal Environment.

In business areas the Inner City area objectives IC2-IC5 reflect the need for streets and public areas to be pleasant and attractive, for development to be appropriate to the streetscape and sympathetic to their locality/adjoining zones and the heritage character of the inner city, and for a diversity of activities that do not adversely affect the City Centre and City Fringe environment. Objective SC2 anticipates suburban commercial centres will have a high level of on site amenity which will not impact on neighbouring areas or the safety and efficiency of the road network. IN2 requires the maintenance and enhancement of the amenity of the Industrial and adjoining zones.

Plan Change 14 introduced a suite of new urban design objectives (DO13A) with the aim of creating sustainable places and communities, high quality public spaces and inspiring places, providing for diversity of housing choice and employment and recreational activities and improved natural and physical connectivity, while recognising the local context.

NRPS performance indicator NA1.8 propose that significant townscape features, cultural sites, trees and historic sites and buildings are afforded a level of protection which preserves or enhances the amenity values enjoyed by the people of Nelson City and a reduction in the number of conflicts between adjoining land uses identified through complaints received by Council. DA2.8 seeks a reduction in the frequency of noise levels exceeding specified levels at specified locations.

NRMP performance indicator DO14e.3 seeks that amenity values are maintained and are monitored via visual inspection and a review of resource consent data and a review of Council complaints. DO13Ae, which has been introduced as part of Plan Change 14, anticipates reductions in crime statistics and improved safety and improved satisfaction with amenity through resident surveys. Zone specific indicators include the number of heritage buildings lost and enhanced (photographic and Resource consent data) and an increase in the number of quality subdivisions based on valuation data, change in ambient noise levels and the change in density of subdivision in rural areas. The number of people using the CMA and any complaints about the loss of amenity. peoples perceptions of safety and amenity, and changes in façade height in the Inner City. Change in ambient noise levels in the Suburban commercial areas.

Plan Change 14 also proposed changes to DO14.1 and DO14.3 to ensure that city layout and design is not only appropriate to the natural characteristics of the City and the orderly and efficient use of land but is also consistent with quality urban design and that the provision of services should also consider the development potential of adjoining land.

NRMP RULES

There are numerous rules in the NRMP that have an impact on amenity from the design controls in the Inner City, to bulk and location controls in the Residential zone, to the subdivision and development standards in rural and conservation areas that result in open space and the retention of the vegetated city backdrop. These rules have been summarised in more detail in the Growth, Coastal Environment, Landscape Values, Heritage and Significant Vegetation sections of this report.

The subdivision rules provide for a range of densities across the city from as small as 300m^2 in the high density residential areas at Stoke, Tahunanui and the Wood, to 15ha in the Rural area and limited subdivision opportunities in the Coastal Marine Area, Conservation and Open Space zones. Urban design standards have recently been introduced as part of Plan Change 14 that seek a quality urban design outcome.

A range of activities are also provided across the zones with the most noxious being able to locate in the Industrial zones with the most limited

range of activities in the Coastal Marine Area and Conservation zone.

The Inner City zone has the most comprehensive range of bulk and location controls to mange how buildings interface with the public realm and to ensure the Church Hill view shaft is maintained. Other zones typically have consistent daylight, height, yard, and building coverage rules to maintain anticipated amenity levels within those zones and at the interface between zones.

The Landscape and Coastal Overlay rules ensure amenity values are retained as subdivision, development, and earthworks typically requires consent as a discretionary activity as a minimum and a landscape assessment is generally required.

Heritage rules are generally consistent across the zones to ensure that a representative range of Nelson's heritage is maintained. Any more than minor alterations to significant heritage buildings requires consent as a restricted-discretionary activity as a minimum and demolition requires consent as a discretionary activity as a minimum. New buildings in Heritage Precincts require consent as a restricted-discretionary activity. Subdivision of sites in a Heritage Overlay requires consent as a discretionary activity.

Trimming and works within the drip-line of heritage and landscape trees need to meet appropriate standards and their removal is a discretionary activity as a minimum.

Works on an Archaeological site require appropriate archaeological assessment and in the Opens Space and Recreation, Conservation Zone or Costal Marine Area works should be 50m away from the site or discretionary consent is required. The Coastal Environment Overlay controls in the Rural zone require that buildings and structures are not located within an archaeological overlay.

Vegetation clearance rules seek the retention of vegetation along stream corridors, in the Conservation Overlay and along coastal margins and indigenous vegetation clearance is discouraged in the Conservation Zone.

Two other rule that are particularly relevant to amenity and that have not been addressed elsewhere in this report are the noise and signage rules. These are summarised below:

Zone	Noise	Signage
Generally applicable		Appendix 20: **General Provisions:** Located on property to which goods or services available Freestanding >10m from road intersection Clear of property access No skysigns (above building or verandah) Not overhanging public space unless adequate clearance in Commercial and Industrial zones Not 3 dimensional, flashing, or moving Meet location, design and safety standards Non audible **Election signs:** <10 per candidate 0.75m^2 2.0m height 2 months prior to election **Heritage items or trees:** <0.2m^2 Location standards for Heritage (A&B)buildings **Property sale signs:** <2.0m 3m^2 in commercial and Industrial zones and 1m^2 elsewhere On site and removed once sale completed **Development signs:** <2.0m^2 and 2.0m height, on site, erected < 2months prior to construction and < 5 days after completion **Reserves and Community Facilities:** <2m high and 1.5m^2, with one sign per road frontage
Residential	**Generated by non-residential activity or home occupation measured at residential boundary:** Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA **Acoustic Insulation of buildings in Airport and Port Effects Overlay:** Acoustic insulation to reduce noise levels to <45dBA (airport) or <40dBA (port) inside habitable rooms	**Property name signs:** One per property <2.0m height and 0.25m^2 **Home occupation:** One per property <2.0m height and 0.5m^2 **Non-residential activities:** One per property <2.0m height and 1.0m^2
Rural	**Measured at residential zone or boundary of Rural dwelling:** Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Noise from normal rural activities excluded from boundary of rural dwelling	Restricted number of words (<6) and location (3.0m from road boundary and 70m from other signs or 200m of a Landscape Overlay), not for a Vehicle Orientated Commercial Activity, and limits on size depending on adjacent road speed

Zone	Noise	Signage
Inner City	**Measured at site boundary:** Day time (7 am – 10pm) L10: 65dBA Other times: L10: 55dBA Lmax: 75dBA **Measured at Residential zone:** Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Construction Noise must meet NZ standards	**Free standing:** < one sign per road frontage and 6.0m high and 4.0m^2, and on site If for directing traffic on site <1.0m high and 0.5m^2, within the site, and limited to directional terminology **Free Standing advertising for Vehicle Orientated Commercial Activities (excluding supermarkets and shopping malls):** < one sign per road frontage and 7.5mhigh and 12.0m^2, on site, not adjoining residential zone, major road, and < five words If for directing traffic on site <1.0m high and 0.5m^2, within the site, and limited to directional terminology **Projecting signs attached to buildings:** One sign per occupancy per road frontage, <2.5m^2. projection <1.5m, right angles, not attached to verandah, minimum clearance from footpath and carriageway **Underside of Verandah:** One sign per occupancy, within outer face, and locational restrictions for clearance from footpath and kerb **Painted or attached parallel to the building:** <30% wall space and <50mm from wall
Suburban Commercial	**Measured at site boundary:** Day time L10: 65dBA Other times: L10: 55dBA Lmax: 75dBA **Measured at Residential zone:** Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Construction Noise must meet NZ standards **Acoustic Insulation of buildings in Airport and Port Effects Overlay:** Acoustic insulation to reduce noise levels to <45dBA inside habitable rooms	As above

Zone	Noise	Signage
Industrial	**Measured at site boundary:** Day time L10: 65dBA Other times: L10: 55dBA Lmax: 75dBA **Measured at Residential zone or former Nayland Railway Reserve:** Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Construction Noise must meet NZ standards Airport and Port covered by other controls **Airport Noise:** Ldn 65dBA on rolling 3 month average 12 midnight -6am Single event noise limit 95dBA for 24 movements. Noise limits do not apply to emergencies or civil defence, or national security **Port Industrial Area:** Port Noise Management Plan, Mitigation Plan, and Liaison Committee in place **Acoustic Insulation of buildings in Airport and Port Effects Overlay:** Acoustic insulation to reduce noise levels to <45dBA inside habitable rooms	As above
Open Space	Measured at residential zone: Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Sounds from events on Regional Reserves exempt where outside 7am-10pm and does not involve electrically amplified music	**Free standing directional signs:** <1.0m high and 0.5m^2, within the site, and be limited to directional terminology **Advertising Signs:** One per road frontage advertising facilities or coming events and <2.0m high and 1.5m^2
Conservation	Measured at residential zone or boundary of Rural dwelling: Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA	Associated with activity approved under DoC Conservation Management Strategy or Plan Comply with DoC standards If adjacent to a road must have written consent of road controlling authority If less than 200m from Landscape Overlay must be <1.0m high and 1.5m^2
Coastal Marine Area	Measured at residential zone: Day time L10: 55dBA Other times: L10: 45dBA Lmax: 75dBA Construction Noise must meet NZ standards Airport and Port covered by other controls	As above

Noise rules generally allow for the greatest transmission of noise in the Industrial and Inner City zones. Higher noise levels are also applied to the Airport and Port although noise management plans are required and acoustic insulation requirements apply to surrounding Residential, Suburban Commercial, and Industrial zones. Noise generated on regional reserves between 7am-10pm is exempt from noise controls accept where electrically amplified music is involved. Where noise standards are breached discretionary activity consent is required.

A range of general provisions apply to signage on heritage items and reserves and community facilities and for different purposes such as elections, construction, and property sales. Larger signs are typically allowed on development sites whilst smaller signs are required on heritage items. There are also general controls regarding location and design. Of note signs are required to be located on the site to which they apply, cannot be skysigns, or be moving or flashing.

Signage standards also vary across zones. The most liberal signage controls in terms of size apply to free standing signs in the Commercial and Industrial zones while the most conservative would apply to the Residential zone. Controls in the Rural and Conservation zone also require signs to be located greater than 200m from the Landscape Overlay. Signage that does not meet these standards is generally a discretionary activity. These varying standards are reflective of the different amenity values in across the zones.

MONITORING INFORMATION

Noise Measurement

A report was prepared as part of the development of the NRMP in 1993 (**Nelson City Council District Plan Noise Performance Standards** – RAD723187). Following is a summary of the report.

During the period 15 November to 17 December 1993 monitoring of 24 hour ambient sound levels was carried out within Nelson City. Sixteen sites were monitored with site selection based on representative land uses (10 residential sites, 2 commercial sites, 3 Industrial sites, and 1 rural site). Throughout the survey it was found that the predominant noise source was from road traffic. The tables below show summary results across land use categories:

Table 1 Summary data from monitoring 16 sites

Land Use	No. of Sites	Av.L10 Day	Av.Leq Day	Av.L95 Day	Av.L10 Night	Av.Leq Night	Av.L95 Night	Max Lmax Day	Max L10 Day	Max Leq Day	Min L95 Day	Max Lmax Night	Max L10 Night	Max Leq Night	Min L95 Night
RESIDENTIAL	10	53.69	52.49	40.36	41.80	41.68	28.47	85.15	65.21	62.78	29.26	75.66	53.93	52.00	23.97
COMMERCIAL	2	60.10	57.70	49.30	49.85	48.60	38.00	81.85	67.70	64.00	37.15	80.70	58.35	55.65	32.55
INDUSTRIAL	3	61.07	58.20	48.27	49.60	47.70	42.37	81.70	65.93	61.83	43.47	76.90	59.03	56.27	41.40
RURAL	1	44.80	43.70	29.10	35.40	34.10	23.10	76.90	61.20	55.70	20.30	66.20	52.80	48.30	20.20

Figure 1 Average L10, Leq, and L95 for Day (0700 to 2200 hrs) and Night (2200 to 0700 hrs).

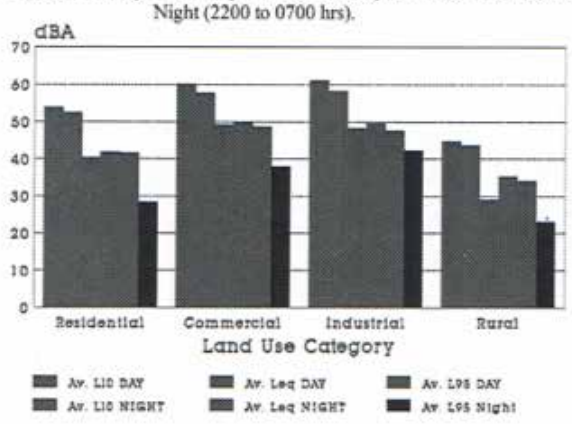
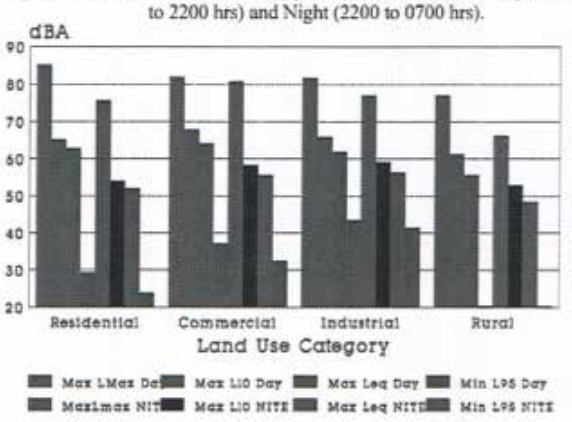


Figure 2 Maximum Lmax, L10, Leq, and minimum L95 for Day (0700 to 2200 hrs) and Night (2200 to 0700 hrs).

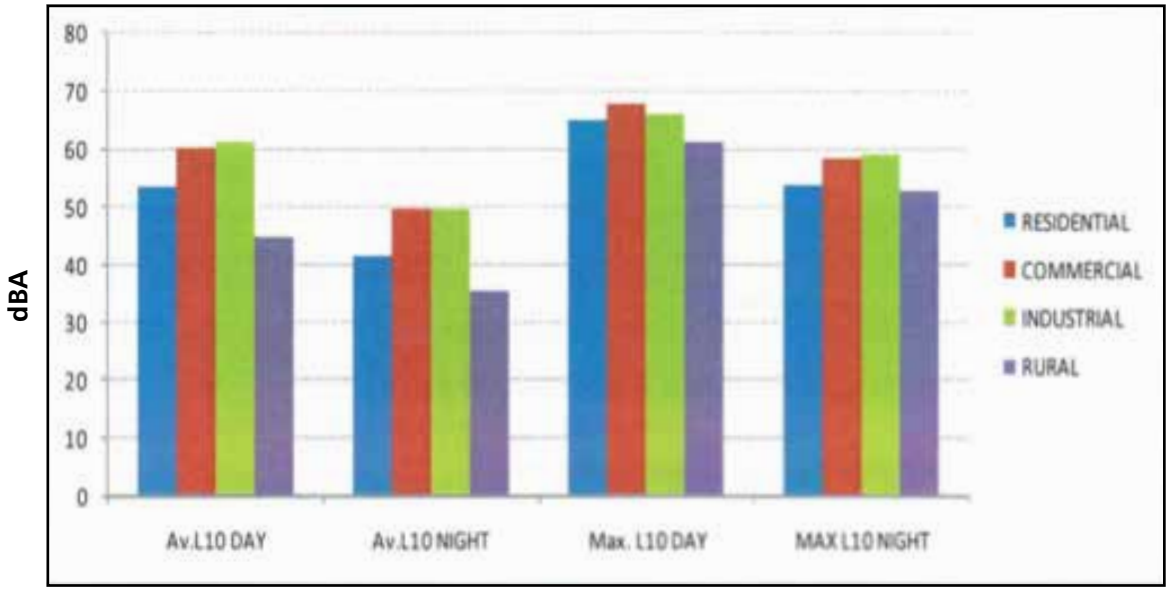


The results show that when the measured levels are averaged across the four different landuse categories a pattern emerges. Noise levels are consistently higher in the commercial and Industrial areas, moderate in residential areas, and lowest at the rural site. This is consistent with the general principle that commercial and industrial areas represent noise emission sites (where noise is generated), while residential (and to a lesser extent rural areas) represent noise immission sites (areas that received noise generated by other land uses). The rural site is thought typical of areas where there is a general lack of noise producing activities (although there may be temporary elevations in noise levels as a result of agricultural activities. The report indicates that the focus should be on average results as maximum and minimums only provide a guide to extremes.

Generally the L10 and Leq levels for residential sites show a pattern of daytime 53dBA, night time 42dBA. Commercial and industrial sites show a pattern of daytime 57 to 60 dBA and night time 47 to 50 dBA. The rural site showed a tendency for much lower noise leves, 44dBA day time and 35dBA night time.

The report also indicated that noise complaint records showed a significant increase in complaints over the last ten years (1983-1993), following the introduction of the Noise Control Act 1982, when an after- hours noise complaint service commenced. However noise complaint information is not integrated with measured noise levels so complaint records cannot be relied on to reveal any useful information about changes in noise levels over time. The records predominantly refer to domestic party type noise sources, with some reference to particular land use activities such as industrial and commercial activities – in particular the port and airport. Many complaints refer to night time disturbance caused by noise disturbance.

The paper **Nelson Inner City Noise Issues February 2009** produced by Malcolm Hunt Associates (RAD729504) shows that ambient noise levels were higher in industrial and commercial areas, moderate in residential areas, and lowest at rural sites. Generally L10 levels for residential sites exhibited a pattern of daytime 53dBA, night time 42 dBA. Commercial and industrial sites were typically found to emit day time 57 to 60dBA and night time 47 to 50 dBA. Rural sites were found to have much lower noise levels, 44dBA day time and 35 dBA night time.



The **Nelson Inner City Noise Survey 2009 Measurement Report and Summary Results** (Malcolm Hunt Associates July 2009 – RAD 817024) observed that Nelson City centre is a moderately noisy place, comparable with large city centres around New Zealand.

The report indicates that the Lmax and L10 levels measured within and around the city centre generally exceed the daytime and night time NRMP standards. However compliance with Rule ICr.42.1 (L10 65 dBA daytime, L10 55 dBA night time) cannot be determined directly from the readings as the measurements were not performed directly at the site boundary to the noise making premises. Importantly the effects of passing traffic have not been excluded from the measured levels. This is because the survey was designed to indicate 'typical' noise levels as received by existing and future residents of the central area and the adjacent residentially zoned area.

The District Plan (outdoor) noise limits are exceeded regularly within the Central City however this is not to say there is widespread non-compliance. This is because much of the measured sound is contributed by road vehicles, a noise source not controlled by the NRMP. There are however times (including average daytime or night time periods) when ambient sound levels are measured lower than the noise limits set out in the NRMP.

According to the results of this environmental survey, there are many outdoor sources of environmental noise present in the area including low level mechanical plant, road traffic and people sounds. However it has been possible to detect the presence of significant levels of low frequency sound on Friday and Saturday nights which indicate prominent levels in the 31 and 63 Hz bands, typical of amplified music. Music and amplified type sounds may contain both impulse (low frequency beat) components and tonal characteristics making them additionally annoying. These sounds (especially low frequency sound) are able to penetrate through typical structures more easily than broadband sound without dominant low frequencies.

The report concluded that "Analysis of night time periods on weekends reveals atypical periods of low frequency sounds from amplified music arising within parts of the Central area and affecting adjacent residentially zoned sites in the general vicinity. The predominance of low frequency sounds for periods of several hours indicates potential for noise nuisance for inner city residents seeking quiet for sleep unless the dwelling is particularly well insulated from external sound."

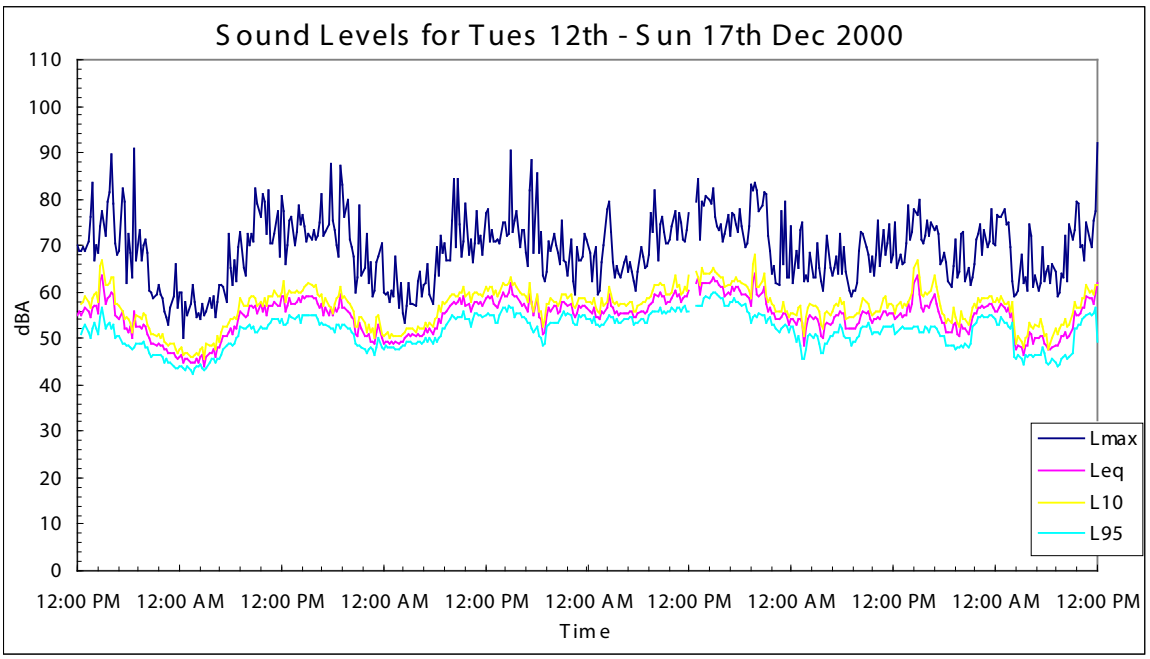
Noise – State of the Environment Reports

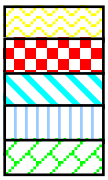
The NCC **1999 State of the Environment Report** stated that preliminary noise monitoring results suggest noise levels near busy roads may be higher than previously thought. The 2001 SOE report indicated that noise associated with Nelson Airport and Port Nelson was particularly difficult to manage. Both facilities are very important to Nelson's economy. They operate seven days a week, including evenings and are associated with a range of noise producing activities. In the ideal world they would be well separated from noise sensitive activities, but in reality both are located in the main urban centre, adjoin residential and other noise sensitive uses and give rise to noise related complaints from some residents.

In the case of Port Nelson, monitoring information suggests that the compliance with noise standards (particularly 85 Lmax) were not being achieved (see graph below).

Port noise

5-day noise summary at 66 Queens Road.





- Containers
- Logs
- MDF (Roll on Roll off)
- Petrol
- Fish

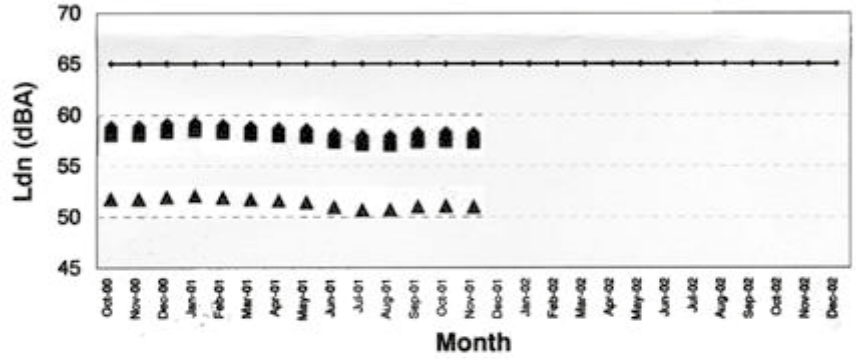
In the case of the Airport 2001 monitoring information was showing compliance with noise limits and a reduction in flight numbers.

NELSON AIRPORT NOISE REPORT

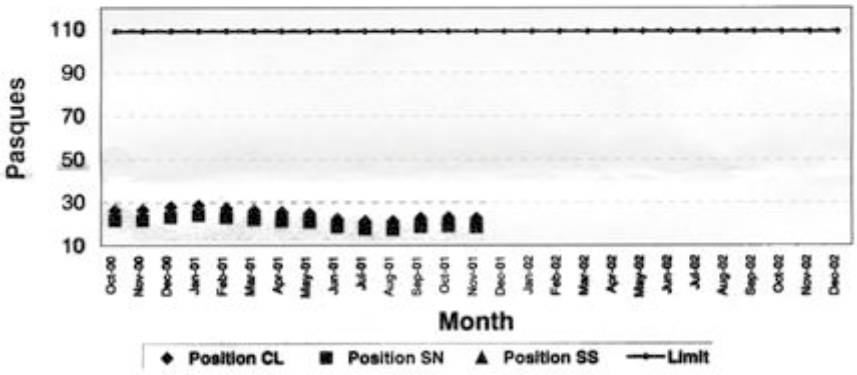
For 3 Months to end of **Nov-01**

	Current 3 Month Noise Levels			Noise	
	Position CL	Position SN	Position SS	Limit	
Ldn	58.2	57.3	50.9	65	dBA
Sound Exposure	23	19	4	109	Pasque

Ldn (3 month rolling average)



Sound Exposure (3 month rolling average)



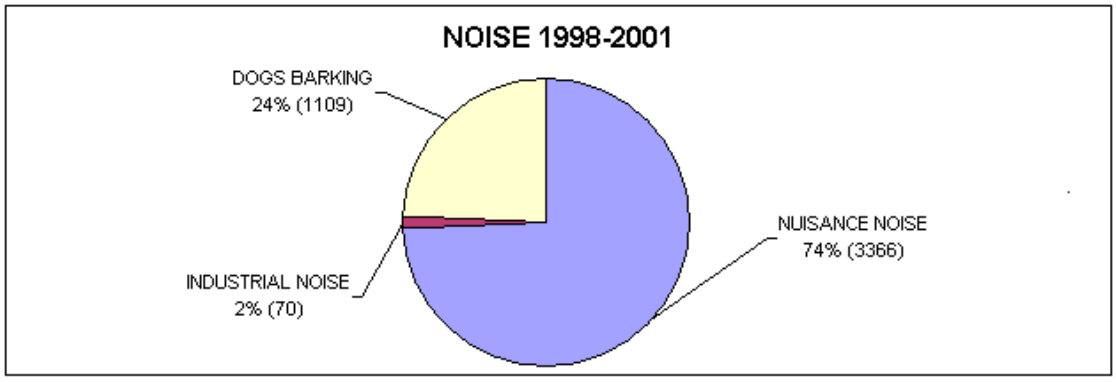
Number of Aircraft Movements

	Total	Day	Night
Sep-01	4500	4412	88
Oct-01	4604	4542	62
Nov-01	3816	3747	69

Report Prepared: 18-Dec-01

The 2004 SOE report provided some general commentary on Noise complaints as follows:

- 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 anymore.



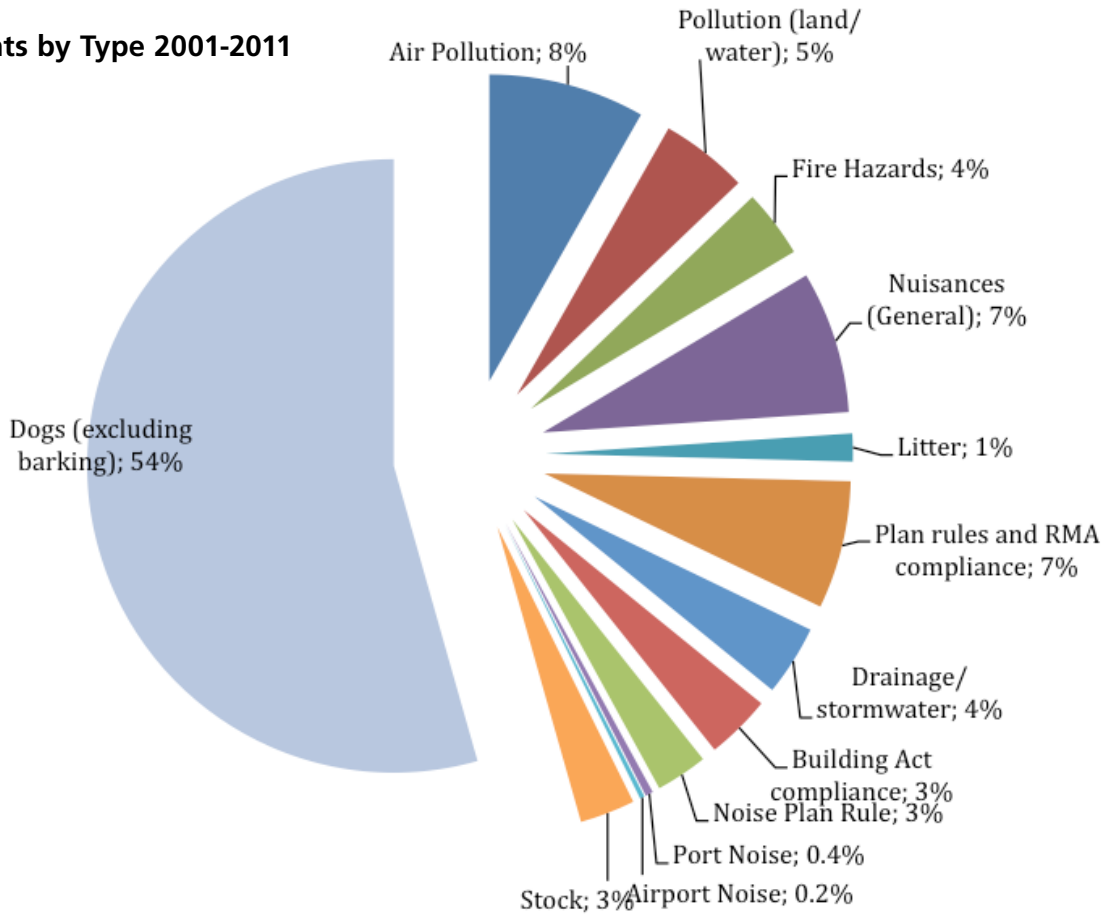
Complaints Data Base 2001-2011

Below is a spreadsheet that identifies the range of complaints received by Council between 2001-2011.

	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	Total
Air Pollution	65	88	250	155	119	117	127	149	150	215	1435
Pollution (land/ water)	82	77	97	104	84	71	76	77	65	72	805
Fire Hazards	60	74	69	50	55	57	72	73	64	49	623
Nuisances (General)	66	125	139	151	124	97	152	123	94	235	1306
Litter	41	17	22	20	33	20	14	22	36	31	256
Plan rules and RMA compliance	127	108	138	128	138	102	139	100	115	80	1175
Drainage/ stormwater	68	68	80	96	29	51	49	74	53	79	647
Building Act compliance	35	19	61	87	77	66	75	109	44	24	597
Noise Plan Rule			21	29	33	57	63	137	64	72	476
Port Noise			12	7	7	9	13	11	8	4	71
Airport Noise			5	1	0	6	5	4	17	5	43
Stock		44	69	47	49	48	48	53	55	94	507
Dogs (excluding barking)	1005	1139	931	932	802	738	917	1028	944	1039	9475
Total											**17416**

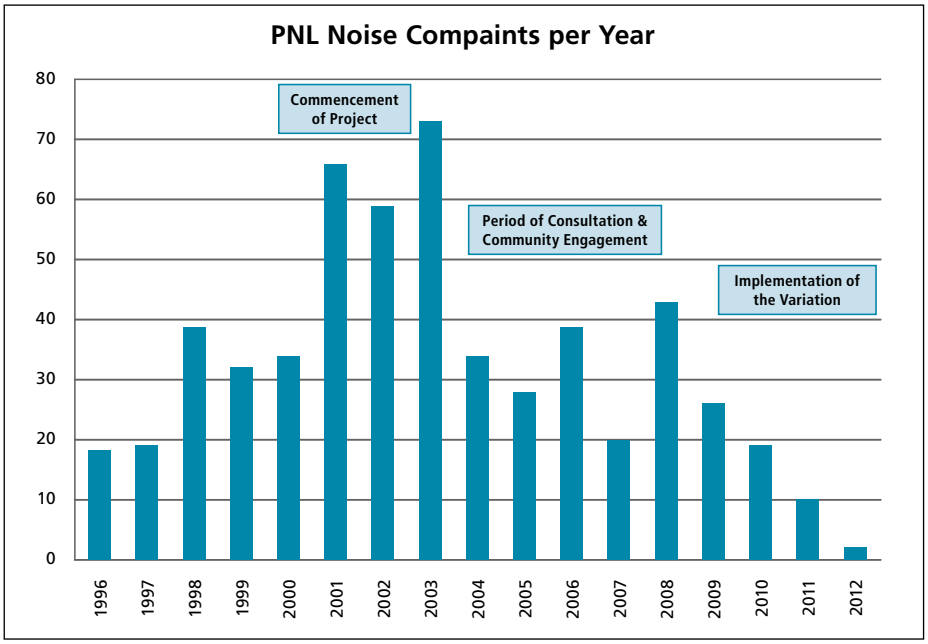
As per 2003/2004 the most significant proportion of complaints were dog related, while noise complaints had reduced significantly.

Complaints by Type 2001-2011



Noise – Port Nelson Limited

Port Nelson Limited's noise complaints monitoring information shows the number of complaints received by the port between 1996-2012.



This shows a significant drop off in the number of complaints since the port noise variation was implemented.

Noise – Plan Amendments

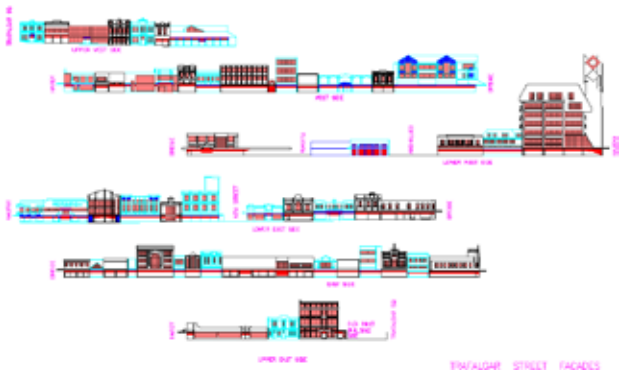
In 2011 the Port Noise appeal was resolved by consent order. This required the continuous monitoring of port noise. Mitigation measures for adjacent residential properties, and the establishment of a Management plan and associated Liaison group made up of local residents and Port representatives so that noise issues could be jointly worked through and appropriately mitigated. Through the life of this matter noise complaints associated with the port have reduced from 73 in 2003 to 10 in 2011.

Plan Change 25 sought to make changes to the explanation to the Inner City, Suburban Commercial, and Residential Noise controls to clarify that exceeding noise standards required assessment as a discretionary activity (the actual standard in the rule) rather than a non-complying activity (the standard identified in the explanation). This matter was heard by an independent commissioner who agreed to remedy the error on the basis that the fuller explanation was retained which outlined the "noise has a major influence on the amenity of an area".

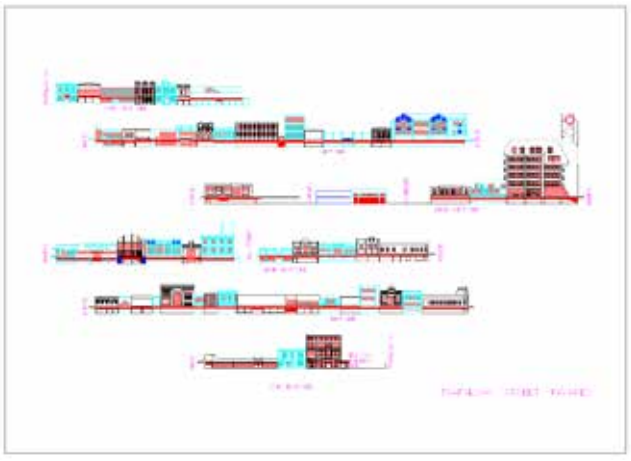
Nelson City Council has been to the Environment Court in the past over issues relating to the management of Inner City noise. In the decision (Decision No. C9/2066, ENV C 70/05, 30 Jan 2006), the court found that the Council should be enforcing the plan rule ICr.42 by measuring the emission of noise at the boundary of the property emitting it. Carrying out this direction is problematic as it is difficult to measure and enforce noise limits at the boundary of the property producing the noise as anticipated by the Environment Court. Work is currently being undertaken to investigate this matter further.

Facade Surveys

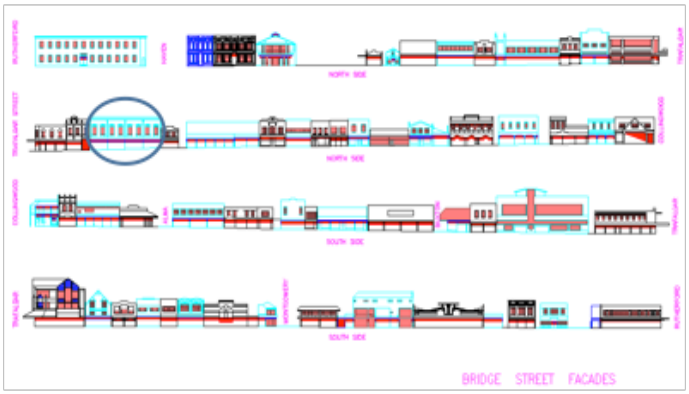
The Council has produced drawings of the facades in the City centre at 1995 and 2000 RAD 1180966, 501041, 477900). An assessment of these drawings has shown very little change over this time period apart from the addition of the Lone Star (94), Little India (269), Summit Real Estate (102), and Fashion Island (242) buildings on Hardy Street and alterations to the Health Shop building on Bridge Street (67). Anecdotal evidence suggests that more significant change has occurred since 2000 and further changes are anticipated in the future given the number of buildings that are potentially earthquake prone. It is therefore recommended that this exercise is undertaken again in 2012 for future monitoring purposes.



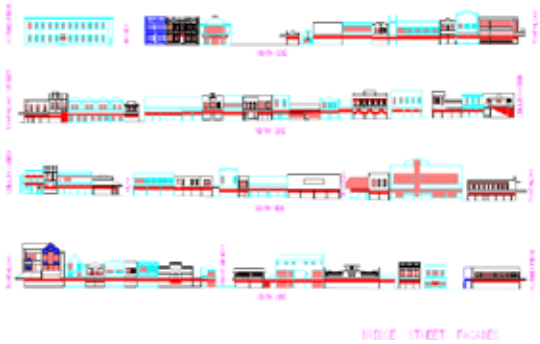
Trafalgar Street 1994 (prior to Majestic fire)



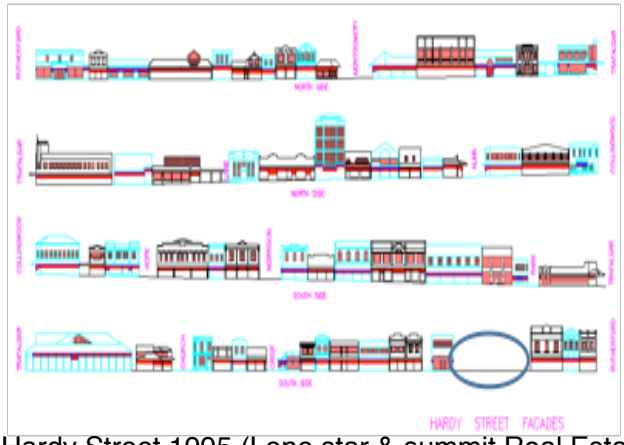
Trafalgar Street 2000



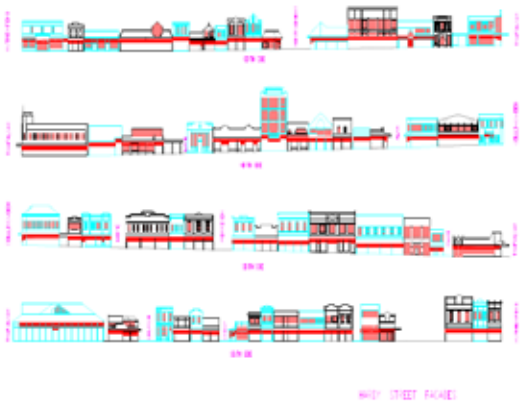
Bridge Street 1995 (Health shop)



Bridge Street 2000



Hardy Street 1995 (Lone star & summit Real Estate)



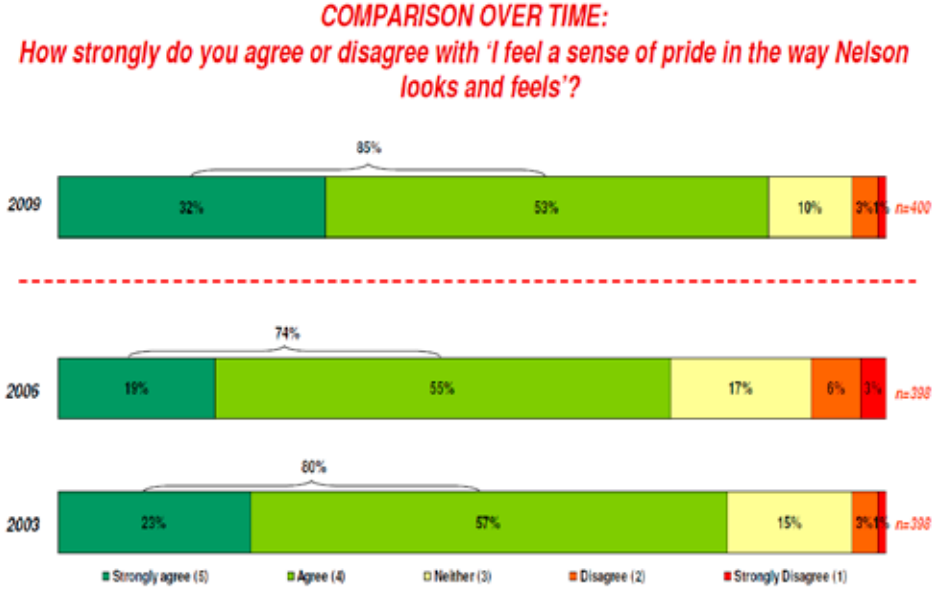
Hardy Street 2000

Resident Surveys

A number of resident surveys sought feedback on amenity issues between 2006 and 2011.

Look and feel

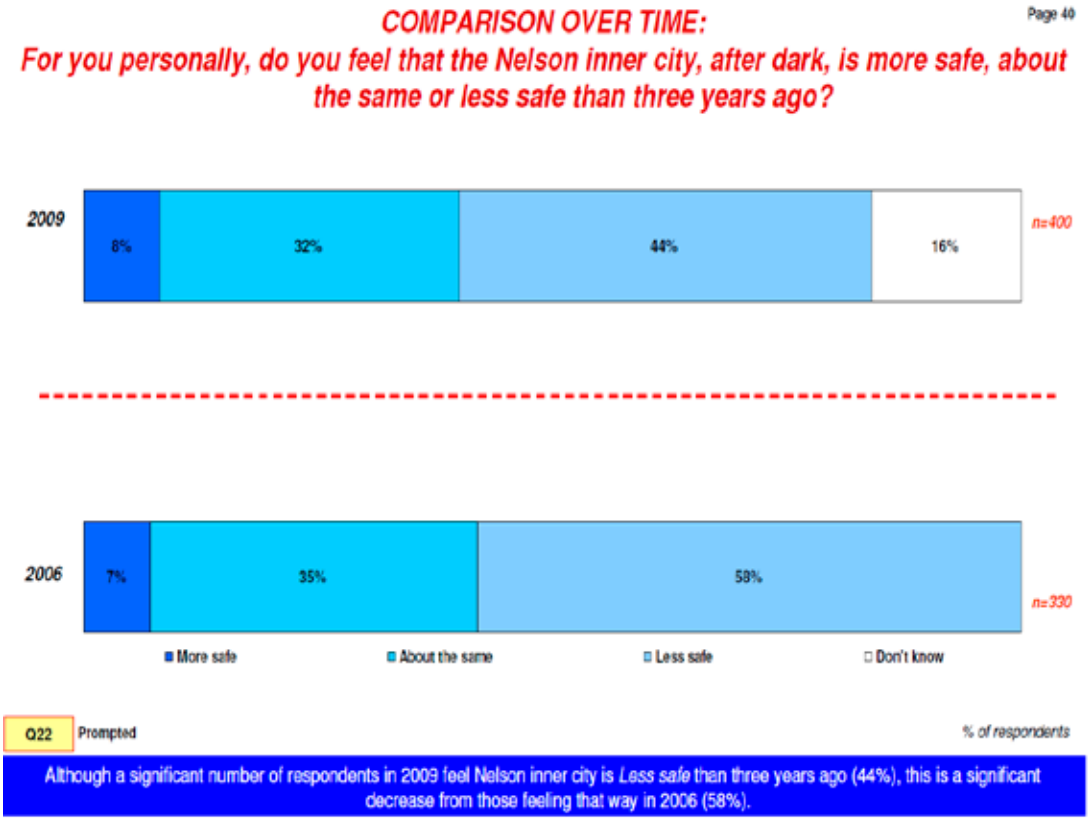
2009 – Although fewer respondents agreed that they felt a sense of pride in the way Nelson looks and feels in 2006(74%) than 2003 (80%), a significant proportion feel this way in 2009 (85%). Helpful, friendly, and welcoming people, parks and gardens, and good population size are the top reasons for respondents having pride in the way Nelson looks and feels. In 2006 the natural environment was the main reason (48%) for people feeling proud of Nelson's look and feel.



Perceptions of Safety

In 2006 the majority of respondents felt their neighbourhood was safe for children to play in unsupervised. The main reason for feeling unsafe were traffic and stranger danger.

In 2009 large proportions of respondents feel safe during the day time in their local neighbourhood (98%), at home (97%), and in the City Centre (94%). Respondents feel most unsafe after dark in walkways (47%), central city during winter (40%), and City Centre (33%). In general respondents were feeling less safe than they did in 2006 (one in ten residents stated they felt very unsafe in their neighbourhood after dark while only 1% stated this in 2006). The majority of respondents felt that Nelson inner city after dark is less safe than in 2006 (44%). Increased violence and crime (28%), Drunks (22%), and media attention (20%) were the top three reasons for respondents feeling this way. Although, a significant number of respondents felt that Nelson's inner city is less safe in 2009 (44%) this is a significant decrease from 2006 (58%).



In 2011 and 2010 satisfaction with safety for motorists, pedestrians, and cyclists were consistent at approximately 60%, 55%, and 38% respectively. There were significant improvements (10%) over 2009 results for pedestrians and cyclists.

State of the Environment Report 2004

The change in density in different parts of the city is also an indicator of whether the amenity and character of areas is changing significantly. For example the NRMP performance indicators anticipate that the density of rural areas will not change significantly. While this is the case generally in the rural environment, the 2004 State of the Environment report revealed that there were significant issues in the Hira area as outlined in the Efficiency section of this report.

Building Consent data

As highlighted under the Growth section of this report, building consent information has been overlaid over various zonings to indicate potential impacts of buildings on these different

environments. This analysis will help outline whether amenity values of different parts of the City are under threat as anticipated in the 1999 SOE report that highlighted monitoring priorities for significant vegetation, numbers of heritage buildings demolished, and impacts on landscapes. Between 1996 and 2011:

- 297 buildings were located on sites with a Landscape Overlay zoning
- 26 buildings were located on sites with a Significant Natural Area survey
- 568 buildings were located on sites identified as a Boffa Miskell Landscape Area
- 88 consents were issued on sites with heritage buildings places or objects
- 39 building consents were issued for sites in a Heritage Precinct
- 23 demolition consents were issued for sites with heritage buildings places or objects

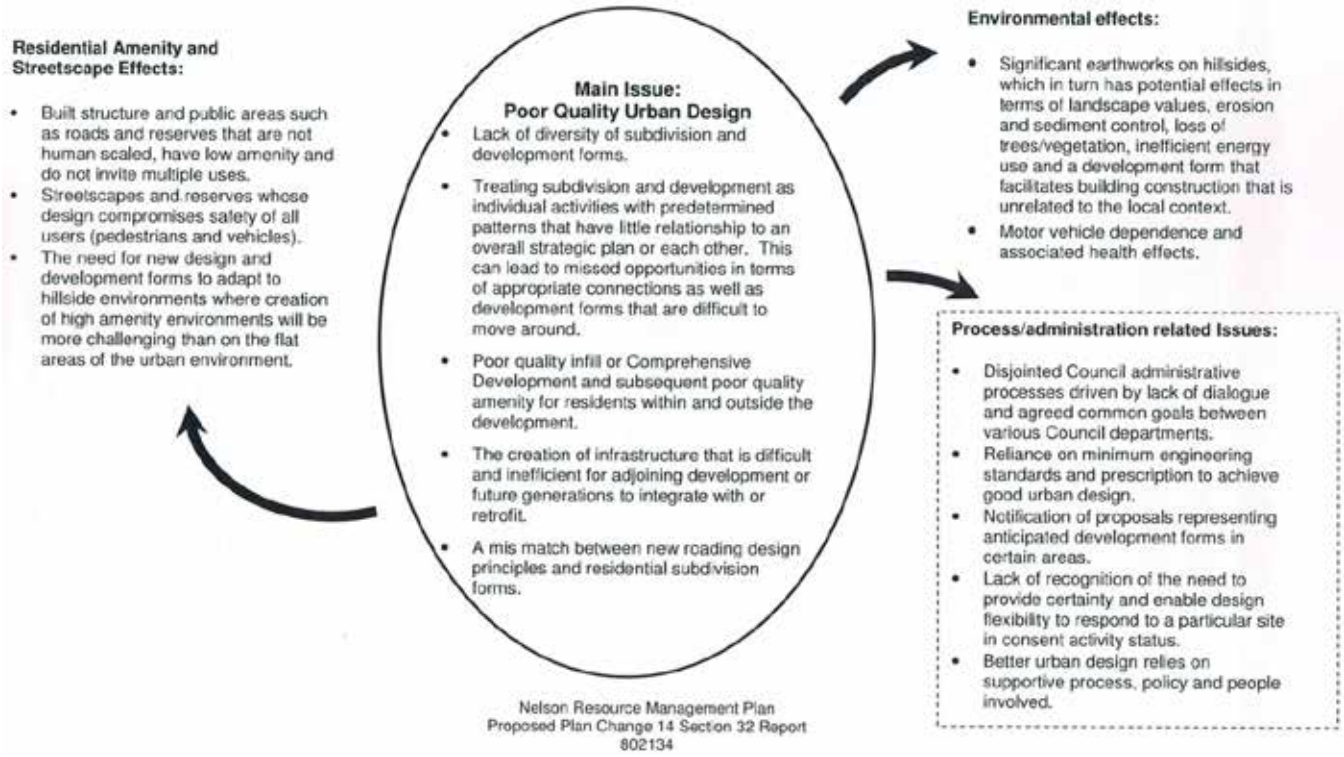
Further discussion on Landscape Values, Significant Vegetation, and Heritage is provided in the respective sections of this report.

A review of the NRMP Right Hand maps overlaid with building consents data suggests that reverse sensitivity amenity impacts are being successfully managed as there are few industrial activities in residential zones and vice versa.

Plan Changes – General

A review of Councils recent plan changes suggests that ten dwellings with heritage value were removed between 1996 and 2012. An additional 24 trees were also added to the heritage appendix as part of Plan Change 22 following a public nomination process. As outlined in the Heritage and Māori sections of this report further work is underway to improve the way Nelson protects its heritage.

Plan Change 14 was also promulgated partly on the basis that urban design direction was not particularly aligned with national guidance and there was a lack of clarity around outcomes sought (see Growth for further discussion on this). Plan Change 14 introduced objectives policies and rules that sought changes to design standards, engineering performance standards, the roading hierarchy, public interface, the services overlay, residential parking standards and comprehensive housing development controls to enable a quality and more compact and connected urban structure and form. These changes responded to a number of Urban design issues summarised in the graphic below:



The s32 for Plan Change 14 indicates that additional work is required on a number of other resource management issues not addressed in the plan change itself. This includes further intensification and structure planning studies which are anticipated to be included as part of the Nelson Development Strategy.

The Heart of Nelson work identified some short comings in the way development in the inner city was being managed. Basically, amenity is generally up to an appropriate standard where rules controlling building design and location apply however amenity issues arise where this is not the case.

Plan Change 21 was the first plan change to be notified to implement the Heart of Nelson Strategy. One of the motivations for Plan Change 21 was because the over provision of parking was making it difficult to achieve good urban design outcomes in the inner city (particularly on the eastern fringe) and across the City generally. Plan Change 21 resulted in the removal of minimum parking standards and expansion of design controls from the eastern fringe of the inner city due to concern about poor design outcomes.

The Heart of Nelson Strategy envisages expanding these controls to the western fringe along with better controls on how buildings front key streets in the inner city area.

Urban Design Panel

The Nelson/Tasman urban design panel was established in November 2009 to have an independent advisory role to promote high quality urban design and Council's urban design objectives for Councils capital projects, consents, and plan changes. The panel was formed in response to a number of poor urban design outcomes that had occurred prior to its establishment and to respond to the issues highlighted in the discussion on Plan Change 14 above.

The panel is made up of a range of professionals with urban design, architecture, landscape architecture, surveying, and planning expertise.

There have been 12 panel meetings over the period from 2009-2012 in Nelson City:

- Collingwood Medical Centre – 2 December 2009
- Toi Toi Subdivision – 2 December 2009
- Performing Arts Centre – 17 March 2010
- Toi Toi Subdivision (second time) – 17 March 2010
- Mixed use development (retail, commercial, office) – 17 March 2010
- Brook Street Village – 27 July 2010
- Montgomery Square – 1 September 2010
- 75 Rutherford St – 15 Feb 2011
- Cawthron Institute – 15 March 2011
- Summerset Village – 1 November 2011
- Trafalgar Centre / Rutherford Park – 3rd February 2012
- Green Gables – 3rd February 2012.

A survey of panel users was undertaken in early 2011. A number of issues were raised by respondents to the survey, on the Panel process. These are outlined below:

- Two of the three respondents to the survey thought that the process for appearing before the Panel and the communication with the Council in regards to the Panel was clear.
- Two respondents thought that the Panel generated good, robust and healthy debate and discussion which was valuable.
- One respondent thought that the Panel recommendations and the resource consent process could be better aligned to create a more streamlined process with the Panel needing more power to influence the resource consent process.
- One respondent thought that the process and communication with the Council was unclear and that the recommendations of the Panel were generic and not particularly valuable.

Council also has a Major Projects Team who also review resource consent applications to ensure an integrated response from Council staff. To date the team has considered 15 development projects and six Council projects. One of the key objectives of the Major Projects Team is improved amenity and urban design outcomes.

SUMMARY – AMENITY VALUES

As noted there are numerous rules in the NRMP that would have an impact on amenity from the design controls in the Inner City to the subdivision and development standards in rural and conservation areas that result in open space and the retention of the vegetated city backdrop.

The subdivision rules provide for a range of densities across the city and Urban design standards have recently been introduced as part of Plan Change 14 that seek a quality urban design outcome.

A range of activities are also provided across the zones with the most noxious being able to locate in the Industrial zones with the most limited range of activities in the Coastal Marine Area and Conservation zone.

These rules are generally effective at achieving the NRPS and NRMP policy direction.

Nelson residents generally appear to be satisfied with the way Nelson Looks and feels but are increasingly concerned about safety issues particularly after dark in the inner city. The Efficiency section of this report suggests that the rules in the plan are effective at addressing amenity issues as the lowest proportions of consents granted are Coastal and Signage at 3% then Air Quality at 4%, and heritage at 5%. This is consistent with the NRMP policy direction that seeks minimal signage, enhanced air quality, limited coastal development, and protection of heritage (although as noted below there is a desire to protect a greater range of heritage).

However there are still a number of amenity issues that could be improved as outlined below.

Noise has been a significant amenity related issue from before the NRMP was originally notified in 1996. Noise issues with the port and airport seem to be being successfully managed by the provisions in the NRMP. There are however still issues associated with the management of noise in the Inner City area and associated with community events.

There appears to have been little change to the facades in the inner city overtime although there is a need to undertake more recent monitoring to confirm this. Issues with building appearance on other main streets, such as the ring route should be considered as part of the Heart on Nelson Plan Changes. Further consideration also needs to be given to potential amenity impacts that may arise due to earthquake prone building issues raised in the Natural Hazards section of this report.

Based on State of the Environment monitoring, census and building consent data it appears that there has been a significant amount of construction in the northern rural areas, significant landscape areas, and heritage areas which may be impacting on amenity.

A review of recent plan changes suggests that additional work is needed to better protect heritage and improve urban design controls particularly in the Inner City. Further citywide strategic work is also necessary to consider future areas for intensification and to better manage rural development. Recently completed plan changes have made amendments to the plan to improve urban design and subdivision outcomes, which have been supported via the establishment of the Nelson/Tasman Urban Design Panel and the Nelson City Council Major Projects Team.

A review of other sections of this report also highlights the need to plan for growth in a way that integrates water and transport management and the protection of significant natural (landscape and ecological) environments and hazard management. Integrated planning will also produce better amenity outcomes.

RECOMMENDATIONS FOR FURTHER WORK

In the Short Term:

- Progress Plan Changes on the current work programme relating to Heritage, Inner City Noise, and Heart of Nelson
- Implement and monitor the outcomes of Plan Change 21 and 14 (including the Land Development Manual)
- Monitor changes to the Inner City facades
- The Nelson Development Strategy should consider the Integration between growth planning, water and transport management and the protection of significant natural (landscape and ecological) environments and hazard management.

TRANSPORT

NATIONAL POLICY DIRECTION

Ensuring that natural and physical resources and energy are used efficiently while enabling people's wellbeing and safeguarding the life supporting capacity of the environment is part of the purpose of the RMA. Since 2005 regional functions under the RMA have included the strategic integration of infrastructure and landuse.

RMP'S POLICY DIRECTION

NRPS objective IN2.2 provides a general transport goal of having a safe and efficient land transport system that promotes the use of sustainable resources while managing adverse effects on human health and safety and natural and physical resources. Policies promote a transport system that meets community accessibility needs, discourages dispersed development and favours intensification over urban expansion, uses energy efficiently, and supports alternative modes such as walking and cycling. IN3.2 and IN4.2 supports the maritime transport and air transport needs of Nelson City and surrounding areas in a way that manages environmental effects.

The Draft 2008 NRPS anticipates a transport network that broadens the existing range of transport options, and reduces reliance on private vehicles, by providing multi-modal solutions and travel demand management. A broader range of transport options for the movement of freight are also anticipated.

NRMP objective DO 10.1 Land Transport, DO11.1 Air Transport, and DO12.1 are similarly worded to the relevant NRPS objectives outlined above where they generally seek an efficient system in a way that manages environmental effects. However, policies provide more detailed guidance. Policies under DO10 promote the minimising of trip lengths via intensification and a safe and efficient road network that reduces conflict between land uses, traffic and people. Air transport policies under DO11 recognise the airport as an important community resource of a predominantly industrial nature but should be managed so as not to significantly impact the amenity (particularly noise) and wellbeing of the community. A Noise management Plan is required to be developed and implemented. Policies under DO12.1 recognise the port as an important community resource that should be confined within the Coastal Permit area. Noise effects should be compatible with the neighbourhoods surrounding Port Nelson.

Plan Change 14 has recently amended Policy DO10.1.1 to emphasise that the environmental effects of vehicles should be avoided or mitigated by promoting more intensive development and co-location of housing, jobs, shopping, leisure, education and community facilities and services to minimise the number and length of vehicle trips and encourage the use of transport modes other than the private vehicle. Policy RE1.2A comprehensive housing has also been added as part of Plan Change 14. This policy encourages higher density development where it is located in close proximity to services, shops, transport routes, open space and other urban amenities. Associated comprehensive housing rules have also been liberalised to encourage quality comprehensive housing development in the higher density residential areas in Stoke and the Wood.

NRPS Key performance indicators (IN2.8) include injury accident reduction and an increase in the number of people using alternative modes such as walking, cycling, and public transport. Another possible measure may be the degree to which intensification has occurred over time. IN3.8 promotes the monitoring of environmental indicators showing that the natural character of the coastal environment being preserved or enhanced and a reduction in valid complaints about port activities. Similarly IN4.8 supports a reduction in valid complaints about air transportation activities.

NRMP performance indicators require regular noise monitoring and complaint management of the port and airport.

NRMP RULES

The NRMP zoning controls provide for urban consolidation by allowing higher density housing in urban areas (rather than rural areas) generally and even higher densities in areas within walking distance of shopping areas and transport nodes in the Wood and Stoke. A wider range of more intensive business activities, such as retail and office, are provided for in the Inner City and Suburban Commercial zones (and not residential, Industrial, and rural) which are also typically located along transport routes.

Appendix 10 of the NRMP contains carparking standards that different activities need to achieve along with design and construction standards across the city. However, parking is not required in the Inner City Centre but any provided must comply with Appendix 10 standards. PC21 extended the 'no minimum parking' requirement to the eastern inner city fringe and allowed for parking reductions in all zones where a Travel Management Plan is provided to assess opportunities for alternative transport modes. Design and location standards for building in relation to Montgomery, Buxton or Wakatu squares, Group A and B heritage buildings, or fronting Trafalgar, Bridge, and Hardy Streets is also controlled in the inner city although mainly for amenity reasons rather than transport. However these rules do support a pleasant pedestrian environment which promotes walking.

Loading spaces are also not required for sites with scheduled frontages (Montgomery, Buxton or Wakatu squares or Trafalgar, Bridge, and Hardy Streets) but where it is provided must meet the standards in Appendix 10. Access across scheduled frontages can also not be provided without discretionary activity consent.

The construction of roads is managed via the Network Utility – Roads rule that applies to all zones apart from the Coastal Marine Area and the Conservation zones. Roads that are not a state highway, Arterial Road, or principal road, or not meeting Council standards require consent as a discretionary activity. Rules relating to vehicle access apply to the same zones across the City. Where access does not comply with Council standards discretionary activity consent is also required.

Subdivision provisions across all zones (apart from the Open Space, Conservation, and Coastal Marine Area zones) consistently require adherence to Councils engineering standards/Land Development Manual as a performance standard, assessment criteria refer to the effects on traffic road network, access and parking, while control is generally reserved over appropriate vehicle access and provision of services. Subdivision standards and assessment criteria also support enhanced public access through the provision of esplanade reserves which partly encourages alternative transport modes such as walking and cycling. Subdivision in the Open Space and Conservation zones requires a discretionary activity consent and is generally non-complying in the Coastal Marine Area zone which would allow a broad assessment of effects including transport impacts.

A number of indicative roads are shown on the Planning Maps to encourage future links to improve connectivity however there are currently no specific rules in the plan requiring these connections or regulating activities on or in proximity to these roads.

Plan Change 14 introduces reference to the Land Development Manual which has a permeable, connected and attractive transport network that encourages walking and cycling as a core objective. Slower design speeds for unclassified roads are also encouraged.

Plan Change 14 itself also introduces a new road classification that distinguishes between "classified roads" and "unclassified roads".

Classified Road – means roads with a hierarchical classification of Arterial, Principal, and Collector. Refer to section 4'Transport' of the NCC Land Development Manual 2010.

Unclassified Road – means roads with a hierarchical classification of Sub-Collector, Local Roads and Residential Lanes. Refer to section 4 'Transport' of the NCC Land Development Manual 2010.

Plan Change 14 introduced rule changes for how buildings front classified and unclassified

roads. For example reverse manoeuvring onto unclassified roads becomes permitted where previously only reverse manoeuvring onto local roads was permitted.

Rules relating to the Port and Airport also seek to encourage related activities to focus in these areas and noise and subdivision controls seek to mitigate the adverse effects generated by those activities via acoustic insulation and limits on increasing housing density.

MONITORING INFORMATION

Noise monitoring information associated with the Port and Airport is included under the Amenity Topic.

Nelson City State of The Environment Report 2004

The SOE 2004 report had the following comment to make about infrastructure generally:

"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. Nelson has a relatively high level of commuters cycling and walking to work, though the number has remained generally static in recent years."

Regional Land Transport Strategy Monitoring Information

In June 2009:

Traffic counts at the two screenlines (Rocks Road/ Waimea Road and Whakatu Drive/Main Road Stoke) in Nelson show that traffic growth has levelled off or is in decline since 2004/05. Prior to that, between 2000/01 and 2004/05 a period of sustained growth occurred, and earlier still, between 1996/07 and 2000/01 there was no growth.

Within the Nelson region, the majority of households are located within the urban areas of Nelson City and Stoke and that there are approximately 1.6 vehicles per household. This is similar to the national average.

The table also shows that the percentage of journey to work trips in the urban areas that are walking or cycling trips varies between 10% for Stoke and 16% for Nelson City.

About 1% travelled to work by motorcycle and 0.5% travelled by bus. Overall in the urban areas about 57% drove to work and 4.3% were passengers, indicating that the majority of vehicle trips were single driver trips with an average vehicle occupancy of less than 1.1, lower than in larger cities.

In the urban areas about 17-18% of workers aged 15 years or older were either off-work, working at home, or did not state their mode of travel. As school trips are excluded from these figures, the proportion of walking, cycling and bus trips would be higher.

The journey to work figures might not be exactly representative of the average modal split as they relate to a single day and are weather dependent.

In June 2011:

Council has made some strategic changes to the way our network is managed. Council has postponed some roading upgrades and used the funding to extend the minor improvements programme and initiate a street lighting improvement programme. Council has also increased parking charges and durations in the CBD and most importantly, transferred budget from parking revenue to fund an improved passenger transport service which is scheduled to commence in early 2012.

Changes to central Government spending priorities have had a significant impact on progress as no funding is available for travel demand management, promotion and education, and less funding for walking and cycling projects. Several activities were put on hold pending the outcomes of the Arterial Traffic Study, completed in August 2011. A number of short term activities have been completed, including reducing the speed limit and installing a pedestrian island on part of Main Road Stoke and completing school travel plans for the Nayland cluster of schools.

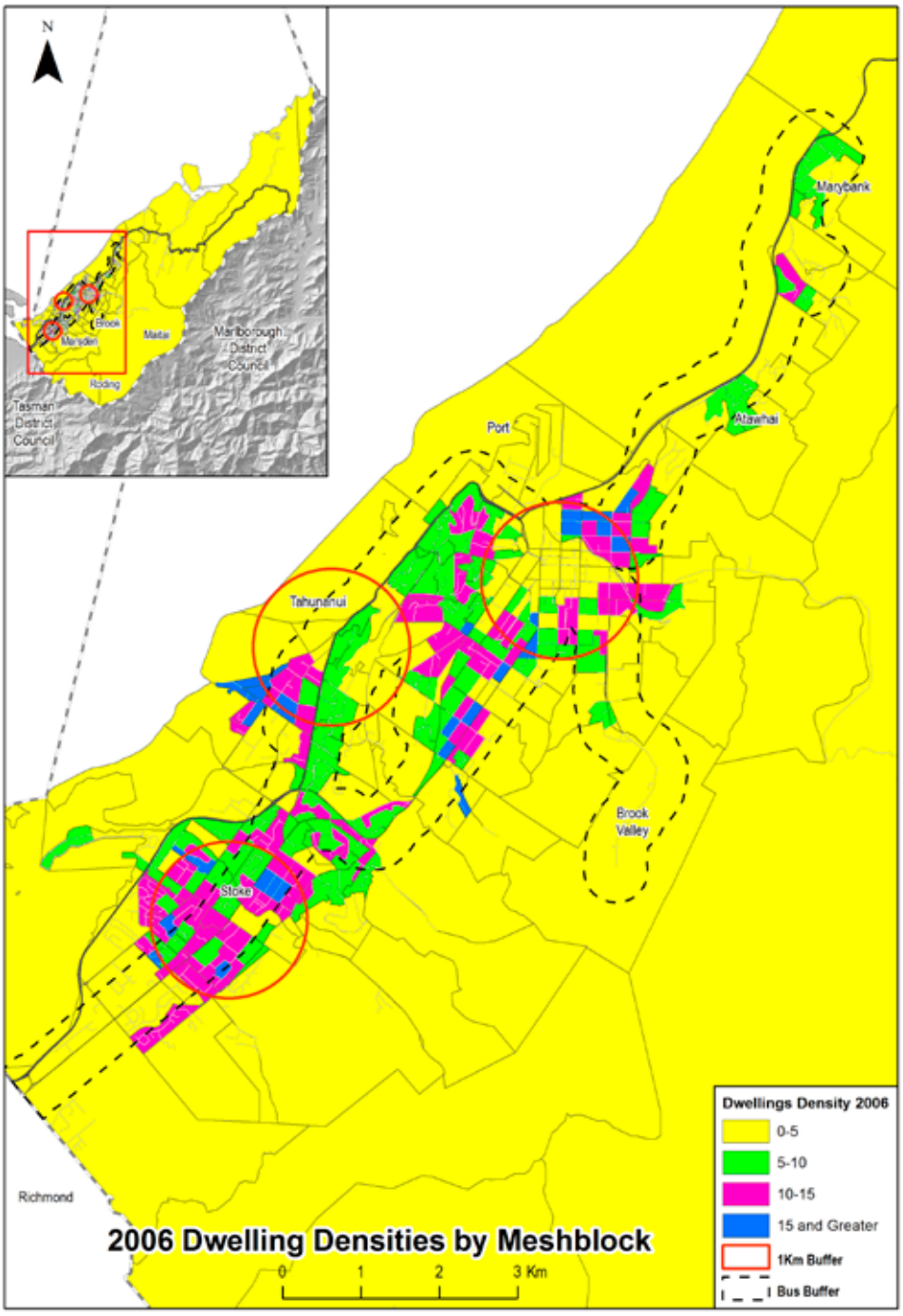
Below is the results of the RLTS monitoring report from 2011:

😐	ED2 – Increase share of weekday journey to work trips by public transport to at least 10 percent by 2018	As the 2011 result is below the margin of error of the survey, it is difficult to conclude if we are on track to meet the target. However, Census 2013 data will measure any changes following improvements to the service in 2012.
😐	ED3 – Increase number of vehicles with more than one occupant in the peak period across the Waimea Rd / Rocks Rd screenline to at least 10 percent by 2018	Although the indicator data is in excess of the target, the limitations of that data means it is difficult to conclude whether progress is on track until Census 2013 data is available.
☹	AM1 – 80 percent of households are within 400 metres (five minute walk) of a bus route by 2012	No progress being made towards target as passenger transport service development has been postponed till 2012.
☺	PH1 – Increase share of weekday journey to work trips undertaken by walking and cycling to at least 25 percent by 2018	Despite a decrease in 2011 in the number of people walking and cycling as a mode of journey to work, the numbers remain on track to meet the target.

This data shows limited progress towards achieving RLTS goals.

Census Data

The map below indicates 1km circles (indicative of a 10m walk) around the main centres (Stoke, Tahunanui, and the CBD) and a 400m catchment around the bus route as anticipated within the RLTS.



As noted in the Growth section of this report dwelling and employment density per hectares is the greatest in and around town centres and within 400m of transport corridors. In 2006 employment density was averaging 127 employees/hectare in the CBD and 13 employees per hectare in the Suburban Commercial areas. Dwelling densities were exceeding 15 dwellings per hectare in the Wood, Tahunanui, Stoke, along the Waimea Road bus route, and in the vicinity of the Victory shops.

When compared to best practice population and employment densities needed to support Public transport from Auckland and Australia (below) further density increases are still required.

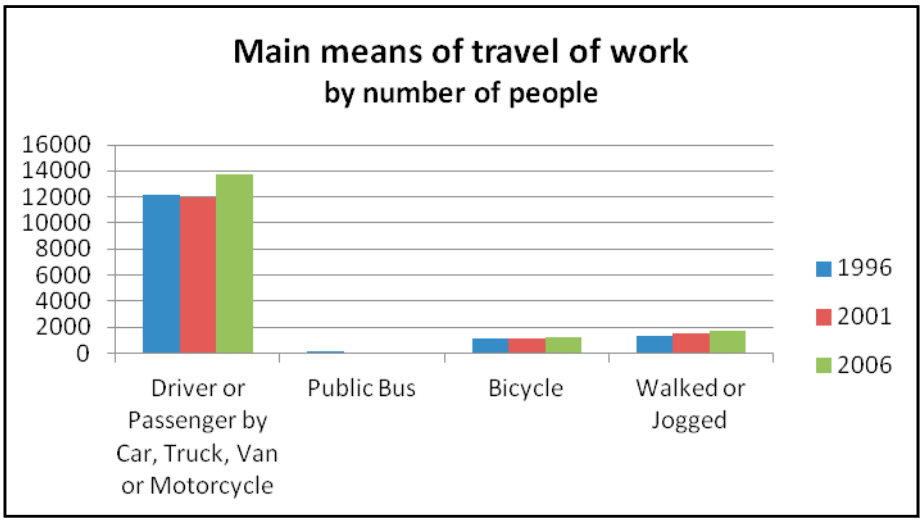
This information suggests that 40 dwellings per hectare and 200 employees per hectare in the CBD and 30 dwellings per hectare and 150 employees per hectare in town centres and along corridors, are required to support a Quality Transit Network. This would almost require a doubling of density in these areas over time.

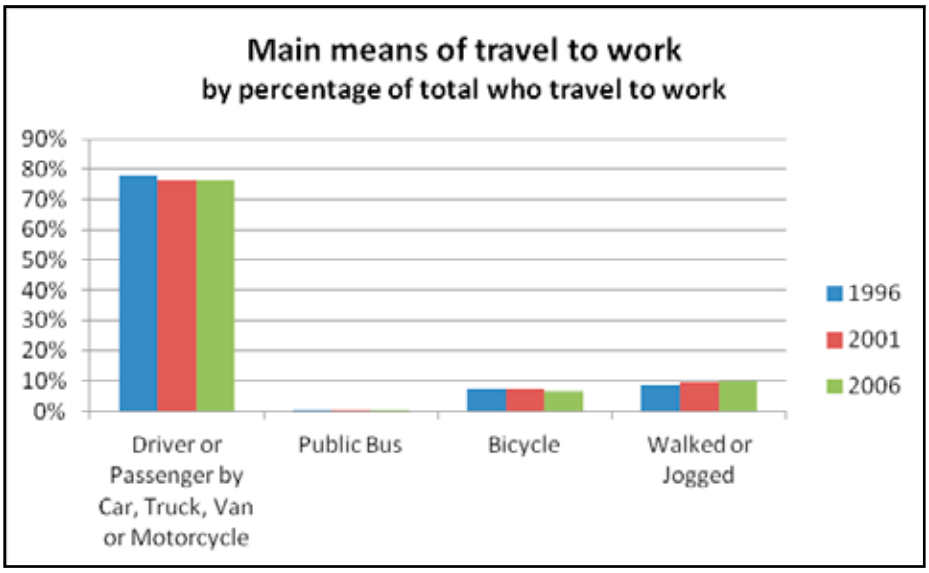
Auckland
Regional Policy Statement

Appendix H

Household and Employment Densities Required in High Density Centres and Corridors to Support the Public Transport System.

	PROPOSED LEVEL OF PUBLIC TRANSPORT PROVISION		
CENTRE TYPE	RAPID TRANSIT	QUALITY TRANSIT NETWORK	LOCAL CONNECTOR NETWORK
SUB REGIONAL CENTRE	*Residential Density (Gross)* 60 Dwellings Per Ha. *Employment Density (Gross)* 300 Employees Per Ha.	*Residential Density (Gross)* 40 Dwellings Per Ha. *Employment Density (Gross)* 200 Employees Per Ha.	NA NA
CORRIDOR	*Residential Density (Gross)* 40 Dwellings Per Ha. *Employment Density (Gross)* 200 Employees Per Ha.	*Residential Density (Gross)* 30 Dwellings Per Ha. *Employment Density (Gross)* 150 Employees Per Ha	NA NA
TOWN CENTRE	*Residential Density (Gross)* 40 Dwellings Per Ha. *Employment Density (Gross)* 200 Employees Per Ha	*Residential Density (Gross)* 30 Dwellings Per Ha. *Employment Density (Gross)* 150 Employees Per Ha	*Residential Density (Gross)* 20 Dwellings Per Ha. *Employment Density (Gross)* 50-100 Employees Per Ha





The census data (left) indicates that there has been an increase in the total number of people that travel to work by car between 1996 and 2006 (almost 2000 people) and an increase in the number of people that travel to work by alternative means such as by bus, walking, and cycling (almost 450 people). It should however be recognised that the working age population also increased by 2700 people over the same period (1996-2006 working age population was 26800 and 29500 respectively).

Percentage wise there has been a decrease in numbers of people that travel to work by car (78% in 1996 down to 76% in 2006) and an increase by those using alternative means (17%-18%). See graph left.

Nationally in 2006, 65% travelled by private vehicle, 3% used the bus, 2% cycled, and 5% walked.

A spreadsheet of journey to work data for 2001 and 2006 has been produced based on Census data (RAD1247216). A summary of key movements is provided below.

Living and Working Location	2001	2006	Change
Living in Richmond and travelling to Nelson for work	2361	3081	720
Living in Nelson and travelling to Richmond for work	1233	1608	375
Living in the Richmond transport zone and travelling to the CBD (The wood, Trafalgar, Kirks, Bronte) for work	792	936	144
Living in the Richmond transport zone and travelling to Airport for work	411	471	60
Living in the Richmond transport zone and travelling to Grampians for work	159	156	-3
Living in the Richmond transport zone and travelling to Saxton for work	126	312	186
Living in the Richmond transport zone and travelling to Port for work	219	240	21
Working in Trafalgar and travelling from the Wood	318	348	30
Working in Trafalgar and travelling from Washington	297	333	36
Working in Trafalgar and travelling from Atawahi	294	312	18
Working in Trafalgar and travelling from Enner Glynn	264	276	12
Working in Trafalgar and travelling from Bronte	255	234	-21
Working in Trafalgar and travelling from Tahuna Hills	240	246	6
Working in Trafalgar and travelling from Langbein	216	219	3
Working in Trafalgar and travelling from Grampians	171	201	30

The most noticeable change between 2001-2006 was the number of people travelling from Richmond to Saxton which has more than doubled (126 in 2001 and 312 in 2006).

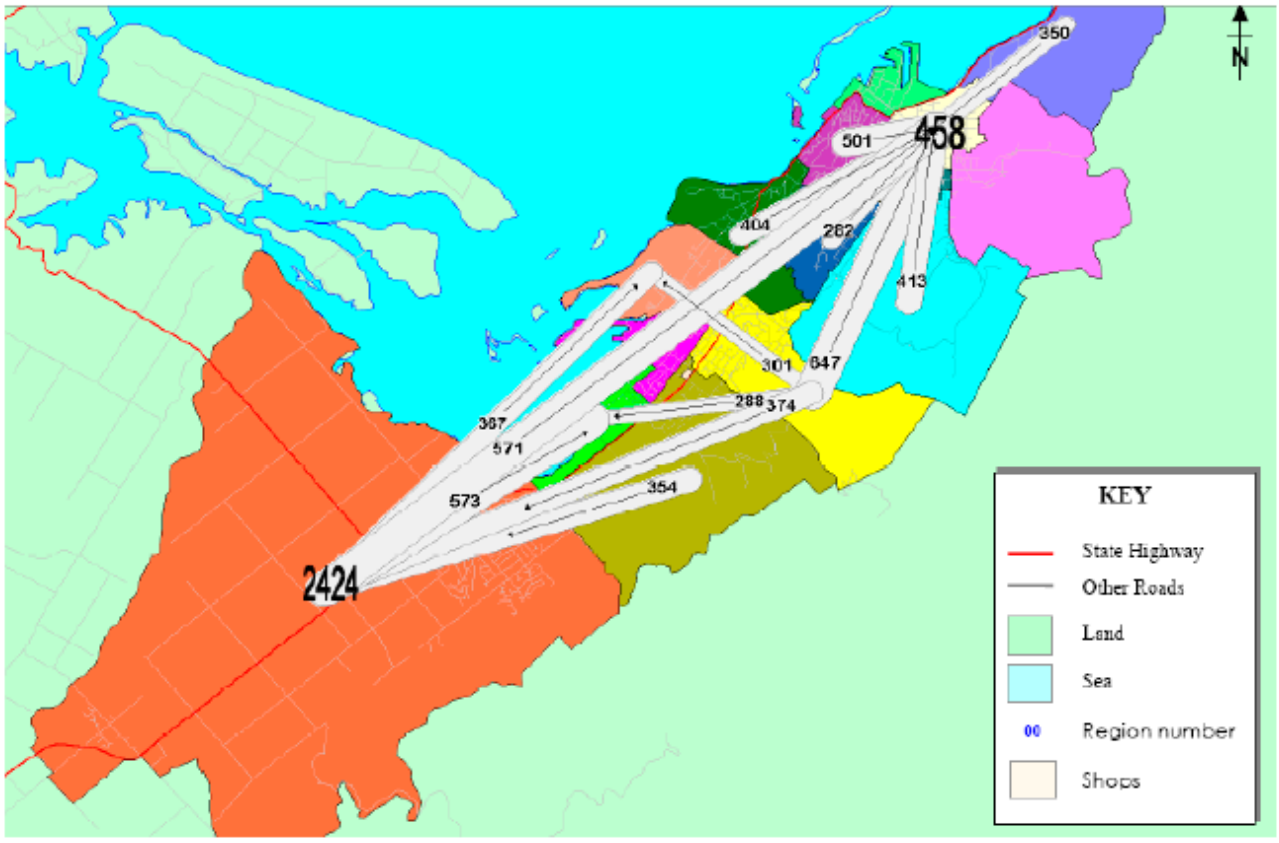
These general trends are comparable with the Parsons Brinkerhoff work below.

Parsons Brinkerhoff (RAD 701862)

The PB report also has journey to work projections for 2016 based on the population and employment projections outlined in the Growth Section of this report. These figures simulate travel during the 2-hour weekday morning peak, which are anticipated to reverse in the evening.

In 2016 it is predicted that the largest journey to work travel movements will be from South to North (see graphic below). Nelson CBD will be the major destination (29%). Richmond will be less significant but still a major destination (11%) and major origin (15%). There will also be a significant east-west movement driven by urban development east of the Ridgeway. A substantial number of trips will only travel along part of the corridor such as trips originating in Richmond and suburbs around Nelson and ending in Industrial areas around Stoke. It should be noted that these projections may be high in some instances given that plan change yields in southern Nelson are lower than anticipated in this model.

Top 15 Weekday Peak Journey to Work Movements – 2016



NOTE – Large bold numbers represent trips internal to the transport zone.

Arterial Traffic Study

In early 2009 Council commissioned a joint study with NZTA into the effects of arterial traffic flows. The study was split into four stages including:

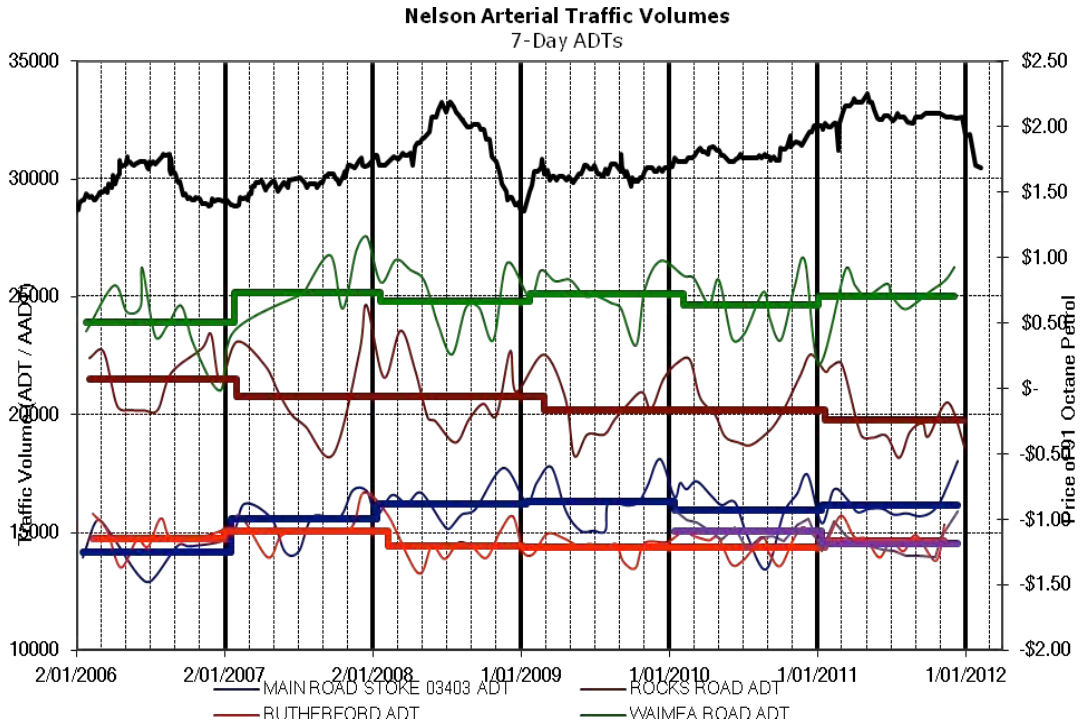
- An evaluation of the existing arterial traffic routes
- Selection of best arterial route options
- Evaluation of the best arterial route options
- Determination of the preferred arterial route transport configuration.

The findings of the study were summarised and reported to the 11 August 2011 Council meeting as follows:

- Nelson does not have a significant traffic problem, nor is one forecast to develop over the modelled time period of the study – the next 25 years
- Of the four options that were assessed in the study Option A – Peak hour Clearways and option B – Southern Arterial both offered positives but also had negatives
- Elements of Option A can be done in stages to provide additional capacity when needed, for example – the study recommends we go ahead with the walk/cycleway around the waterfront in the short term, subject to NZTA funding approval
- Option B – the southern Arterial route should be protected as a long term future dedicated transport corridor should things change.

Fundamentally the study determined that while Option B does provide additional vehicular capacity for a marginal increase in cost when compared to option A, the social and environmental consequences of realising that additional capacity are significant. The consequences might be able to be justified if the current network was reaching capacity and the economic wellbeing of the city was being affected but the modelling shows that is not the case and won't be for the foreseeable future.

Nelson Arterial Traffic Volume Data



This Graph (RAD 726253) highlights the avarage daily traffic volumes on Nelson's main arterial roads. It appears that traffic volumes are increasing on Waimea Road and Main Road Stoke while they are decreasing on Rutherford and Rocks Road. Overall thre appears to be a slight increase in traffic volumes over time.

Plan Changes

Decisions on Plan Change 21 have recently been notified. A key component of this plan change was to reduce carparking requirements in the Inner City and have a more flexible approach to parking throughout the City generally. Transport Solutions Limited (Ross Rutherford) provided expert analysis of Inner City parking demand. Below is a summary of that analysis.

In mid-2009 Ross Rutherford undertook an analysis of the parking data in the Nelson Parking Study 2008 Data Collection Report dated February 2009. This demonstrated that, while the public parking spaces in the four squares were effectively fully occupied between 12 noon and 1:30pm on the Thursday survey, overall there was sufficient short stay parking (defined as parking with a duration of less than 4 hours) in the Central Core.

The maximum occupancy of the total available 1,388 short stay spaces was 82.6%. The maximum occupancy of all available parking spaces including unrestricted parking was 78.9%. Further, the Buxton Square survey indicated that almost one quarter of the available spaces were taken up by long stay parkers (employees) rather than the shoppers for whose use they were intended. The survey indicated that the supply of short stay/ shopper parking could potentially be increased by over 10% by effective enforcement of the parking restrictions. These figures indicate that overall the City Centre area has adequate parking for shoppers provided the available parking is used effectively. They do not support the contention that Plan Change 21 would adversely affect the commercial vitality or viability of Nelson's City Centre.

The Council has recently implemented a 3 hours parking limit for the Wakatu Square car park and has increased the parking fees for the Montgomery, Buxton, Millers Acre and Wakatu Square car parks from 50c to $1 an hour. These measures demonstrate that the Council is actively managing the public car parking supply and has taken steps to make more effective use of the available spaces.

Analysis of the 2008 Parking Study data for the area defined by Collingwood Street, Riverside, Malthouse lane, Harley Street and Hardy Street. The survey data indicates that there are a total of 156 on-street parking spaces on Riverside Road between Collingwood Street and Ngaire Road, Bridge Street between Harley Street and Ngaire Road, Hardy Street between Collingwood Street and Alton Road, and Harley Street from north of Bridge Street to Hardy Street. These consist of 2 P10, 71 P60, 52 P120 and 31 unrestricted spaces. The maximum occupancy of these spaces was 106 or 68% around mid-day during the Thursday survey. Assuming a desirable maximum on-street occupancy of 85%, this indicates that there were 27 spaces available in this area during the peak parking period.

This data further supports the conclusion that an increase in demand for public parking resulting from the effect of expanding the Inner City Zone as proposed in Plan Change 21 can be accommodated by the existing public parking supply both in the vicinity and in the current Inner City.

Plan Change 14 also contains provisions that aim to improve connectivity by ensuring that future road connections are not built on and by encouraging enhanced streetscapes that are pedestrian and cycle friendly and of a human scale. Plan Change 14 also encourages Comprehensive Housing Development in High Density Residential areas in Stoke, and the Wood and externally references the Land Development Manual which supports connected transport networks and slow speed road environments.

Plan Changes 17 and 18 also encourage alternative means of travel through the inclusion of indicative walkways and roads, and through the provision of esplanade reserves for access purposes.

Three Roundabouts – Saxton Fields Transportation Study Project Feasibility Report

The 'Three Roundabouts – Saxton Fields Transportation Study Project Feasibility Report' by OPUS which was commissioned jointly by NZTA, NCC and TDC was finalised on 24 August 2011. The executive summary of this report is outlined below:

"Opus International Consultants (Opus) has been commissioned by the New Zealand Transport Agency (NZTA), Nelson City Council (NCC) and Tasman District Council (TDC) to undertake a Transportation Study into the effects of traffic growth on the operation of three roundabout intersections and link road connections at Whakatu Drive/Richmond Deviation (SH6) on the Nelson/ Tasman border. The existing road network in this area is experiencing severe congestion in the peak periods, with long delays to motorists using both the state highway and the local road networks. In order to address these existing deficiencies, this transportation study has been developed to a PFR level to identify transport improvements for the short, medium and long term. The existing planning policy for land use and transport integration places significant importance on the Three Roundabouts – Saxton Fields intersections and surrounding land use development potential, with the Nelson to Brightwater Strategy Study and the Arterial Traffic Study identifying the importance of enhancements to the SH6 corridor and surrounding road network. The objectives of this study have been agreed by the three key partners and focus on better understanding the existing transport issues, growth and development pressures and identifying short to longer term solutions.

These objectives include:

- *To assess the impact of land use changes in the forecast years of 2016 and 2036, on the efficiency, safety and capacity of the road network within the study area.*
- *To develop improvement options and undertake a preliminary assessment (with and without a road link between Hill Street and Suffolk Road)*

of these against the ability to accommodate traffic demand, ensure trip reliability (within the study area) and alleviate congestion should the existing transport network provide insufficient capacity for future transportation demands in 2016 and 2036.

- *To identify points in time at which the roundabout intersections of Champion Road/ Salisbury Road and Main Road Stoke/Salisbury Road reach Levels of Service D or worse.*
- *To identify points in time at which the roundabout intersection of SH6 reach Levels of Service E or worse.*
- *To develop options that do not detrimentally impact on the road network within the study area and/or potential future upgrade proposals.*

Project specific SATURN and SIDRA traffic models were developed and calibrated to current traffic demands and queue lengths to confirm that all three intersections are currently subject to peak time delay and congestion which is in excess of the project objective of Levels of Service D for the local road and Levels of Service E for SH6. This confirms the current traffic demands result in unacceptable levels of service and any further demand, which includes that associated with Plan Change 18 and 20, would further degrade the current operation. A large number of options have been considered; these options were then assessed and screened in order to identify options aimed at meeting the project objectives.

The assessment of options indicates that some of the options do not meet the project objectives in the long term (2036) e.g. Option 1 and 3 without grade separation. These options provide for short term improvements and can be used within a staged approach to provide long term solutions.

The short term options would provide immediate benefits, and have a potential life of approximately 2 to 3 years for Option 1 based on predicted growth (with or without Plan Change 18 and 20). However Option 3 has a potential life of 22 years without Plan Change 18 and 20, or 12 years with the development and the link road between Hill Street and Suffolk Road being built. This is based on current predicted traffic demands for the years modelled (2016, 2023 and 2033). Both options could be implemented as an interim solution prior to the longer term option providing grade separation of the SH6 Link Road roundabout.

The longer term Options 2 and 4 both provide benefits and meet the project objectives through to 2033 in accordance with the projected traffic growth (with or without the additional development). This Transportation Study has concluded that there is a need to implement short term improvements as soon as possible and the Option 3 provides the most effective short term option, however at a significant cost. It can also be concluded that longer term grade separated options provide immediate benefits and better fulfil the project objectives. Option 2 has been identified to provide the best short and long term solution and achieves a BCR of 4. It is recommended that NZTA, NCC and TDC should seek funding to prepare a Scheme Assessment Report and undertake more detailed micro simulation modelling to confirm the effectiveness of the options identified as part of this PFR level assessment."

Furthermore, the recommendation of this report is that:

This transportation assessment has identified a number of opportunities to address current and future transportation needs in the Three Roundabouts – Saxton Fields project area. Based on this assessment it is recommended that Option 2 is the most effective solution to address all of the project objectives both in the short and long term, with or without Plan Change 18 and 20. Also Project partners should seek funding to undertake a full scheme assessment report for the project to confirm the assessment undertaken in this study and undertake public and stakeholder consultation. This should include the following:

- *Micro simulation modelling is undertaken for Option 1 and 2 to confirm that the solutions will achieve the desired short and long term outcomes associated with future development/ traffic growth phasing demands.*

- *Undertake incremental assessment to determine the implementation phasing for the transition from Option 1 to Option 2 in terms of EEM and project funding.*
- *That future transport strategy and improvements (e.g. 4 laning of Richmond Deviation) incorporate improvements at Three Roundabouts – Saxton Fields."*

This matter was subsequently reported to the Council and the Council decided not to fund further work.

SUMMARY – TRANSPORT

Overall the transport data shows that the transport objectives of the NRMP are partially being met. Monitoring information shows that household density is increasing in town centres and along main transport routes relative to other areas and recent changes to the comprehensive housing provisions as part of Plan Change 14, and the carparking standards in both Plan Change 14 and 21, will also provide for increased intensification (employment and residential) generally. However, by comparison to density standards required to support better public transportation uptake in Australia and Auckland (40 dwellings per hectare and 200 employees per Ha in the CBD and 30 dwellings per hectare and 150 employees per hectare in town centres, to support a Quality Transit Network) further intensification gains (both residential and employment) are necessary. This could be explored further as part of the Nelson Development Strategy which would also contribute to achieving the strategic integration of land use and infrastructure anticipated in the 2005 amendments to the RMA.

Increasing density around key transport routes may also aid in reversing the trend of increased journey to work via private car identified in census data, increased traffic volumes displayed in Nelson Arterial Traffic Volume data outlined above, and projected increases in CO_2 emissions outlined in The Sustainability Stock-take of Nelson City (see Energy section).

Plan Changes 14,17, and 18 also require improvements to road and walkway connectivity which should also have a positive impact on reducing travel distances and support alternative transport modes.

Monitoring information in the Amenity section of this report indicates that the number of complaints associated with the port and airport have reduced which will help ensure that their importance as regional infrastructure is not compromised.

The results of the Arterial Traffic study show that significant improvement to the arterial network are not required in the short term to broaden the range of options for freight or provide for the safe and efficient use of the road network. However the three roundabout study suggests that further work is needed in the short term to relieve congestion in this area including the potential to improve connections between Hill Street and Suffolk Road. Neither of these projects have identified the necessity for short term changes to the NRMP transport provisions. Nevertheless, having a clearer understanding of future landuse change as part of the Nelson Development Strategy will allow for more informed medium to long term changes where these are considered necessary.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- That the Nelson Development Strategy assess further opportunities for Intensification and strategic road, walkway, and cycle linkages.

In the Medium Term:

- Implement the Nelson Development Strategy through Plan changes to the NRMP and NRPS where necessary.

In general:

- Explore opportunities to work with Tasman and Marlborough District Councils.

CONTAMINATION

NATIONAL POLICY DIRECTION

The purpose of the RMA is sustainable management which includes safeguarding the life supporting capacity of air, water, soil, and ecosystems while avoiding, remedying, and mitigating any adverse effects of activities on the environment. In making decisions Councils shall have particular regard to the maintenance and enhancement of the quality of the environment. Council functions include the control of land to prevent and mitigate adverse effects of hazardous substances and the effects of contaminated land. Section 15 of the RMA also controls the discharge of contaminants into or onto air, water, and land.

The NZCPS 2010 requires the management of discharges to water in the coastal environment including sewerage, stormwater, port and marine facilities.

On October 10 2011 the Resource Management (National Environmental Standard for assessing and Managing Contaminants in Soil to protect Human Health) Regulations 2011 came in to force. This NES establishes national guidelines for managing soil contamination that commenced on 1 January 2011. Ostensibly the NES controls the removal of fuel storage systems, sets guidelines and limits for sampling of soil, disturbing the soil, and subdividing and changing use on land subject to potential contaminants on the HAIL (Hazardous Activities and Industries List). The HAIL includes matters such as storage, servicing, disposal and production associated with the following activities: Chemicals, electrical and electronic works, power, explosives, metals, minerals, vehicles, cemeteries and waste.

RMP'S POLICY DIRECTION

The objectives of the NRPS (DH3.2 and WM2.2) seek the elimination of the potential for radioactive contamination and a progressive reduction in the volume of hazardous substances used and produced in Nelson respectively.

The Draft 2008 NRPS hazardous substances and contaminated sites Objective encourages the identification of contaminated sites to determine existing risks and rehabilitation of sites where risks to the environment or health is remedied or mitigated. In relation to radioactive contamination the draft NRPS mimics objective DH3.2 outlined above. The Draft 2008 NRPS introduces a new objective addressing risks associated with genetic engineering which seeks to retain Nelson City's status as being free of genetically engineered crops.

NRMP objective DO3.1 (Hazardous Substances) seeks that the actual and potential effects arising from the storage, use, disposal and transportation of hazardous substances are managed to ensure that any potential or actual adverse environmental effects are avoided, remedied or mitigated. Policies seek the containment of hazardous substances, the management of contaminated sites, and transport of hazardous substances along main arterial routes.

The NRPS performance indicators (DH3.7 and WM2.8) outline the need to quantify the presence or absence of any nuclear facilities or craft in Nelson and seek a reduction in contaminated sites and the range and volume of hazardous substances being used and disposed of in Nelson. Results from landfill monitoring should show no adverse effects.

NRMP performance indicators (DO3e) seek the avoidance of contamination of the natural environment and appropriate management of hazardous facilities as measured by the number of incidents and accidents based on OSH and Council statistics.

NRMP RULES

The hazardous substances use and storage rules are repeated across all zones and refer to Appendix 21 for guidance. Appendix 21 outlines a range of permitted, controlled, and discretionary activities. To be permitted, an activity must comply with design standards and the permitted effects ratio in the relevant zone.

Design standards include matters such as storage requirements, site design to contain effects (including contaminated discharges) on site, underground storage standards, adequate provision for signage, waste management, maintenance of site records, emergency and contingency plans, and information requirements.

The effects ratios are the lowest in the most sensitive zones such as the conservation and residential zones and highest in the industrial and rural zones. Ratios typically increase as consent thresholds increase (eg – permitted industrial ratio is 0.75 and discretionary is greater than 1.5).

A number of activities are exempt, or exceptions are made, from the hazardous substances use and storage rules including:

- Trade waste sewers
- hazardous consumer products for private domestic purposes
- Retail outlets for domestic scale use
- Facilities using genetically modified organisms
- Substances that give rise only to a dust explosion risk
- Gas or oil pipelines
- Fuel in domestic equipment not exceeding 20 litres
- Use or storage associated with temporary military training activity where Defence force standards are met
- Substances used in cooling or heating medium
- Substances in classrooms meeting the Ministry of Education standards
- Storage of up to 10000 litres of petrol and 50000 litres of diesel where Department of Labour standards are met
- Storage of LPG where NZ standards are met
- Specific provisions for Nelson Marlborough Health Services in Waimea Road provided in Schedule C to the Residential Zone.

The Industrial zone is the only area where the production of hazardous substances is allowed so long as standards in Appendix 21 are met and safe disposal methods are adopted. Otherwise consent as a non-complying activity is required.

As noted in the Freshwater section of this report there are numerous rules governing the discharge of contaminants to water. Of note, the deposition of waste, toxic, or radioactive material is prohibited and the discharge of sewerage to freshwater, point source stormwater discharges containing contaminants, and direct discharge of agrichemicals in and near waterbodies requires consent as a discretionary activity. The disposal of hazardous substances in the Coastal Marine Area is a Prohibited activity.

The Residential, Rural, and Suburban Commercial, and Inner City zones allow activities where radioactivity does not exceed 0.1 terabecquerel such as smoke detectors, and luminous watches and clocks. Activities with less than 1 terabecquerel, such as new medical laboratories, require consent as a discretionary activity. The Industrial and Inner City Fringe zones provide for up to 10 terabecquerels as a discretionary activity so that activities such as X-ray centres and Hospitals can be included. All zones prohibit the use storage and disposal of radioactive material exceeding 1000 terabecquerels which would rule out large scale facilities such as irradiation plants and nuclear power plants.

There appear to be no rules in the plan governing the use of sites with historic use of contaminants in line with the Resource Management (National Environmental Standard for assessing and Managing Contaminants in Soil to protect Human Health) Regulations, apart from the hazardous substances use and storage rules. The subdivision rules do however have as a matter of control "the effects of natural and other hazards".

MONITORING INFORMATION

Very little formal monitoring information is currently gathered in relation to the management and risk of hazardous facilities within Nelson City. While records are held by Environmental Inspections Limited they are not widely accessible although they are recorded on the "Conditions Book" that is used to inform the building consent process. The Council is presently undertaking a project to formally record existing hazardous sites and then expand this to include substances on the HAIL as required by the recent National Environmental Standard for assessing and Managing Contaminants in Soil to protect Human Health.

SUMMARY – CONTAMINATION

One of the key RMA functions of the Council is to control land to prevent and mitigate adverse effects of hazardous substances and the effects of contaminated land. NRPS objectives seek a reduction in hazardous substances used in Nelson and the NRMP objectives seek that the effects associated with hazardous substances are avoided remedied or mitigated.

NRMP rules align with resource management plan objectives by establishing more conservative limits for the storage and use of contaminants in more sensitive zones and more liberal thresholds in less sensitive areas such as Industrial areas.

However there is a gap in the plan at the moment in terms of the control of historic soil contamination. This has been acknowledged in the draft NRPS objective that " encourages the identification of contaminated sites to determine existing risks" This gap has been filled to a degree by the NES for Assessing and Managing Contaminants in Soil to Protect Human Health which establishes consent thresholds for existing contamination that would override any District Plan standards. However, in order for the NES to be effectively and efficiently implemented there is a need to improve Council's identification of contaminated sites.

Furthermore, monitoring results highlighted in the Freshwater section of this report suggest that there are contaminants entering some of the City's waterways as a result of stormwater runoff and discharges.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Progress work to establish a comprehensive Hazardous Activities and Industries List for Nelson City to implement the National Environmental Standard for assessing and Managing Contaminants in Soil to protect Human Health
- Investigate discharges of contaminants to waterways as part of the implementation of the Freshwater NPS.

HERITAGE

NATIONAL POLICY DIRECTION

The purpose of the Resource Management Act is the sustainable management of natural and physical resources, including the consideration of those finite characteristics of natural and physical resources. The maintenance and enhancement of amenity values, which includes things people appreciate about an area, is another matter that needs to be considered in achieving the purpose of the RMA. In addition s6(f) and s6(g) were added to the matters of national importance in 2003 and 2011 to recognise the importance of the protection of historic heritage and customary rights respectively.

NZCPS 2010 requires, where appropriate, buffering areas or sites of historic heritage value in the coastal environment (policy 6) and the protection of historic heritage from inappropriate subdivision, use and development through, amongst other things, identification and inclusion of areas within regional policy statements and plans.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

The Draft 2008 NRPS seeks the retention and enhancement of heritage items that contribute to the character, heritage and cultural values, or visual amenity of Nelson.

NRMP objective DO4.1 seeks the retention and enhancement of heritage items that contribute to the character, heritage values, or visual amenity of Nelson, in a setting that enhances such items.

DO4e uses the number of listed heritage items (buildings and trees) remaining or removed as a performance indicator for heritage values.

NRMP RULES

Below is a broad summary of the Heritage rules:

Very limited alterations can be made to a Group A or B Heritage building place or object as a permitted activity. More extensive alterations require consent as a restricted discretionary activity and discretionary activity for group B and Group A buildings respectively.

New buildings on the site of a heritage building is a controlled activity. Whole or partial demolition of a group B building is a discretionary activity and a non-complying activity for a Group A building.

Demolition of a Group C building requires two months notice to qualify as a permitted activity to allow the opportunity for interested parties to negotiate voluntary protection.

Only minor alterations are permiited to buildings within a heritage precinct, otherwise consent is required as a restricted discretionary activity. Erection of new buildings in a heritage precinct is a restricted discretionary activity. Demolition of buildings in a heritage precinct are permitted where the building is not a category A or B building or two months notice is given for a category C building. Front fences meeting certain design standards are permitted in heritage precincts, and those that are not are discretionary.

Trimming of heritage and landscape trees is permitted if sensitively undertaken and if not will be a discretionary activity or controlled activity respectively. Activities within the dripline of a heritage or landscape tree are only permitted where works meet certain standards. Removal of a landscape tree is discretionary while removal of a heritage tree is non-complying. Removal of local trees is permitted where one weeks' notice is given to Council.

A number of areas around the city are also identified as heritage and landscape woodlands as part of a Heritage overlay. Subdivision of land in a Heritage Overlay generally requires consent as a discretionary activity.

Works on an Archaeological site within the Residential Zone, Suburban Commercial, or Inner City Zone are permitted only where written advice from Iwi or an experienced archaeologist confirms that the proposed activity will not adversely affect the values of the site. However in the Opens Space and Recreation, Conservation Zone or Costal Marine Area works should be 50m away from the site or discretionary consent is required. The Coastal Environment Overlay controls in the Rural zone (RUr.50) require that buildings and structures are not located within an archaeological overlay and limited earthworks are provided for (RUr.52).

MONITORING INFORMATION

Building consent data

A review of Councils building consent data has indicated that of the 3852 consents issued between 1996-2011 four were in heritage woodland areas, 39 were in heritage precincts, and 88 were on sites with Heritage buildings, places, or objects. Furthermore, of the 339 consents for demolition/resiting, 23 were on sites with Historic Buildings Places, or Objects, and nine were in Heritage Precincts. Four demolitions were both on sites within a Heritage Precinct and on sites with Historic Buildings, Places, or Objects.

The 'Nelson City Council Earthquake Prone Building Policy 2006'identifies the types of buildings that may be earthquake prone. To date Council has identified that 63 buildings are currently identified as heritage buildings in the NRMP and are potentially earthquake prone. How landowners respond to earthquake prone risk will have an impact on those sites heritage value.

Valuation data

A snapshot of the age of buildings based on valuation data was provided in November 2011. This data will allow Council to track how old buildings are when they are demolished so that Council can anticipate the degree to which buildings of various ages are being lost.

Plan Changes

A review of the District Plan Database indicates that 10 heritage buildings identified in the NRMP have been demolished or are in the process of being demolished as outlined below:

Year	Type	#	Street	Cat
2012	Demolition (Cat C)	90	Collingwood St	C
2011	Demolition (Cat A or B)	30	Hastings St	B
2010	Demolition (Cat C)	105	Collingwood St	C
2008	Demolition (Cat C)	109	Collingwood St	C
2008	Demolition (Cat C)	387	Wakefield Quay	C
2002	Demolition (Cat C)	379	Wakefield Quay	C
2000	Demolition (Cat C)	98	Waimea Rd	C
1998	Demolition (Cat C)	154	Hardy St	C
1998	Demolition (Cat A or B)	67	Bridge St	A
1996	Demolition (Cat A or B)	371	Wakefield Quay	B

Of these the Bridge Street and Hastings streets buildings were demolished as a result of fire and Wakefiled Quay had a certificate of compliance for removal prior to the NRMP being notified. Therefore no higher value heritage buildings (Category A or B) have been approved to be demolished. Category C buildings do not require a resource consent to be removed if prior notice is given. This would suggest that the current rules are effective at protecting the most significant elements of Nelson's built heritage.

Plan Change 22

Plan Change 22 sought to add 24 additional trees to Appendix 2 – Heritage Trees of the NRMP. These trees were assessed by Council utilising the STEM assessment methodology and by an independent commissioner via a Plan Change hearing as justifying protection in the NRMP.

The NRMP has three categories of listed trees: Local, Landscape and Heritage. Heritage Trees receive the highest level of protection under the planning rules, with Local Trees being the least protected. Twelve of the Plan Change 22 trees were assessed as meriting Heritage status, with ten in the Landscape category and two Local. The following trees were protected through Plan Change 22 which became operative on 12 March 2012:

Address	Botanical name	Common Name	NRMP Category
42 Arapiki Rd	Quercus robur	English Oak	Heritage
18 Campbell St (Road Reserve)	Quercus robur	English Oak	Landscape
7 City Heights	Quercus robur	English Oak	Landscape
31 Cleveland Tce	Alectryon excelsus	Titoki	Heritage
31 Cleveland Tce	Podocarpus totara	Totara	Heritage
277 Hampden St	Metrosideros robusta	Rata	Heritage
Harper St	Ulmus procera	English Elm	Landscape
180 Kawai St	Magnolia grandiflora	Evergreen Magnolia	Landscape
30 Marybank Rd	Dacrycarpus dacrydioides	Kahikateas (2)	Heritage
16 Ngatitama St	Quercus robur	English Oak	Heritage
1/138 Nile St	Quercus palustris	Pin Oak	Landscape
142 Nile St	Liquidambar styraciflua	Sweet Gum	Local
19 Richmond Ave	Liquidambar styraciflua	Sweet Gum	Heritage
16 Riverside	Phoenix canariensis	Phoenix Palm	Heritage
52 Russell St	Metrosideros excelsa	Pohutukawa	Heritage
247 Rutherford St	Acer negundo	Box Elder	Landscape
18 Sowman St	Magnolia soulangiana	Saucer Magnolia	Landscape
166 St Vincent St	Quercus robur	English Oak	Landscape
29 Stanley Cres	Metrosideros excelsa	Pohutukawa	Landscape
39 Stansell Ave	Nothofagus solandri	Black beech	Local
45 The Ridgeway	Erythrina crista-galli	Coral Tree	Landscape
26 Todd Bush Rd	Quercus robur	English Oak	Heritage
384 Trafalgar St Sth	Podocarpus totara	Totara	Heritage

As part of the Plan Change 22 process four additional trees were also nominated by the community and identified through research to warrant protection. These trees were not successfully included in the NRMP but were recommended for further consideration in a later plan change. There have also been another 26 trees nominated for protection since the notification of Plan Change 22 in September 2010 (refer RAD 1261290). These trees are awaiting a STEM assessment. These trees should be assessed and responses given to the nominees.

GIS Database

Councils tree database has also been reviewed in 2009 for location accuracy and condition (live, storm damaged, dead or removed). This resulted in amendments to planning maps to improve their accuracy. This has resulted in anomalies in the current plan as some trees are now more accurately referenced than others.

Nelson Boulder Bank Historic Area Registration Report

This report assesses the heritage significance of the boulder bank. The boulder bank has been found to possess aesthetic, archaeological, architectural, cultural, historical, social, technological, and traditional significance and value. The report contains a thorough assessment of these features and considers that the boulder bank qualifies as part of New Zealand's historic and cultural heritage.

The key elements that contribute to the historic area are described as follows:

- The baches and their surrounding outbuildings, picnic tables and planted vegetation.
- Lighthouse tower and remnants and structures around it.
- Remnants of one of the powder magazines and nearby slipway.
- Foundations of the dragline winch-house and other structures associated with the dragline on both the Boulder Bank and Haulashore Island.
- Old wharf on the northern side of the Cut.
- Māori and European Archaeological sites.
- Farm track at the northern end of the Bank.
- Visible pedestrian tracks through the lichen/ moss and over the boulders.
- View seaward over Tasman Bay and landward to Atawhai, the city centre and port.
- Low profile of the baches.
- The sole readily identifiable vertical element introduced into the landscape by the lighthouse tower.
- Boulder beaches and gravel ridges in a range of profiles.
- Fifeshire Rock as a sentinel marking the old harbour entrance.

Heritage Inventory Project

Dr John Wilson, undertook a 'Thematic Historical Overview' of Nelson City (1176578). This thematic historical overview established that in order to have a more widely spread range of heritage resources reflected in the NRMP, new listings should be more representative of those with none or few examples including: post war housing, post war commercial buildings, industry, health and social services, social organisations, military, schools, transport and communications, post war churches, significant Nelson people, significant architectural styles and ethnic minorities.

The recommended categories are:

- Category A – heritage items or areas which have a high significance nationally or regionally; or
- Category B – heritage items or areas which have a high significance locally.

It is unclear how many buildings in these categories have been demolished since this overview was developed. However, now that Council has a snapshot of building valuation data as at November 2011, it will now be possible to track the age and type of buildings that are demolished over time.

NOTE – For discussion on Iwi Heritage refer to the Māori Section of this report.

SUMMARY – HERITAGE

The NRMP rules have been relatively successful at protecting Nelson's heritage since the notification of the NRMP. While a review of building consent data indicates that approximately 10% of demolitions (32) between 1996-2011 affected heritage buildings or sites it would appear that no category A or B buildings have been intentionally demolished. Objective DO4.1 seeks the "**retention and enhancement**" of heritage items that contribute to the character, heritage values, or visual amenity of Nelson, in a setting that enhances such items. This suggests that any loss of heritage would not achieve the objective that seeks retention and enhancement. However an analysis of the associated policies indicates that protection and retention of Category A and B buildings is highly desirable and important respectively, while protection of Category C buildings is desirable with demolition or removal only proceeding where alternatives are explored. Given this distinction, it would appear that the built heritage controls have been effective at retaining Nelson's heritage to the degree currently anticipated in the NRMP.

However, the Heritage Inventory Project has indicated that the NRMP is not current in terms of protecting an appropriate range of Nelson's heritage. A number of buildings and sites of this nature have recently been damaged or altered suggesting that a plan change to protect this wider range of heritage is now becoming a high priority. Such a plan change would also improve the NRMP's effectiveness at achieving recent amendments to the purpose of the RMA and the NZCPS.

There is also an ongoing need for the NRMP to stay current in terms of heritage protection. Consequently a process needs to be established to ensure that requests to add heritage items are expeditiously responded to and ongoing monitoring is undertaken to identify the age of buildings lost as well as tracking development occurring on sites identified in the Heritage Inventory Project.

The heritage tree identification methodology has recently been confirmed as being appropriate via Plan Change 22. There is, however, a need to ensure that existing tree listings are current in terms of location and condition to ensure rules are efficient and effective (ie) landowners and Council are clear about which trees on a property are protected and where trees have already been damaged/removed.

While there appears to be limited development within the heritage and landscape woodlands (four consents according to building consent data) there are no rules that appear to manage development in these areas apart from the subdivision controls. A review of these areas should be undertaken to clarify the role of their identification.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Progress the Heritage Inventory Project
- Assess the impacts of earthquake risk on the City's heritage resources as part of the Heritage Inventory Project
- Establish an efficient system to assess requests to add heritage items to the NRMP
- Annually monitor the loss of heritage Buildings, Sites and Objects and the age of buildings that are demolished utilising building consent, resource consent and valuation data.
- Review tree listings to ensure that data is accurate and appropriate.

In the medium term:

- Review the woodland areas to better understand the purpose of their identification.

In general:

- Explore opportunities to work with Te Tau Ihu iwi.

MĀORI

NATIONAL POLICY DIRECTION

The purpose of the Resource Management Act has always recognised the role that Māori play in the sustainable management of natural and physical resources by highlighting the principles of the Treaty of Waitangi, having particular regard to Kaitiakitanga and the ethic of stewardship, and recognising and providing for the relationship of Māori with taonga.

In addition s6(f) and s6(g) were added to the matters of national importance in 2003 and 2005 to recognise the importance of the protection of historic heritage (which includes sites of significance to Māori) and customary rights respectively. S61(2A), S66(2A), and S74(2A) were also added to the RMA in 2011 to ensure that Iwi planning documents and customary title documents should be taken into account when changing resource management plans. The NZCPS 2010 and NPS Freshwater also reinforces Māori participation in decisions relating to the coastal environment and water matters.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

The objectives of the Nelson Regional Policy Statement (TW1.4.1-1.4.4) are framed around the Treaty of Waitangi and the legislative requirements of Council both now and into the future. The NRPS seeks to establish a mutually beneficial relationship with iwi of Whakatu that safeguards the taonga and tikanga (treasures and values) of iwi. The NRPS also seeks to promote Kaitiakitanga (guardianship) of iwi for the benefit of the whole community.

The Draft 2008 Nelson Regional Policy Statement acknowledged the need for Iwi to be involved in resource management decision making, a commitment to the Treaty of Waitangi, and issues of particular importance to Iwi including coastal and freshwater quality, biodiversity, and heritage.

Nelson Resource Management Plan objective DO1.1 anticipates that the management of natural and physical resources recognise the needs of Māori communities and enables Māori to provide for their social, economic, and cultural wellbeing and their health and safety.

NRMP Policy DO1.1.4 indicates that access should be provided to traditional resources within public reserves, water bodies, and coastal water, consistant with preserving natural values. Access to these places is provided for in the Coastal Marine Area and Open Space and Recreation zones, via reserve management plans, and through the provision of esplanade reserves/strips that are created at the time of subdivision.

The Nelson Regional Policy Statement performance indicators (TW1.10.1-TW1.10.3) seek a reduction in damage to sites of cultural significance, increased protection for archaeological and cultural sites, and satisfaction with Council resource management procedures and practices by tangata whenua. Nelson Resource Management Plan performance indicators (DO1e) anticipate that there will be regular consultation between Council and Māori and evidence that Iwi Management Plans have been taken into account in the development of resource management plans. It is also anticipated that provision for papkainga (villages), taiapure (fishery management) or mahinga mataitai (seafood management) will be given consideration in forward planning.

NELSON RESOURCE MANAGEMENT PLAN RULES

The Nelson Resource Management Plan contains a number of rules that address objective DO1.1 as reflected in the methods to the underlying policies. These methods highlight rules dealing with papakianga and cultural heritage, access to the coast and open space including via the provision of esplanade reserves as opportunities arise on subdivision, and rules that provide for cultural activities.

Papakainga are specifically provided for in the Open Space and Recreation zone rules relating to the Whakatu Marae and generally provided for in the Rural zone. Deposition of materials and discharges to water are controlled by earthworks, vegetation clearance, freshwater and the Coastal Marine Area rules. Subdivision controls specifically reference Māori values and consultation with tangata whenua as a matter of assessment and access to water is encouraged by requiring the formation of esplanade reserves in accordance with Riparian Overlays. Sites of significance to iwi are protected through subdivision rules requiring the avoidance of heritage overlay areas and any disturbance of sites being controlled via Archaeological Sites rules which require advice from iwi.

MONITORING INFORMATION

Council policies and procedures

Processes are in place to ensure that the Iwi Management Plan (Nga Taonga Tuku Iho Ki Whakatu Management Plan 2004) is taken into account in the development of Resource Management Plans. A review of nine recent plan changes undertaken by Council has revealed that the s42a and/or s32 reports have referenced the Iwi Management Plan. Furthermore a key step in the plan change procedures is to consult with Iwi, including taking plan change reports to Kotahitangi (combine Iwi leaders/Council forum) and identified iwi roopu (groups) with environmental interest. A copy of each plan change is sent to Iwi as part of the standard notification process. Recent submissions on plan changes received by iwi groups have been generally supportive of the Plan changes that Council has initiated relevant to Iwi. A number of plan changes that are in development have also included iwi groups on the relevant working parties including the SNA and Iwi Inventory Project as outlined below.

In addition to consultation with Iwi at the plan development stage Council also sends Iwi groups a copy of the resource consents list so that they can indicate an interest in those consents, as well as a copy of all notified resource consents.

The Horiorangi Marine Reserve has been established to provide for the recovery of plant and animal communities. The Whakapuaka taiapure has also been established.

State of the Environment Report 2004

The state of the Environment Report highlights that an Iwi Management Plan and Memorandum of Understanding for resource consent processing are in development. The report also acknowledges that 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 the identification of archaeological sites and overlays identifying locations of cultural significance to protect them from adverse activities.

Iwi Inventory Project

In early 2009, the Nelson City Council approached iwi for guidance on the identification of Māori cultural heritage sites and appropriate measures for their recognition and protection under the Nelson Resource Management Plan (NRMP). An iwi working group was established with representatives from the six iwi affiliated to Whakatu Marae.

The working group held a number of hui to consider the issues, discrepancies and gaps in information currently in the NRMP for the recognition and protection of Māori cultural heritage sites. Existing sites were verified and additional information was identified for inclusion in the NRMP.

This process was managed and a report developed by a consultant (Ursula Passl) (884954).

Where there was uncertainty about sites, these were listed for further investigation (see Appendix One) of the report.

The working group also discussed issues associated with the management of Māori cultural heritage sites – these are presented with explanations in Part One of the report. The issues

provided the working group with a framework from which to consider options for improving the management of Māori cultural heritage.

SUMMARY – MĀORI

To some extent the objectives of the resource management plans, that seek the management of resources that recognises the relationship of Māori with key taonga, are now being met through the development of the Iwi Inventory Project and via the policies and procedures that are in place to ensure that Iwi management plans and Iwi groups are considered in the development of Plan Changes and through the resource consent process. It is however recommended that the Iwi Inventory Project is progressed before significant sites to Iwi are damaged.

A review of recent plan changes suggests that Iwi are satisfied with the resource management relationship between Council and tangata whenua. It is however recommended that surveys of Iwi groups are undertaken on an annual basis to explore Iwi views on current resource management practice and that priority is given to reviewing Iwi Management Plans to ensure plan provisions remain current. Also a number of terms in the plans should be defined in order to aid with interpretation.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Consult with Iwi about the findings of this report
- Progress the Heritage Inventory Project, the Significant Natural Area Plan Change and where requested work with Iwi in the NZCPS and NPS Freshwater Plan Changes
- Work with iwi and identify specific sites for mahinga kai (traditional food harvest)
- Continue policies and procedures for Iwi involvement in Resource management Act Processes
- Establish an annual survey of Iwi groups regarding feedback on Council Resource Management Act processes.
- Assist with the review of Iwi Management Plans
- Provide a comprehensive glossary of interpretation for concepts in the Resource Management Plans
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

NATURAL HAZARDS

NATIONAL POLICY DIRECTION

The purpose of the Act is to promote the sustainable management of natural and physical resources. Sustainable management means managing use, development, and protection of natural and physical resources in a way which enables people and communities to provide for their wellbeing and their health and safety while avoiding, remedying or mitigating any adverse effects of activities on the environment. Councils also need to have particular regard to the effects of climate change.

As a result of the Canterbury earthquakes, work has been identified that seeks to elevate natural hazards as a matter of greater importance. This reflects the priorities in the RMA for preserving natural character, landscape, flora and fauna, public access, cultural values and heritage over managing natural hazards. The Government has signalled that it intends to amend the RMA to give greater weight to managing the risks of natural hazards like earthquakes. In October 2011 the Government established a technical advisory group to review the principles (s6&7) of the RMA. Recommendations will be considered through 2012. The scope of work in the terms of reference includes whether the RMA can be improved to give greater attention to managing a broader range of natural hazards, including through Civil Defence Emergency Management Group Management Plans prepared under the Civil Defence Emergency Management Act 2002.

The functions of regional councils includes the control and use of land and planting in water to avoid or mitigate natural hazards along with the control of the quantity and flow levels of water. The functions of territorial authorities also includes the control of any actual or potential effects of the use, development and protection of land for the purpose of avoidance and mitigation of natural hazards and the control of effects of activities (including subdivision) in relation to surface water in rivers and lakes.

The NZCPS 2010 requires that coastal hazards (including tsunami) over 100 years are identified taking into account a number of factors including the likely effects of climate change (Policy 24). Once identified, subdivision and development in coastal hazard areas shall be appropriately managed including through avoiding development and adopting a managed retreat approach (policy 25) and through provision of natural protection measures (policy 26) and via adopting strategies for protecting existing development (policy 27).

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

The objectives of the NRPS (DH2.2) seek the protection of property and human health and safety from the effects of natural hazards and that hazard proneness and the adverse effects from hazard events are minimised.

Greenhouse gas emissions and climate change objectives acknowledge the need to be adequately prepared for changing climatic conditions due to sea level rise.

Two key objectives relate to natural hazards in the NRMP. These are DO2.1 and CM8.

DO2.1 seeks an environment within which adverse effects of natural hazards on people, property, and the environment are avoided or mitigated. Policies (DO2.1.1-DO2.1.4) then go on to reinforce this by stating that development, redevelopment and intensification of activities should not occur where the hazard is likely to endanger human health and safety, property, or the environment. No activity should aggravate any known hazard on any site, and access to riparian areas should be provided for maintenance and flood mitigation works.

CM8 focuses on minimising the risks to people, property, and the environment through the avoidance and mitigation of natural hazards within the coastal environment. Policies (CM8.1-CM8.5) manage activities, protection works, temporary works, structures, and disturbances in a way that avoids or mitigates the impacts of hazards in the coastal environment.

The Planning Maps identify potential areas of fault, slope, and flood hazard within which resource consent is required in order to develop.

The NRPS performance indicators (DH2.8.1-DH2.8.3) seek that:

- reported damage of threats to human life and natural and physical resources from potential hazard situations will be minimised,
- further development in hazard prone areas will be restricted, and
- a high degree of community understanding and preparedness of and for natural hazards is developed.

NRMP performance indicators (DO2e.1.1 and DO2e.2.1) seek a low incidence of damage to property and risk to life from natural hazards and a low density of development and increased design requirements when resource consents are applied for.

NELSON RESOURCE MANAGEMENT PLAN RULES

Natural hazards are managed in the NRMP via a series of natural hazard overlays. The NRMP contains specific rules for development and subdivision in the relevant zones to which the natural hazard overlays apply. Natural hazard overlays include:

- Fault Hazard
- Grampian Slope Risk
- Tahunanui Slump Core and Fringe Slope Risk
- Floodpath
- Flood
- Inundation.

These hazards are largely found on the planning maps, apart from some flood-paths which are described in a table in the front of the planning maps.

Land Management Overlays also control hazards to a degree by controlling development on sloping land that may be subject to slope instability and on low lying areas that may be subject to coastal erosion. Typically earthworks not meeting permitted standards and located in the Land Management Overlay have a higher consent threshold than those that do not.

In the Fault Hazard Overlay the erection, extension or alteration of a building within the Fault hazard overlay is permitted provided that where a fault trace can be precisely located by reference to the Councils condition book, subdivision or site files, or GIS database, the building is set back at least 5m from that fault trace. Otherwise restricted-discretionary consent is required. To this degree the Fault Hazard Overlay is utilised as a buffer area whereby more detailed information might negate the need for a consent.

The Grampian and Tahunanui Slope Risk overlays have their own specific controls. In the Grampian Slope Risk Overlay earthworks are generally permitted where excavation does not exceed 0.6m and fill does not exceed $3m^3$. In the Residential Zone stormwater is also managed so that driveways must have an impervious seal and stormwater from impermeable areas or water storage areas must be piped to an approved stormwater system to be permitted. Discretionary activity consent is required where these standards are not met.

In the Tahunanui Slope Risk Overlays, stormwater needs to meet the same standards as the Grampiam Slope Risk Overlay. All earthworks require consent as a discretionary activity. Structures that add a load to a site of greater than 1000kg and an extension or rebuilding of an existing residential unit requires consent as a restricted discretionary activity. New residential units within the core area are non-complying and in the fringe area are discretionary. Erection of new residential units, resulting in more than one residential unit per site are prohibited in the core area. Subdivision in either core or fringe area is generally prohibited apart from boundary adjustments, network utilities or open space.

In the Residential, Open Space, Industrial, Suburban Commercial, and Inner City zones the erection or extension of any building or structure (apart from post and wire/mesh fencing and network utility lines) and earthworks generally requires a discretionary activity consent via specific

Flood Overlay controls. There are no specific Flood Overlay controls for structures and earthworks in the Rural or Conservation zone although earthworks and structures rules themselves are relatively restrictive in the Conservation zone (generally requiring a discretionary activity consent). Earthworks within a Flood Overlay are not provided for in the Rural zone without a restricted discretionary consent.

Like the Flood Hazard Overlay, specific rules relating to the Inundation Overlay do not apply to the Rural, Coastal or Conservation zones. In other zones the erection of buildings or extension of ground floors by more than 20% and earthworks generally requires consent as a controlled activity to address localised ponding from stormwater during heavy rain events or high tides. Where the height of ground floors is 150mm above approved ground floor levels this rule will not apply. In the residential zone the permitted rule specifically references a change of use of any accessory building to involve human habitation.

Earthworks in the Land Management Overlay is generally a restricted discretionary activity across the zones. Soil disturbance rules also control earthworks on slopes exceeding 25 degrees.

Subdivision in a Natural Hazards Overlay is generally a discretionary activity apart from the Tahunanui Slope Risk Overlays where subdivision is generally prohibited as outlined above.

MONITORING INFORMATION

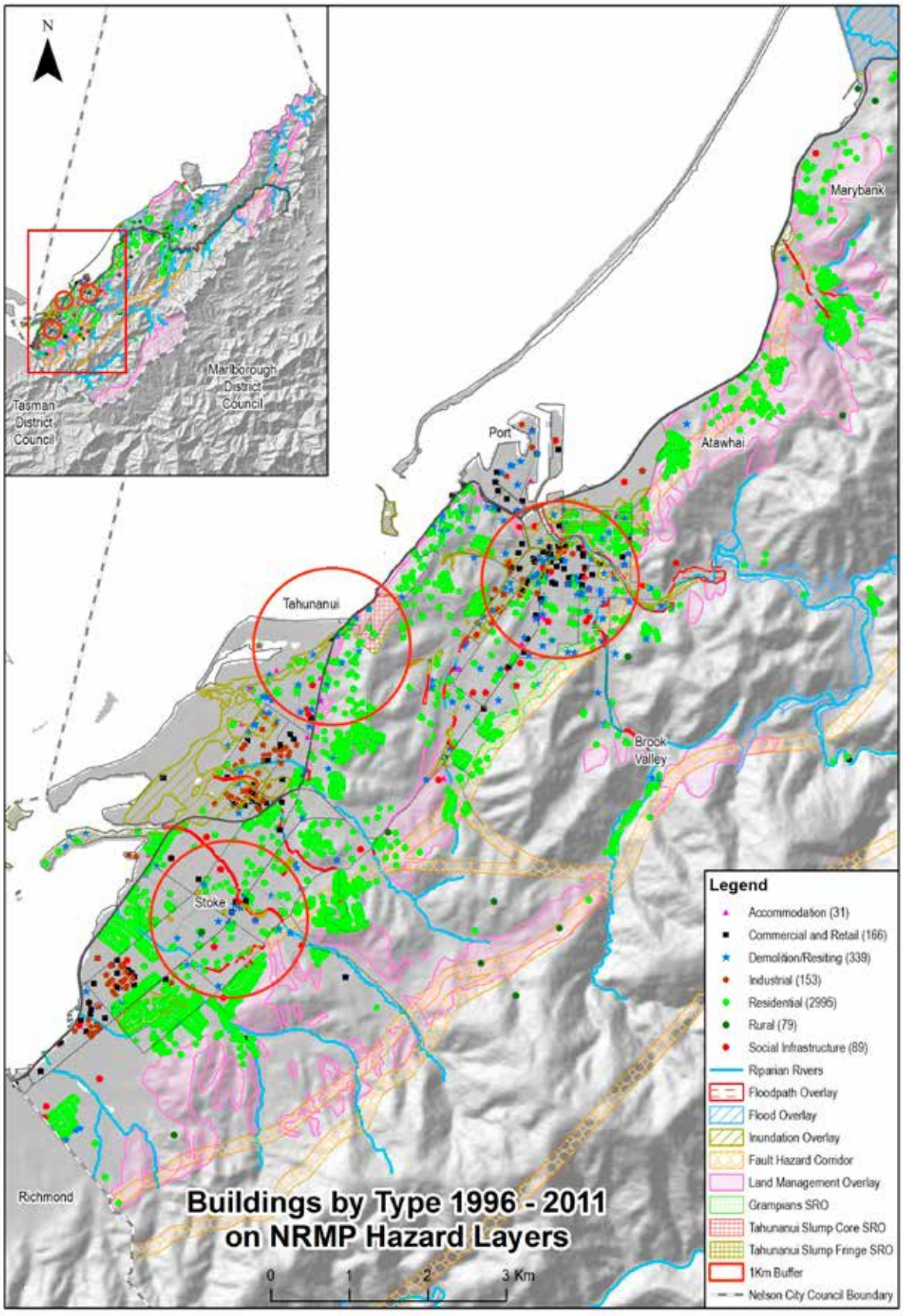
The development of the NRMP included a number of technical reports that mapped potential hazards. Apart from the fault hazard overlay review and new information gathered from further technical reports accompanying resource consents, or plan changes that seek to rezone land for further development, there has not been a comprehensive review of the original NRMP information. The Waimea-Flaxmore fault hazard overlay has been recently reviewed in light of further geotechnical studies that have been completed at resource consent stage. A layer has been added to the map below to show where the revised fault hazard overlay would apply.

While it is understood that the Flood and Inundation Overlay took account of the Ministry for the Environment guidelines for sea level rise at notification of the NRMP there has been no review since then. While management has been adequate to date this may not be the case in the future with sea levels and storm events predicted to increase as a result of climate change.

While no specific monitoring of natural hazard performance indicators has been undertaken, a review of building consent data reveals that there has been an increase over time in the number of buildings on sites within hazard areas. The table below indicates the number of building consents issued between 1996-2011 and the percentage of the total consents issued (3852), for sites containing potential natural hazards.

Hazard Type	Number of Consents 1996-2011	Demolition	Percent of Total Consents
Land Management	407	17	11%
Fault Hazard	267	20	7%
Flood Hazard (Includes Flood Overlay (33), Flood Path Overlay (4), and Inundation Overlay (372))	409	72	11%
Slope Risk Overlay	58	10	2%

This is spatially depicted in the map below:

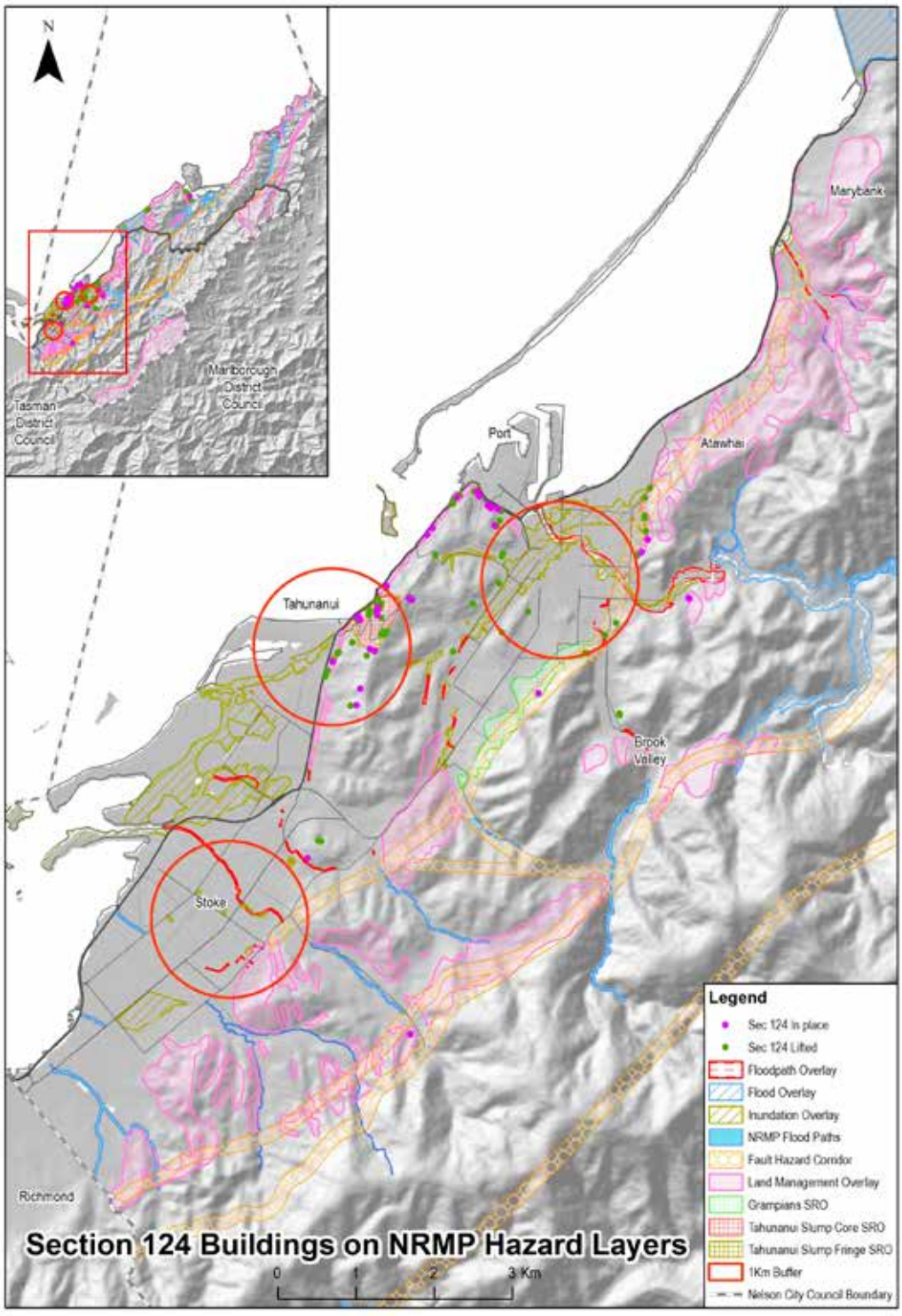


This map and the data above does not include the Flood paths identified in the table at the front of the Planning Maps. These floodpaths are currently being mapped so that a better understanding of flood risk in these areas can be evaluated.

Further work is also underway to map a broader range of hazards such as sea level rise, liquefaction, and Tsunami. A review of building consent data will determine the extent to which development has increased in these risk areas and be useful for informing future plan development.

A review of the Nelson City State of the Environment 2010 report highlights the dynamic nature of Nelson's rivers and the susceptibility to flooding. These records indicate significant floods in 1995, 1998, and 2007 (see Freshwater section of this report for further details).

Flooding and slips that occurred as a result of the December 2011 Rain Event have highlighted the need to update natural hazards information so that hazard management is more accurate. Below is a Map (RAD1287016) showing the location of 'dangerous' buildings in relation to NRMP hazard overlays:



Of the 100 buildings identified as dangerous (pursuant to s124 of the Building Act 2004) subsequent to the December 2011 Rain Event, 50 were identified as being subject to a natural hazard layer in the NRMP. 22 buildings were identified as being on sites with multiple potential hazards with 27 being located in the Land Management Overlay. The vast majority of buildings (83) were located in the Residential Zone. Of the buildings identified as dangerous, only six were built after the NRMP was notified.

A number of buildings have also been identified as potentially earthquake prone pursuant to Councils 2006 policy. Council's policy on earthquake prone buildings is the 'Nelson City Council Earthquake Prone Building Policy 2006'. All buildings are affected by this policy with the exception of single story residential buildings and two (or more) story residential buildings which contain only one or two household units. The policy also states that:

"Buildings designed after 1976 are unlikely to be earthquake prone unless they have a critical structural weakness from a design deficiency or unauthorised alteration."

Council's Building Unit is currently undertaking a desk top assessment of potential earthquake prone buildings to determine whether the policy applies. The first step for buildings subject to the policy is for landowners, once advised by the Building Unit, to commission a chartered professional engineer to complete an Initial Evaluation (IEP).

Landowners will need to consider the economics of strengthening these buildings versus their demolition. The alteration or demolition of these buildings may have a significant impact on the heritage and amenity values of the City.

While there is limited hazard data recorded on the NRMP maps Council's GIS system is updated more frequently than the NRMP maps. This more up to date data is utilised at the building consent stage to indicate hazard risk at the time of building. While the Fault Hazard Overlay rules reference Council's GIS system other hazards rules are restricted to the hazards as depicted in the NRMP. Consideration should be given to how these rules can be made more effective in the future.

SUMMARY – NATURAL HAZARDS

Resource management plan objectives generally seek a reduction in threats to human life as a result of natural hazards. There is also a drive at the national level to improve natural hazard management given the recent Canterbury earthquakes. The NZCPS also requires that coastal hazards such as Tsunami and Sea Level Rise are appropriately managed.

NRMP rules are relatively restrictive in that subdivision of sites within a Hazard Overlay requires assessment as a discretionary activity and other rules control the establishment of buildings and earthworks in identified hazard areas. However, the location of buildings within natural hazard areas is not always a good indicator of hazard risk, particularly in the case of the fault hazard and flooding where engineering assessments are provided to better define hazard areas.

Nevertheless, monitoring information indicates that an increasing number of buildings are located on sites that are subject to natural hazards such as in the December 2011 Rain Event. The effectiveness of these rules at achieving the NRMP objectives is therefore questionable, particularly given the dated nature of the NRMP hazard maps. Further work is therefore recommended in order to more accurately predict the scope and improve the management of natural hazards in the future. This work should have a relatively high priority given the potential for risk, the need to respond to national policy change in the short term, and the need to inform the preparation of the Nelson Development Strategy in 2012/2013.

How landowners respond to potential earthquake risk may have a significant impact on the City's heritage and amenity values.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Expand the Maitai flood modelling work to the other catchments across the city to align with the timeframe for catchment management planning.
- Add the Flood paths identified in the table at the front of the Planning Maps to the Planning Maps and further refine these as part of ongoing catchment management planning work.
- Analyse sea level rise, liquefaction, and Tsunami modelling work
- Review the Land Management Overlay and Slope Stability Overlay utilising data from the December 2011 Rain Event.
- Complete work to refine the Waimea-Flaxmore fault-line maps.
- Assess the list of potentially earthquake prone buildings and consider the possible impact of their alterations/demolition in terms of heritage and amenity value.
- Explore opportunities to work with Tasman and Marlborough District Councils on natural hazard work.

FRESHWATER

NATIONAL POLICY DIRECTION

The purpose of the RMA is to promote the sustainable management of natural and physical resources in a way that safeguards the life supporting capacity of water. In achieving this purpose Councils need to consider the protection of ecosystems within water and the efficient use of water as a resource. Water management is a key role of regional Councils which includes the need to maintain water quality and quantity along with ecosystems within water. The control, of the use and allocation of water and discharges to water are key methods to achieve this role.

The NPS freshwater Management 2011 covers water quality, water quantity, integrated management, tangata whenua, and a progressive integration plan. The NPS directs regional Councils to safeguard the life supporting capacity ecosystem processes and indigenous species and associated ecosystems of freshwater in sustainably managing water quality and quantity by:

- establishing **freshwater quality limits** for all freshwater bodies in the region and a **programme for meeting those** limits,
- establishing rules to **manage contamination**.
- establishing freshwater objectives and setting environmental flows by having regard to climate change and the connection between water bodies,
- establishing criteria for transfers of water take,
- by promoting the efficient use of water, and
- ensuring water is not over allocated.

In addition, **integrated management of freshwater** and landuse and whole catchments (including interactions between freshwater, land, associated ecosystems and the coastal environment) is required. This involves the co-ordination and sequencing of regional growth, land use and development, the provision of infrastructure, and the foreseeable impacts of climate change. Tangata whenua are to be involved in the management of freshwater to the extent that their values are reflected, and the NPS establishes an integration programme for regional councils where amendments to implement policies are established by November 2012 to be completed by 2030 in the absence of being able to make changes by 2014.

The proposed National Environmental Standard on Ecological Flows and Water Levels (proposed NES) was released for submission in 2008 and aims to promote consistency in the way we decide whether the variability and quantity of water flowing in rivers, ground water systems, lakes and wetlands is sufficient. The proposed NES would do this by:

- Setting interim limits on the alteration to flows and/or water levels for rivers, wetlands, and groundwater systems that do not have limits imposed through regional plans or Water Conservation Orders.
- Providing a process for selecting the appropriate technical methods for evaluating the ecological component of environmental flows and water levels in rivers, lakes, wetlands, and groundwater systems.

The NES is currently on-hold pending consideration of further advice from the Land and Water Forum in 2012.

RMP'S POLICY DIRECTION

NRPS objectives WA1.2 and WA2.2 support the maintenance and enhancement of the quality of inland and coastal water to protect fisheries and aquatic ecosystems, to support aquatic life and to ensure adequate supply for abstractive uses.

The Draft 2008 NRPS utilises Objective DO19.1 from the NRMP "All surface water bodies contain the highest practicable water quality" and anticipates that flow levels in streams provide for natural, cultural, and recreational values, efficient use of water, and a reliable and long term water supply.

The NRMP freshwater provisions were introduced via a plan change that was notified

on 9 October 2004 and became operative on 5 May 2007. Prior to this there were no provisions governing the management of freshwater in the NRMP.

NRMP Objectives DO18.1 – DO18.4 seek to maintain and enhance water flows and levels within water bodies and groundwater while providing for appropriate and equitable abstraction. The natural functioning of ecosystems is not disrupted by the diversion of surface water. Objective DO19.1 and DO19.2 seek all surface water bodies and groundwater contain the highest practicable water quality. Policies seek the maintenance and enhancement of water quality with a minimum grade of C to be achieved for waterbodies. Objective DO20.1 requires an integrated management approach with key stakeholders for the protection and use of freshwater resources.

NRPS performance indicators WA1.8 highlight the need to monitor water quality to show that water classifications are achieved and conditions placed on water, coastal, and discharge permits are being met, monitoring of the marine environment in the port area showing no new introduced exotic organisms or chemical/heavy metal contamination, and monitoring of indicator shellfish species and instream fauna. WA2.8 seeks to monitor water abstractions, river flows, and the health of in-river plant and animal indicator species (undertaken by both Council and water abstracters), showing that river flows are not being artificially reduced to levels where significant adverse effects are occurring, abstractive water usage showing that water is being used beneficially and efficiently, frequency of water shortages, and reduction in domestic water usage per capita and reduction in usage per unit of production.

NRMP performance indicators (DO7e, DO18e, DO19e, and DO20e) echo those of the NRPS and include such measures as water sampling to ascertain stream health, contamination in stormwater discharges, and groundwater. Fish catch records, flow monitoring, metering of water use, and the degree to which relevant water management plans are integrated into statutory processes are other key pieces of monitoring information.

NRMP RULES

As noted, the freshwater rules were introduced by Plan change in 2004, which became operative in 2007. The rules governing freshwater are generally consistent across the zones and as part of Plan change 24 became an Appendix to the plan to avoid repetition throughout the NRMP. The controls address activities and structures that can occur in the bed of rivers, lakes and wetlands along with water take, and discharges to or near waterbodies. Most activities have a permitted activity within certain thresholds apart from more sensitive activities such as instream dams, the transfer of water permits, management of bores and wells, or discharges of sewerage to freshwater bodies. There are also a number of activities that are Prohibited such as the planting of willows and plants identified in the Regional Pest Management Strategy, the deposition of waste, toxic, or radioactive material, and new water takes downstream of NCC urban water supply intakes in the Maitai and Roding rivers.

Appendix 28 of the NRMP includes guidelines for:

- Aggregate extraction (quantity limits for the Matai, Brook, wakapuaka, poorman, Orphanage, Jenkins, Arapaki streams, and intake structure generally)
- Flow Regimes (reasons for minimum flows, flow basis, and Allocation limits for Whangamoa, Wakapuaka, Teal, Ludd, Todds, Maitai, Hillwood, Poormans, Saxton, Oldham, Roding streams/ rivers and a default limit of 10% of 1 in 5 year (7 day) mean low flow for rivers generally)
- Water allocation rules relating to water intake structures, water meters, monitoring fees, water rationing requirements during low flows, expiry and duration of water permits (10 years for Whangamoa, wakapuaka, and groundwater from June 2013 and Glenduan, Atawhai, Stoke, Fan, and York from 2014, and 20 years for Roding and Maitai from 2017)
- Water classifications and priorities for improvement of various key streams as well as characteristics and criteria for freshwater standards

- Surface water quality criteria for toxicants
- Reasonable mixing zone standards
- Obsolete structures.

The rules for Aggregates extraction (FWr.8), take,use and diversion of water (FWr.12), take, use diversion of groundwater (FWr.14), and point source discharges to freshwater bodies – other than stormwater (FWr.20) require compliance with Appendix 28 standards as a permitted activity.

The mix of rules and standards seek to deliver on the NRMP objectives consistently across zones.

There are also a number of other rules and appendices in the NRMP that would also have an influence on freshwater management. These include:

- Soil disturbance
- Earthworks
- Vegetation clearance
- Slope risk overlays
- Flood path/flood overlays
- Building on low lying sites
- Site coverage
- Site coverage for structures, storage and utility yards
- Riparian overlays
- Service overlays
- Subdivision
- Land Development Manual (LDM).

Soil disturbance is restricted to slopes less than 25 degrees and 5m from banks of rivers and 20m from the coast, debris is positioned where it will not dam or divert a stream, bare soil areas are revegetated, no conspicuous change in colour of streams, and soil is managed on site to avoid offsite effects.

Earthworks are generally permitted across zones where height or depth of excavation does not exceed 1.2m, excavation is retained, earthworks are 10m from streams and 20m from coast, no soil will dam or divert a stream, water clarity is achieved, cleanfill materials only are used, soil effects are managed on site and earthworks are not in Flood and Slope risk overlays. Soil disturbance and earthworks in the conservation zone is restricted to track maintenance.

Vegetation clearance is typically split between the clearance of indigenous forest and general vegetation clearance. Indigenous vegetation is defined as an area of naturally occurring vegetation where the area covered by plant species indigenous to the District is the same as or greater than the area covered by other plants. Vegetation clearance is defined as any activity which results in the removal or reduction in vegetation cover from an area of land other than that caused by grazing animals or domestic gardening, except for the purpose of controlling or eradicating pest plants or trimming of vegetation (other than indigenous vegetation)

Indigenous forest clearance is not permitted in the residential zone. In the rural zone clearance of indigenous vegetation is permitted where it is not within a riparian overlay, is less than 0.2ha or is in accordance with a approval under the Forests Act 1949, and it complies with all other rules in the plan including appendices.

Vegetation clearance in biodiversity corridors or within 5.0m of a river identified in Appendix 6 (other than for domestic gardening, fire breaks, fencing, maintenance of state highways, and utility services) or within 20 m of the coastal marine area is not permitted.

Building on low lying sites is only permitted where obstructions to water flows are avoided.

Site coverage can have an impact on stormwater runoff rates. In the residential area this controls building areas and ranges from 30-60%. In rural areas site coverage includes structures, storage, and utility yard areas to a maximum of 2500m^2.

In Riparian Overlays structures, the disturbance of river banks, and adverse effects on indigenous vegetation are controlled.

Subdivision in the Services Overlay is generally a discretionary activity and proposed to be a restricted discretionary in the Residential zone as part of PC14. Subdivision that meets the engineering standards in the Land Development Manual (LDM) and provide for required esplanade reserves is generally a controlled activity.

The LDM establishes minimum standards for controlled activity subdivision and/or development and design guidance for residential subdivision in relation to rules in the NRMP. Of relevance to freshwater the LDM covers stormwater (including encouraging low impact design and incorporating sea level rise and climate change predictions in rainfall intensity curves), wastewater, water, and earthworks standards.

PC14 has altered references from "engineering standards" to the "LDM" in subdivision, access, network utility, building on low lying sites, and relevant freshwater controls across the residential, industrial, commercial, and rural zones. Reference is also made to the Stormwater bylaw where this is relevant.

The Stromwater bylaw (Bylaw 212 Stormwater) aims to work in tandem with the NRMP to control discharges to the Council stormwater system. The bylaw requires erosion and sediment control plans for construction activities, minimum stormwater quality is achieved by controlling contaminants and adverse effects on aquatic life, pollution prevention plans for high risk industrial or trade premises, ongoing monitoring of discharges, and the ability to fine for offences.

MONITORING INFORMATION

The **Nelson Biodiversity Strategy** Technical Report 2006 (RAD 467041) provides a snapshot of Nelson Biodiversity and includes the following commentary on the state of freshwater.

The Nelson freshwater environment is a tiny portion of the Nelson land area comprising about 0.25% of the total. Freshwater resources include rural rivers and streams. Some of those flow through exotic forestry plantings such as the Whangamoa, Wakapuaka and Upper Maitai. There are urban rivers and streams such as the Brook Stream, Lower Maitai River and Poorman's Valley Stream. Nelson has some almost unmodified streams. There is just one lake, the artificial impoundment of the Maitai water supply dam. Freshwater in Nelson include springs and wetlands such as the upper Maitai Rushpools, as well as groundwater. Natural freshwater boundaries cross territorial boundaries and as such should be seen in a wider regional context.

At least 15 types of freshwater fish, crayfish and shrimp species can be found in streams in Nelson.

Freshwater fish species found in streams of the Nelson City area	
COMMON NAME	**SCIENTIFIC NAME**
Native	
Yelloweye mullet	*Aldrichetta forsteri*
Shortfin eel	*Anguilla australis*
Longfin eel	*Anguilla dieffenbachii*
Torrentfish	*Cheimarrichthys fosteri*
Giant kokopu	*Galaxias argenteus*
Koaro	*Galaxias brevipinnis*
Banded kokopu	*Galaxias fasciatus*
Inanga	*Galaxias maculatus*
Upland bully	*Gobiomorphus breviceps*
Common bully	*Gobiomorphus cotidianus*
Giant bully	*Gobiomorphus gobioides*
Bluegill bully	*Gobiomorphus hubbsi*
Redfin bully	*Gobiomorphus huttoni*
Common smelt	*Retropinna retropinna*
Introduced	
Goldfish	*Carassius auratus*
Brown trout	*Salmo trutta*

Recent records of spotted eel (*Anguilla reinhardtii*, naturalised) and rainbow trout (*Oncorhynchus mykiss*, introduced) have yet to be confirmed.

A number of species are now extinct within the Nelson region (NZ Grayling, Brown Mudfish) and small in number (only one known population of Giant Kokopu). Species richness within small streams is influenced by human activities (construction of overhanging culverts, weirs, tidal gates, bridge aprons, reductions in water quality, and loss of instream and riparian habitats) and weeds and pests (weeds such as didymo, Egeria, entire marchwort, and Senegal tea, and pests such as Mosquitofish, koi carp, rudd, and tench).

Many freshwater systems in Nelson are degraded. The most degraded rivers and streams are those in the urban area, especially small streams in Stoke, Bishopdale, Atawhai, and the Glen. Conversely the rivers and streams with the highest water and habitat quality are in the rural areas, with upstream sites being less impacted than down-stream. Monitoring and classification results under a national classification system for most major rivers and streams in Nelson are given in the Council's Freshwater Plan. Aquatic habitat and biodiversity matters are included within priorities for improvement.

In summary, Nelson freshwater ecosystems are under increasing pressure as the human population grows. We have drained and developed almost all our freshwater wetlands and swamp forest is one of our most threatened habitats. Much of the biodiversity in our remaining streams and rivers has been retained. With careful management many of the smaller streams and wetlands could be restored and the life supporting capacity of our larger rivers sustained.

SOE REPORTING

Nelson's river ecology and recreation bathing water quality is summarised in State of the Environment reports 1999, 2002, 2004 and 2010 (RAD 219898 and 927654), which consolidate Council monitoring over the intervening years. The River and Stream Health (RAD 1094858 and 1269621) and Recreational Bathing Water (RAD 1094857 and 1269448) scorecard was launched in April 2011, to provide more up to date information to the public and promote awareness and community engagement. Each scorecard summarises the key results, NCC initiatives and work in progress to improve freshwater and bathing water quality. A consolidated 5-yearly State of the Environment report is due in 2015. However, this may change with the introduction of annual monitoring summaries and requirements to report more at a national level (e.g. Land and Water Forum). The results from these reports and associated investigations are summarised below.

Cawthron were commissioned with developing the Councils water quality programme and classification, based on river ecology monitoring from 1999 to 2007 (RAD 794917, 609553). The 2007 Updated Freshwater Classification for Nelson (RAD 702404) provides a review of the freshwater classification, long-term grade (2000-2007) and introduction of the automated (Excel) annual classification for each site. The 2007 Freshwater Classification system was used to inform Plan Change 24, which altered the classification of the Streams identified in the NRMP.

A review of the classification and long term grades for each site is due in 2012/13, incorporating the five years of monitoring data since the 2007 update. The review is likely to incorporate MFE national protocols and single indicators for freshwater monitoring and align with the National Policy Statement and any changes to the NRMP (Freshwater Plan).

FRESHWATER QUALITY

State of the Environment river and stream health is monitored quarterly across Nelson representing a range of land use types, which include pristine native bush habitat in upper catchments, and waterways in the rural and urban area. The monitoring is undertaken at base flows and therefore does not fully represent the contribution (increased flows, sediment, nutrient and bacteria loads) from rainfall-runoff events. Nine of the 28 sites monitored in 2011 had degraded water quality, below the NRMP policies for all waterways to be grade C (Moderate) or above. Four sites classified at grade C or above, the upper and lower Lud, Sharland and Groom have fallen to D or E since 2007 (the lower Lud returned to grade C in 2011). Three sites with grade D, Maitai at Riverside, Brook at Manuka Street and lower Todd Valley improved to a grade C in 2011.

Water quality monitoring has shown that elevated nitrates, fine sediments (measured by total suspended solids and turbidity) and E. coli bacteria significantly contribute to the Degraded (D) classification, mainly caused by unrestricted live

stock access to waterways in rural areas and upper catchments of the urban area.

Other factors including forestry clearance and earthworks associated with urban development also contribute to elevated sediment and nutrient yields through surface run-off but are not directly monitored.

A water temperature survey (RAD 1140007) over 2009-11 of the Wakapuaka catchment, including Teal and Lud tributaries showed that overall, the critical water temperatures increased along the Wakapuaka River from 14.1˚C in the upper reach (Duck Pond Road) to 19.9˚C in the lower reach (Maori Pa Road). National Institute of Water and Atmosphere research shows that critical water temperatures over 21.5˚C cause 50% of mayflies and stoneflies to die and is detrimental to trout and some native fish species. The elevated temperature of 22.6˚C in the Lud (upper and lower reach) is considered to be detrimental to the life supporting capacity of water and contributes to the elevated average temperature of 18.5˚C, 200m down-stream at Hira.

The annual classification of the freshwater quality grades over the last five years and total number of non-compliant sites (Degraded and Very Degraded) are provided in Tables and Maps below:

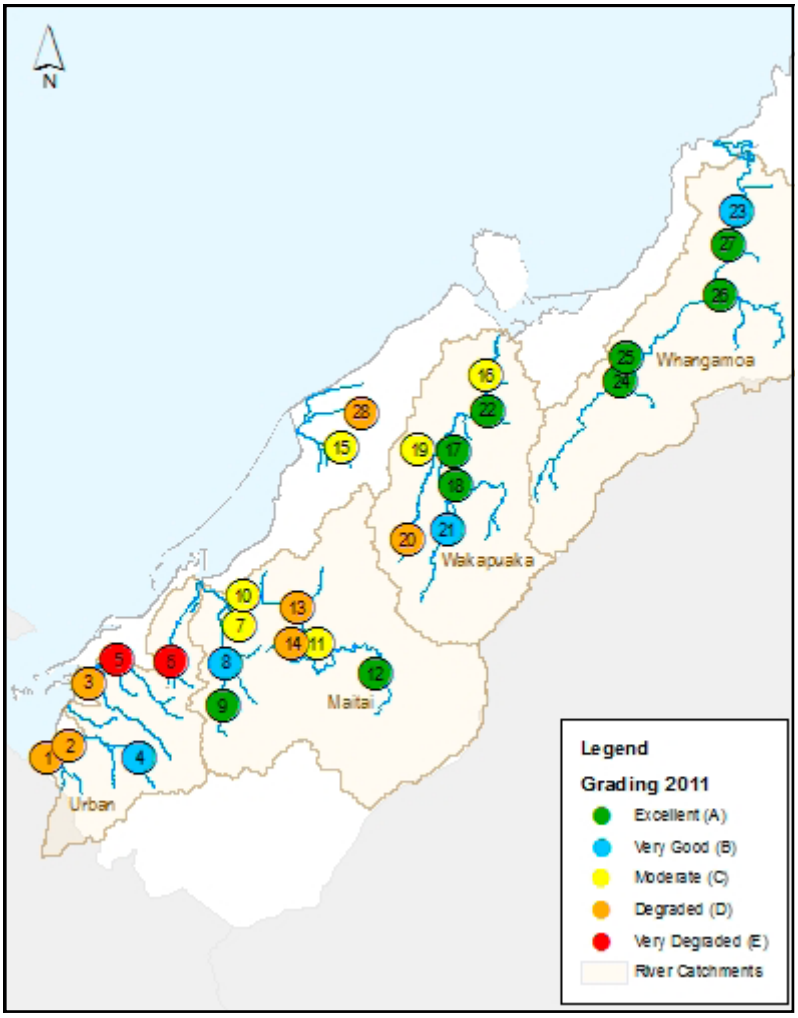
Nelson Freshwater Classification Of Sites From Quarterly State Of The Environment River Ecology Monitoring.

Freshwater Classification	2007	2008	2009	2010	2011
Excellent	8	8	7	7	9
Very Good	3	6	9	4	4
Moderate	7	4	4	4	6
Degraded	6	3	3	7	7
Very Degraded	3	6	5	6	2
Non-compliant Sites from annual monitoring					
Total	**9**	**9**	**8**	**13**	**9**

Long Term River Classification From 2007 Review.

Long Term River Classification		
1	Saxton at Main Rd	E
2	Orphanage at Saxton Rd East	D
3	Poorman at Seaview Rd	D
4	Poorman at Barnicoat Walkway	C
5	Jenkins at Pascoe St	E
6	York at Waimea Rd	E
7	Brook at Manuka St	D
8	Brook at Burn Pl	*
9	Brook at Motor Camp	A
10	Maitai at Riverside	D
11	Maitai at Groom Rd	C
12	Maitai South Branch at Intake	A
13	Sharland at Maitai Confluence	C
14	Groom at Maitai Confluence	B

Long Term River Classification		
15	Todds at SH6	D
16	Wakapuaka at Maori Pa Rd	C
17	Wakapuaka at Hira	A
18	Wakapuaka at Duckpond Rd	A
19	Lud at SH6	C
20	Lud at 4.7km	C
21	Teal at 1.9km	C
22	Pitchers at 890m	A
23	Whangamoa at Kokorua Bridge	A
24	Whangamoa at Hippolite Rd	A
25	Graham at SH6	A
26	Collins at SH6	B
27	Dencker at Kokorua Rd	B
28	Hillwood at Glen Rd	D



The MFE recreation Suitability for Recreation Grade for seven bathing sites along the Maitai and Wakapuaka river range from Very Good to Very Poor.

Site Name	Bacteria grade 2007/08	Recreation grade	Bacteria grade 2011/12	Recreation grade
Tahunanui Beach	B	Good	B	Good
Monaco Beach	B	Good	B	Good
Cable Bay	B	Good	B*	Good
Atawhai	C	Fair	B	Good
Hira Reserve	D	Very Poor	D	Very Poor
Paremata Flats	D	Very Poor	D	Very Poor
Maitai Camp	C	Fair	B	Good
Sunday Hole	D	Poor	C	Fair
Girlies Hole	C	Fair	C	Fair
Collingwood St Bridge	D	Very Poor	D	Very Poor

*Cable Bay 13 samples collected

Council routinely monitors seven freshwater recreation bathing sites from November to March. The results are summarised in State of the Environment (SoE) reporting and annually since 2010 (RAD 1094857). The first regional recreational bathing water survey in 1992/3 (RAD 792452) showed that Maitai at Girlies Hole and Roding River at Twin bridges breached the median standard (RAD 792452). Since 2003 bathing sites have been assessed by the Microbiological Water Quality Guidelines (MFE/MOH), resulting in an overall Suitability for Recreation Grade for each bathing site. In 2011/12 the Maitai River at Maitai camp had improved bacteria counts, upgrading from a C to B and Good recreation grade. Sunday Hole and Girlies Hole all have Fair recreation grades. There was no change in the recreation grade for Collingwood St, which remains at Very Poor due to contamination from sewerage and other sources such as wildfowl. Hira Reserve and Paremata Flats (Maori Pa Road) had Very Poor grades. However, there was an improvement in bacteria counts at Hira Reserve and Paremata Flats (Maori Pa Road) with no red alerts at these sites in 2011/12. A health warning excluding recreation in the Maitai down stream of Collingwood St bridge and in the Wakapuaka river at Paremata Flats remains in place during 2011-12 (RAD 1094858).

Two Wakapuaka river bathing sites, at Hira and Paremata Flats Reserves were included in the 2007/08 routine monitoring programme. The results from the sampling regularly exceeded national guidelines at both sites giving rise to Alert/Amber or Action/Red modes. Following the results a sanitation survey (RAD 706588) of the Wakapuaka river was undertaken sampling water for bacteria from the headwater tributaries (Teal and Lud) and from the main stem. High bacteria levels were reported in the upper Lud, the Macs Road and Lud confluence and lower Lud. Whilst no bacteria source was specifically identified from the survey (e.g. septic tank or livestock) the report highlighted ways for landowners to reduce the amount of livestock accessing waterways, through the Rural fencing Grants Programme and planting riparian margins.

Microbial source tracking was employed in March 2011 to investigate the sources of faecal bacteria at bathing water and river ecology sites with elevated bacteria (RAD 1055761). Ruminant (livestock) and wildfowl faecal contamination were identified in the Lud River (upstream of Hira) and the Wakapuaka River at Paremata Flats. Whilst wildfowl, gulls, ruminants and human faecal sources were identified at Collingwood St Bridge.

Historically, bacteria counts have been elevated at Collingwood Street bridge, since the 2005/2006 summer when monitoring commenced at this site. Environmental Science and Research reviewed the lower Maitai bacteriological monitoring results from intensive sampling of E. coli in December 2006 and January 2007 (RAD 1304518). The samples revealed a strong association with tide (higher tide, lower the bacteria) and bacteria counts tended to be lower around noon, possibly from cumulative solar radiation. However, the results neither confirmed nor explained the elevated counts recorded at Trafalgar and Collingwood Street. Following on from this review, Nelson City Council commissioned Cawthron to investigate the source of elevated faecal coliform and Enterococci in the lower Maitai, using microbial source tracking (RAD 672921).

Human faecal markers were detected in all samples downstream of the Halifax Street Footbridge. The stormwater runoff at Trafalgar Street and associated infrastructure in the CBD was subsequently investigated by Council engineers. Extensive investigations identified a cross-connection in the vicinity of the Trafalgar Street, in relatively new pipes and sections of damaged infrastructure in older pipes. All remedial work was completed in 2010. However, Recreation bathing water results at Collingwood Street bridge remain elevated with 3 red alerts from 21 samples (2010/11) and 15 red alerts from 21 samples (2011/12). A repeat of the 2007 intensive sampling programme, targeting stormwater outlets and sewerage lines in the lower Maitai was undertaken in February 2012, which confirmed a localised source of bacteria at Collingwood Street bridge. Investigations of the sewer pipe scour valve at this location are ongoing.

Native fish

Annual consent reporting for the Maitai Reservoir water supply (RAD 1225323) has met compliance with consent conditions (flow, dissolved oxygen, temperature). However, biomonitoring indicates that the operation of the reservoir backfeed scheme is impacting on the instream ecology. A long term decline of macroinvertebrate and fish communities immediately down stream of the reservoir was first reported in the 2005-2006 Maitai consent compliance report (RAD795789). The cause has yet to be resolved, despite a number of research studies by Cawthron addressing ecological flows (RAD 1306075), dissolved oxygen and metal contamination (RAD 993634).

Nelson's native fish distribution, habitat and fish passage has been compiled from a range of information sources including a review of records by Cawthron in 2006, a regional survey conducted in 2008 by University Canterbury, compliance monitoring for consented works relating to roading or land development and as part of ecological / catchment assessments. However, there is currently no programme of regular fish surveys for any of Nelson waterways, other than relating to resource consent conditions (Maitai Dam reservoir and Orphanage Stream). Most of the Council information describing native fish distribution and habitat quality is ad-hoc, collected by contractors (Cawthron, Department of Conservation, ecological consultants) to meet consent requirements:

The Cawthron review (RAD 518978) reported on 19 species of freshwater fish, of which 16 were native. Of these the giant kokopu and long fin eel are noted as being in 'gradual decline' in the Department of Conservation's threatened species classification list, while the lamprey are listed as being 'sparse'. All of the other species are not considered to be threatened. Brown trout are the most widespread introduced fish within the region. Gambusia, koi carp and tench have also been reported within the region, but appear to have been successfully eradicated (-2006).The threatened giant kokopu and lamprey have been reported on single occasions (the latter most recently in Poorman Valley Stream during fish salvage prior to gravel extraction). Future monitoring should involve more surveys to determine the size and viability of these populations.

The Nelson wide 2008 native fish survey (RAD 676533) concluded that overall, urban sites had a lower than expected number of fish taxa compared to other Nelson urban sites surveyed. A lack of suitable fish habitat was considered the most likely explanation for the paucity in fish diversity. Fish surveys and restoration of the main urban waterways are being undertaken in 2012 as part of the consent to remove gravel accumulated from the December 2011 flood. Additional fish passage remediation work to artificial barriers, including culverts and bridges, is also targeted at four urban streams as part of the Stoke Stream Rescue project (RAD 1248661 and 1250280).

Cawthron reported on the fish distribution along Poorman Valley Stream in 1996 (RAD 529164), prior to subdivision upstream of the Marsden Valley cemetery. Improvements to fish passage at two aprons were identified and modified to increase upstream access.

Cawthron reported on the fish distribution, conservation status and migratory requirements along Jenkins Creek in 1996 (RAD 488811) in relation to proposed culverts and diversions as planned for the Stoke by-pass. At least six species of native fish, including common and upland bully, smelt, banded kokopu, koaro, eels and introduced brown trout were recorded in Jenkins Creek. Only the most able migratory fish, koaro, banded kokopu and eels were recorded upstream of the proposed culvert in the headwaters of the catchment (as is the pattern elsewhere). No follow up monitoring has been undertaken to assess whether fish passage has been affected by the by-pass. However, fish surveys undertaken as part of the 2012 gravel extraction in urban streams will provide a useful comparison and map the distribution and range of native fish species.

Orbit Environmental Services assessed the fish habitat and fauna of Orchard, York, and Arapaki streams as part of Council work to improve flood capacity (RAD 797164, 797394, and 797593). Fish passage was improved in the Orchard and Arapaki

streams. However, the scope for improving fish passage in the York stream was limited by the extent of open water way and margin that can be vegetated.

Field surveys of physical barriers to fish passage, focusing on river crossings, including culverts, bridges, fords and direct access points (by stock or vehicles), were undertaken in 2005/6 to assist in the implementation of the freshwater plan change rules. The results of the survey have remained as field sheets, but provide an overview of where some structures are located.

A fish survey of Orphanage Creek was undertaken by Cawthron in 2007 (RAD518979) and DOC/NCC in 2010 to meet consent conditions for the weir at Orphanage (Hydrology) Recorder site. The Cawthron report indicated that the range of fish species recorded from the Whakatu Drive to upstream of the flow recorder site indicated that fish passage was not a significant issue. However, fish passage over the larger Main Road Stoke weir may only occur under slightly elevated flow conditions. The DOC report indicated that fish passage occurred. Recommendations from the survey resulted in minor changes to the rock substrate at the base of the weir to raise downstream water level height to improve fish passage at low flow and check mitigation effectiveness with survey March-April.

The Stoke Stream Rescue Project 2010/12 is a Council initiative funded by MFE. The aim of the project is to raise awareness about the value of local streams, through community meetings, school visits and change attitudes that will foster ownership and respect for our urban waterways. Outcomes of the project will be preliminary catchment management plans for four streams (Orphanage, Jenkins, Saxton and Poorman Valley), publications and actions to improve water quality and habitat.

A comprehensive assessment of aquatic habitat values and enhancement options for the four Stoke Rescue Project Streams was undertaken by DoC in 2011 (RAD1166187). The report also provides a model for using inanga habitat as a focus for aquatic enhancement actions and framework for building on existing Council initiatives and community interest and promoting a sense of ownership that leads to long term care of our waterways.

Stoke streams, and other waterways feeding the Waimea Inlet, were also surveyed in 2011 for spawning inanga (RAD 111894). The DoC report contains some recommendations on future spawning survey work and potential habitat protection projects for the multi-agency Waimea Inlet Strategy/Forum. It is envisaged that the Waimea Inlet partners will collaborate to investigate prioritising work and resourcing opportunities and engage assistance from local communities/schools where appropriate and consider establishing local streamcare groups.

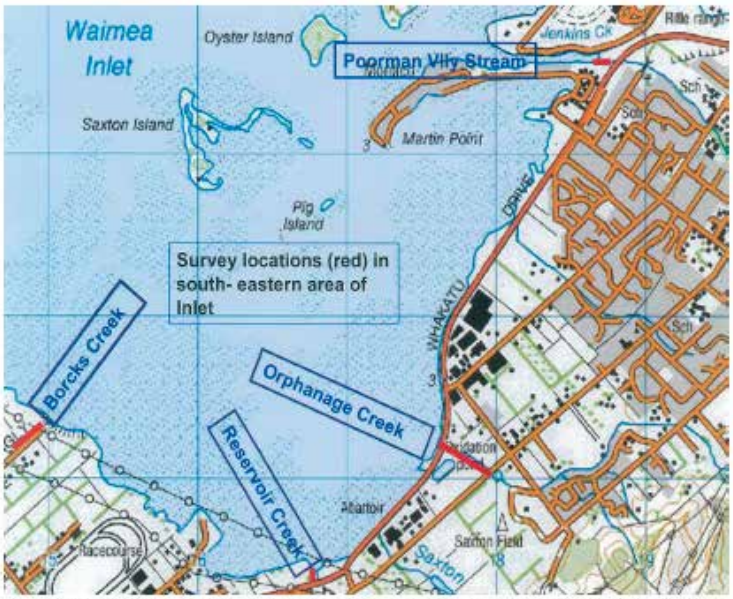


Fig. 13 Area surveyed for inanga spawning in 2011marked red (from Rutledge 2011)

Flooding of Nelson in December 2011 and the associated land slips and erosion of river banks has resulted in accumulation of gravel and changes in the morphology of urban waterways that are not consistent with the required Q50 flood capacity. Council has commissioned remediation works to remove excess gravel from river beds along urban waterways. This work requires fish to be removed prior to gravel extraction. Modifications to the river bed and banks are undertaken in consultation with an ecologist to ensure fish habitat is not compromised.

Water Flows and Domestic drinking water supply

The 2010 SOE report outlines the rationale for the minimum flow levels in the NRMP as follows:

The river and stream hydrology monitoring is used to determine minimum flows and allocation limits, which are listed in the NRMP along with water quality classification for each river or part of a river. The overall quality of each site is based on water chemistry, habitat and biological factors. Guideline values that specify levels of contaminants of various values/uses of our water ways and biological indices, which were calculated from the communities of aquatic insects, algal slimes found at each site, also tell us about overall water quality at a site.

The NRMP includes rules regulating minimum flows and allocation limits in the various rivers and streams of Nelson City. Water takes have to stop if the flow levels go down to minimum flow levels.

The minimum flows for the smaller foothills rivers (the Teal River, The Lud River and the lower wakapuaka River) are set at the 1 in 5 year (7 day) low flow. This means that the lowest 7 day continuous flow a river is expected to get on average once every five years.

The upper Wakapuaka and the Whangamoa River minimum flows are set at the higher level of Mean Annual Low Flow (MALF). This means the lowest flow in a river is expected to get on average once a year. This is due to the relatively low level of abstraction, and the rivers high conservation values.

The allocation limits for the rivers set a limit on how much of the total flow can be taken out for out of stream uses. This varies between 10 and 33 per cent of the five year low flow, with the rivers with least abstraction (such as the Whangamoa) having the lowest allocation limits. Domestic water takes up to 1,000 litres per day from surface water are permitted activities for properties not included within the reticulated supply. There is currently no requirement for these takes to be metered so the cumulative take from catchments is unknown and cannot be accounted for when flow measurements are taken, and regulation of takes during minimum flow periods is difficult to enforce.

The minimum flows and allocation limits for the Roding and Maitai Rivers were set as part of the urban water supply resource consents.

The main recorder sites and summary flow characteristics are provided below:

Table 5.5 Summary Flow Statistics for Larger Nelson Rivers and Streams.

Recording Site	Minimum flow (m^3/s)	Maximum flow (m^3/s)	Mean flow (m^3/s)	Date of maximum flow	Length of record
HY Collins at Drop Structure	0.021	72.524	0.528	22/1/76	From 4/3/62 to 17/3/09
HY Wakapuaka at Hira	0.165	204.323	1.291	23/2/95	From 8/8/78 to 1/5/08
HY Maita South above Old Intake	0.076	59.922	0.802	23/2/98	From 12/5/95 to 7/7/08
HY Maitai at Forks	0.140	168.578	1.378	1/7/98	From 7/3/97 to 30/4/08
HY Maitai at Girlies Hole	Null*	294.637	3.066	23/2/95	From 25/1/86 to 30/7/08
HY Maitai at Avon Terrace	0.046	162.107	1.711	15/4/08	From 12/11/04 to 14/8/08
HY Orphanage at Ngawhatu	0.001	25.323	0.058	23/5/07	From 3/5/04 to 15/4/08
HY Roding at Skid Site	0.135	237.048	1.563	23/2/95	From 22/2/95 to 21/5/08
HY Roding at Caretakers	0.029	152.445	1.340	23/5/07	From 13/2/01 to 21/5/08

*Note: Maitai at Girlies Hole does not record low flows

Table 5.5a Summary statistics for the small stream logger sites.

Recorder Sites	Area (km^2)	Mean Flow (l/s)	MALF (l/s)	5 Year Low (l/s)
Hillwood Intake	0.5	20.8	2.7	2.0
Teal Upper	13.8	375.9	95.9	77.5
Lud Upper	2.2	54.0	10.5	7.6
Lud Lower	9.4	131.9	23.2	16.0
Todds Valley SH6	5.1	29.7	2.3	0.8
Todds Valley Upper	1.6	13.5	1.2	0.5
Wakapuaka at Duckpond Rd	13.4	775.0	204.7	167.2
Poorman at Barnicoat	2.9	101.2	15.3	12.7
Jenkins Creek Upper	3.7	46.2	0.6	Dry

These summary statistics illustrate a number of characteristics of Nelson Catchments:

- Extreme storm events in 1995 and 1998 in a number of catchments (below: top photo, Flooding of the Wakapuaka River 1995; bottom photo, Flooding of the Glen Flats 1998)

- Extreme low flows can occur during dry periods, with 2-5% of the mean flow. This can result in small streams drying up
- Extreme high flows can occur during flood events due to very intense rainfall. For example, the 23 May 2007 storm event delivered 65mm of rain within the first hour and a total of 108mm over 12 hours. The flood peak was more than 400 times the mean flow.
- Intense rainfall can be very localised. The 23 May 2007 event resulted in 108mm of rain in the Orphanage Creek catchment, but only 47mm of rain in the central city (St Vincent Street) and about 58mm in Appleby
- The short record available from any recording sites make it difficult to reliably estimate the frequency of extreme events
- Managing low flows is important to protect in-stream values due to impacts on animal and plant habitat reduction, water temperature increase and dissolved oxygen increase
- Monitoring is critical to determine when water takes should stop
- In Nelsons smaller rivers the mean flows range between 13.5 litres/second at Todd Valley Upper and 775 litres/second at Duckpond Road along the Wakapuaka River, which generally reflect the size of the sub-catchment.

The Nelson reticulated water supply is sourced from the Maitai South Branch and Roding Rivers. Standing water from the Maitai Dam reservoir (referred to as the 'backfeed') enters the Maitai South Branch at the foot of the intake weir to replace water the water abstracted. Consent conditions apply to maintain summer and winter **minimum flow requirements**, water temperature, turbidity, dissolved oxygen and heavy metals (iron and manganese). Flows are measured on the South Branch 20 metres upstream of the intake/backfeed weir and at the Maitai Forks. Water quality, periphyton and fish monitoring is undertaken at an upstream control site (above intake) and 200 metres upstream of the Maitai Forks (referred to as 'Site B'). A series of Maitai River South Branch **consent compliance** reports have been prepared annually by Cawthron since 1996.

Maitai River

Council commissioned a new water treatment plant including upgrades to the monitoring system in August 2004. A review of existing information on the state of the Maitai River (Report 857, RAD 606364) was published in September 2004, highlighting that high algal biomass occurred throughout and that quality in macroinvertebrate communities decreased downstream along the main (Maitai) stem. The review recommended a catchment approach within the context of a broader plan, to ensure that the outputs of smaller

projects can be linked or combined to provide more information and value for money. Some of the issues raised have been investigated further (river flow habitat condition and nitrates) and addressed by changes in water management and consent. Analysis of **habitat flow conditions** for trout habitats in the Maitai River (RAD 796989) suggest that factors including low flow may be limiting trout population. The invertebrate food supply for fish are depressed and periphyton proliferations and siltation are contributing to poor quality habitat conditions for invertebrates. These factors represent a significant reduction in food supply for drift feeding fishes such as trout. Other metals present in the Upper Maitai may also be having an impact. **High nitrate concentrations** and conductivity in Sharland Creek was investigated by Cawthron (RAD 519798). Inputs of nitrogen and the compounds causing high conductivity water appear to come from diffuse sources throughout the catchment, but in particular, from around the upper and mid reaches of Sharland Creek. Possible sources, such as inputs from extensive tracts of recently logged/young exotic forest and inputs from underlying bedrock, were considered, but no single source was apparent. Maitai River nitrate-N concentrations were consistently higher downstream of Sharland Creek, and nitrate-N loads from Sharland Creek were at least double those coming from the entire Maitai catchment upstream, resulting in dramatic increases in loads downstream. The high turbidity / poor clarity water entering the Maitai River from Sharland Creek reduced water clarity in the Maitai River and is also likely to have increased loads of fine sediment in the substrate downstream, particularly at high flow. In contrast, any impacts on conductivity and pH were minor and relatively uncertain, and there was no evidence of any impact on bacteria concentrations. A number of projects listed have not been undertaken but could be considered for the proposed Maitai Catchment Management Plan (e.g. **impacts of various land use and river works (maintenance) practices on instream sediment loads and ecosystem health**).

Biological monitoring of the Maitai River for the water supply reservoir was first undertaken in 1982 (referred to in Stark 1990, RAD). Council applied for a variation in 1988 to change the water temperature condition that was limiting the ability to provide water quality of a consistently high standard. Cawthron were commissioned to undertake a detailed investigation of **macroinvertebrate and fish communities** in relation to **water temperature** in 1989, to provide a technical recommendation (RAD 792238). The report concluded that fish and macroinvertebrate communities were healthy and were generally indicative of relatively clean and unpolluted conditions; with similar communities as existed in 1982-1983 (prior to the establishment of the Maitai reservoir). Moreover, that operation of the water supply was likely to reduce extreme temperatures in the Maitai River, which could be more beneficial to fish further downstream. The 2005-2006 Maitai consent compliance report published in July 2007 (RAD 795789) highlighted for the first time a **long term (trend) decline in macroinvertebrate communities** since monitoring commenced in 1989.

Cawthron highlighted the potential for **metal contamination and toxicity to aquatic life** in the Maitai River from elevated manganese concentrations (RAD 993634). Low dissolved oxygen levels approaching the consented limit were recorded from the Maitai reservoir discharge in April 2010, and were probably present (not recorded through instrument failure) through to June (RAD 1003850). Anaerobic conditions in the deeper layer of the Maitai reservoir during late summer-autumn produce a form of manganese that is soluble and more toxic to aquatic life. The occasional elevated levels of manganese discharged to the Maitai River indicate a moderate chance of direct or chronic toxicity to aquatic life. However, other metals present in the upper Maitai catchment may also be discharged at environmentally significant levels and potentially encourage the dominance of potentially toxic cyanobacteria over diatom-based communities. However, monthly water quality sampling in 2010-2011 (RAD 1225323) indicated

that consent conditions for turbidity, iron and manganese concentrations were not breached. Dissolved oxygen concentrations were high on all sampling occasions during the 2010-2011 monitoring. A series of continuous water chemistry measurements will be taken in 2011/12 to track the onset of water temperature stratification and breakdown of the thermocline in the Maitai reservoir. It is anticipated that this information will be analysed (via 2012/13 Envirolink funding) in conjunction with historical consent biomonitoring data to investigate the relationship between temperature, dissolved oxygen, heavy metal, periphyton and invertebrate communities.

Roding River

Nelson's water supply is augmented by water intercepted from the Roding River via gravity fed line from a six metre high concrete weir. Regular consent monitoring of water quality including macroinvertebrate and fish communities has been undertaken by Cawthron since 2002 (this consent monitoring is referred to in RAD 795580).

In 1995 Cawthron assessed the Benthic macroinvertebrate and fish communities in the **Roding River** and their **minimum flow requirements** (RAD 792771). The study concluded that at low flows, predominantly poor habitat was available for macroinvertebrates and brown trout. The fish and macroinvertebrates found in the Roding River occur throughout the region and the recreational value of the trout fishery was very low. Furthermore, the opportunity to enhance the existing values, at least for trout, was limited owing to the limitations imposed by natural flow regimes. High water temperatures may also be impacting on fish populations, particularly brown trout.

The consent for the Roding water supply operation was renewed in 1999 subject to certain conditions, including that a wetted zone be present at all times on the face of the weir to facilitate fish passage by eels and other native fish. Cawthron reported (RAD 794132) that the weir had no (detrimental) effect on the distribution of migratory native species but the numbers of these species achieving passage was unknown. Modifications to the face of the weir were undertaken to create a 'fish climbable face' under high and low flow conditions.

Monitoring of the Roding and Maitai river flow is undertaken by TDC (under contract) to enable Council to manage flows within the consent conditions and maintain environmental flows.

Stormwater Discharge Contamination

The Nelson City Council Resource Consent No. 075499, covering the discharge of stormwater to freshwater requires that three of six listed catchment types are sampled annually so that all are monitored once every two years. The Consent also requires that a Stormwater Monitoring and Management Programme (SMMP) be established. Sampling for the Consent was carried out at four sites in 2010 (RAD 990935) and remaining two sites in 2011 (RAD 1170662). The reporting also established monitoring objectives in reference to Appendix 28.5 of the Nelson Resource Management Plan (NRMP) as required by Condition 8 of the Consent. Four of the catchment type examples match those for which relevant historical stormwater quality data exists (RAD 519877). Generally there were higher levels of metals and nutrients for 2010 compared to 2004, and the changes in metals concentrations tend to suggest an association with particulates (Total Suspended Solids).

Stormwater discharge to freshwater is also monitored at eight catchments every three years to assess changes in sediment composition and accumulated contaminants along Nelson's waterways. Significant contamination by both heavy metals and semi-volatile organic compounds was found at four sites in the lower Jenkins, middle York and lower and lower-middle Maitai catchments (RAD 954596). Results from these sites indicate significant sediment contaminant accumulation associated with both residential sources and inner city stormwater runoff.

Contaminant sources from industry have been assessed through audits of private stormwater and sewer sumps at industrial areas and consent monitoring relating to the York Valley land fill.

The Cawthron report (RAD 5221100) describing contaminant levels in stream sediments of the Tahunanui industrial area sampled in February 1996 concluded that:

- At two Arapaki stream sites at Pascoe Street, the greatly elevated concentration of a number of contaminants relative to other sites suggests a significant point source, rather than a diffuse source of contamination.
- Contaminant levels in Maire stream, particularly the concentrations present at (Parkers Road residential) indicate high levels of contaminants may be entering the waterway in the industrial area.
- The contaminant levels present in Arapaki and Maire streams have the potential to exert a detrimental effect on the stream ecosystem.
- Jenkins creek and the Nayland Road drain were relatively free of the contaminants investigated.

Overall, the levels of contamination present could have some impact on stream ecology *(in the Tahunanui industrial area and downstream environments*). However, the modified nature of the waterways investigated means few areas are likely to support significant aquatic life at present or have a high habitat value even in the absence of significant contamination. Factors such as sulphide levels in sediments, variation in water flow, high suspended solids loads, and the absence of riparian vegetation, will greatly degrade the natural habitat value. Minimising the input of contaminants to these waterways would be an important step in increasing overall water quality. However, changes to other environmental parameters may be more effective in terms of improving conditions for aquatic life.

An investigation of the "Contaminant Levels in Stream Sediments: York Industrial Area", was undertaken by Cawthron in 1998. The report (No.436) highlighted the widespread presence of both PAHs and copper, lead and zinc; contaminants commonly reported in stormwater, which suggested that road runoff is the most likely source of the contaminants detected. There was no evidence of significant point sources of contamination from the industrial area. An audit of industrial and business sites and a public education campaign to raise awareness about stormwater were recommended as the most effective means of ensuring that ongoing and future contaminant inputs are minimised.

The York Stream Vanguard Street Environmental Survey and Audit 1998 (RAD) concluded that stormwater interceptor traps receiving wastes from industry are not regularly maintained or checked. Private sumps are in a poor state and not maintained. Both result in fine particulates any grits with contaminants discharging directly in to the stormwater system. Council staff have also observed local residents disposing of green waste direct to York stream.

The Tahunanui Stream Care Project (RAD 983208) was undertaken in 2005 and was an Audit and questionnaire of commercial business in the Tahunanui industrial area led by Peter Lawless. The purpose of the project was to reduce the adverse impact of industrial activity on streams in the Tahunanui area by gaining voluntary improvement in site management practices. In 1996 more than half (59%) of industrial sites in Tahunanui did not have the oil interceptors they needed to prevent pollution. The report concluded that 90% of all Tahunanui sites would breach rules relating to stormwater discharges to freshwater in the proposed Freshwater Plan. Pollution prevention plans (requirement of Stormwater bylaw) will capture initiatives relating to increasing awareness and understanding by site managers of their implications on of their practices for steam health, effective regulation and enforcement. However, few (if any) of these plans have been received from site owners and the key recommendations from the report have not been implemented:

- prepare a management plan for Jenkins and Arapiki stream catchments setting out clear goals for the streams and a plan for remedial action (specific to industrial practices);
- engage the Tahunanui site managers in the planning process and use this as a basis for increasing awareness and understanding by site managers of the implications of their practices for stream health;

- involve site managers in developing a good practical description of best practices as it applies to the stormwater management of the Tahunanui catchment;
- provide a process within the Council to integrate activity on stream health related matters.

Cleanfill and contaminated sites

The Councils regional land fill operation at York Valley has consent monitoring undertaken by Tonkin and Taylor Ltd. MWH New Zealand Ltd was engaged by Nelson City Council (NCC) to undertake a review of the York Valley Landfill Resource Consent Monitoring, which included the report prepared by Tonkin and Taylor Ltd: York Valley Landfill Annual Monitoring Report—July 2010 to June 2011. The review (RAD 1234589) relating to surface and ground water quality concluded that:

- The monitoring of the leachate quality was completed as required under the relevant resource consent conditions; although no quality limits are imposed by the Resource Consent (975261). The leachate quality was summarised to be of a similar quality to that previously measured at the site.
- Several semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) were detected in the April 2011 leachate sample. In all cases the leachate concentration was below the Australian and New Zealand Environmental Conservation Council 2000 (ANZECC 2000) guidelines for protection of aquatic ecosystem from toxicity (95% trigger value) guideline, or where there is no guideline, the concentration is within the range of historical measurements.
- Parameters analysed as leachate indicators (chloride, boron, ammonia-N, conductivity) were elevated in groundwater wells MW4A, MW4B and MW5C compared to other wells on site. Some explanation is provided in regard to these results. Further assessment of the leachate drainage system at the toe of the landfill to investigate possible improvement for the system which may prevent further leachate contamination is proposed. Zinc and Total Organic Carbon (TOC) were elevated (in MW5A) above the trigger levels in April 2011. Although some explanation is offered, no further investigations or actions are proposed in the monitoring report.
- Concentrations of manganese and magnesium were elevated in well MW4B, which is consistent with values recorded in 2007-2010. Manganese and magnesium concentrations have continued to increase over the past four years, with the September 2010 readings the highest since monitoring began in 1998. No explanation or hypothesis for the increase in magnesium concentration was provided within the monitoring report. Magnesium levels in MW4A and MW5C were consistent with those recorded in previous years.
- No SVOCs or VOCs, or organochlorine pesticides were detected in groundwater. The monitoring and inspections of the York Valley stream adjacent to the site were conducted as per the resource consent conditions. No SVOCs or VOCs were detected within York Stream samples during December 2010.
- Concentrations of iron at the downstream monitoring location exceeded the New Zealand Drinking Water Standards (NZDWS) in both December 2010 and June 2011. Concentrations are consistent with previous years and were reasonably similar at the upstream location. The guideline for iron is stated as aesthetic only.
- The consent monitoring report states that chloride and nitrate are slightly elevated downstream (vi) but similar to historical results and lower than the upstream site (iv). Similarly, concentrations of magnesium and manganese were lower at the downstream monitoring site compared to upstream, indicating that the landfill operations are not adversely impacting surface water quality.
- Suspended solids monitoring was undertaken during site inspections following heavy rainfall. Three of the 46 results exceeded the consent limit during the reporting period. It is not made

clear in the report if Nelson City Council was notified at the time the exceedances were recorded. The monitoring report states that the exceedances were caused by stormwater runoff over steep deforested terrain in Gully 2 upstream of the landfill. Tonkin & Taylor have conducted a review of this instability and provided recommendations on remediation works.

- Conditions E(6), E(7) and G(6) of Resource Consent 065160 require that the quality of stormwater discharge from the landfill shall be characterised at the outlet to the stormwater treatment ponds. It is suggested in the monitoring report that results indicate there is no evidence of any landfill activities adversely impacting stormwater quality as suspended solids in stormwater have historically been elevated. No further discussion is offered in the monitoring report as to the reason for these elevated suspended solids results.
- No organonitrogen or organophosphorus pesticides or other landfill leachate indicator parameters were detected within the stormwater samples during the December 2010 monitoring round.
- The December 2010 results show water hardness, alkalinity, bicarbonate, calcium and magnesium higher than previous years results, however the June 2011 results were consistent with historical values (prior to December 2010), confirming the elevated results were not persistent. It is not clear what caused these elevated results.
- Conductivity readings were reported to have been undertaken in line with the resource consent condition with no readings exceeding the trigger level of 270 ps/cm during the report period, with readings typically between 160 and 220 ps/cm. However MWH noted that the conductivity reading during the December 2010 monitoring round was recorded at 530 ps/cm which is an exceedance of the trigger level and consequently a non compliance.

Gibbons Holdings operate a landfill site above the Council managed York Valley site. The sole users of the site are Waimea Sawmillers Limited and Gibbons Construction Limited. A resource consent (115166) application was lodged in July 2011; the application is on hold until further information is received from the applicatant (April 2012). Environmental monitoring data (included in the consent application) was provided for 1996, 2006 and 2007 and summarised in the Pollution Prevention Plan. Water samples were analysed from York stream above and below the landfill site and from leachate at the base of the tip; describing pH, chemical oxygen demand, suspended solids, tannin like compounds, boron, iron and lead. Based on three sampling events over the 11 year period, the Plan describes a positive trend for all of the analytes, commenting that the improvement in stormwater quality as a direct result of responsible site management.

A proportion of Nelson's coastal reclamation in the Port and the Wood area include capped land that was once used for landfill. There is potential contamination from degrading infill materials, in-situ over decades, leaching to groundwater and surface water. No monitoring occurs at these sites.

Environmental Investigations Limited has responded to complaints relating to cleanfill sites and will monitor compliance of waste composition at cleanfill sites not requiring resource consents. A register of contaminated sites, including old landfill sites, will be classified under the Hazardous Activities and Industries List to ensure the sites are appropriately classified and documented.

Port Nelson Limited Long Term Monitoring Programme

A freshwater (marine tidal influenced) site on the lower Maitai and Saltwater Creek, downstream of York Stream industrial area along Vanguard and St Vincent Streets was included in the Port Nelson Limited monitoring programme on sediment quality and aquatic ecology in 1996/97. Elevated contaminant levels were noted in Saltwater Creek (site NCC2). The 2011 monitoring report (RAD 1090840) commented that Saltwater Creek had the highest cadmium in sediment metals levels of all sites, for benthic samples. However these levels were only marginally above detection limits and

below ANZECC trigger levels. Zinc levels exceeded the ANZECC (2000) guideline criteria for Interim Sediment Quality-Low at this site and two others. The Port Nelson Limited monitoring programme is a rolling programme which takes 4-5 years to complete the sampling and analysis across all sites. As has been outlined in the overall schedule for the Long Term Monitoring Plan, it is the intention to provide a comprehensive multi-year analysis of the data in 2014.

SUMMARY – FRESHWATER

The NRMP freshwater provisions are relatively new compared to the rest of the NRMP as they became operative in 2007. A lot of the monitoring data above relates to consents that were issued prior to this date and yet these will have an impact on the results monitored today. Nevertheless water quality monitoring information is still showing a downward trend in some streams since the freshwater provisions have been in place.

While the NRMP has a broad suite of rules to manage freshwater it is clear from the monitoring information that these rules alone are not effectively achieving freshwater objectives, in particular objective DO19.1 and associated policies that seek that all surface water bodies contain the highest practicable water quality with a minimum grade of C.

Monitoring information suggests that water quality objectives are currently not being achieved as nine of the 28 sites monitored in 2011 had degraded water quality (below the moderate C grade). Four sites, the upper and lower Lud, Sharland and Groom have declined in water quality from grade C to D or E since 2007 (the lower Lud returned to grade C in 2011). Monitoring of landfill and contaminated sites suggests that improvements are needed to effectively manage water quality contamination.

Three (Wakapuaka at Hira, Paremata Flats Reserve and Maitai at Collingwood Street Bridge) of the eight freshwater recreational bathing sites historically have high bacteria counts and were identified as "Very Poor" in 2010/11. A long term decline in fish and invertebrate communities, high nitrate levels, and reduced water clarity has been identified in the Maitai along with potential metal contamination and toxicity to aquatic life in the Maitai, Jenkins, and York streams. It has also been identified that stormwater discharges from the Tahunanui industrial area would breach NRMP discharge standards and discharges at Buxton Carpark, Collingwood Street, Bolt Road, and Bronte Street have had increased levels of metals and nutrients.

It is also clear from the stream flow monitoring information above that flows are susceptible to extreme events. The Freshwater NPS requires that we incorporate the foreseeable effects of climate change into our planning for water-takes. Ongoing monitoring of water levels and records of the need to stop water takes are important as is the need to plan for further extreme events in the future.

A network of permanent hydrology recording sites provide real time flow records and rainfall data for Nelson's main rivers and one urban stream. This record of information, local knowledge, and the Low River Flow Process provides an effective tool to identify approaching minimum flow periods and also model information for resource management (e.g. assessing environmental flows) and utilities (e.g. flood capacity) planning. There is currently no requirement for metering permitted water takes (in rural areas with no reticulated supply). Consequently, the cumulative take from catchments is unknown and cannot be accounted for when flow measurements are taken, and regulation of takes during minimum flow periods is difficult to enforce. It is therefore important that a better understanding of water flows, levels, and extraction is gained to clarify whether the NRMP objectives are being achieved and to inform the Freshwater NPS integration programming requirements for 2030.

Consent monitoring of the Maitai reservoir has shown a long term decline in the invertebrate and fish community, immediately downstream of the backfeed from the resevoir. Further investigations are required to understand the cause for the decline in river ecology, with respect to the reservoir operations for the Nelson water supply and what can be done to improve it.

While work is underway to improve water quality in some of the urban streams with the poorest water quality as part of the Stoke Stream Rescue Project and through the development of the Maitai Catchment Management Plan, a comprehensive programme of work is needed to be identified by December 2012 to meet the requirements of the Freshwater NPS to indicate how Councils water quality targets can be achieved by 2030. Furthermore a number of streams that are of the poorest quality in the City are not included in these initiatives such as the Hillwood stream, Lud River, and the Wakapuaka River, which includes the Hira and Paremata recreational bathing areas.

Similarly, an integrated approach to landuse and water management is also required to address issues highlighted via monitoring information provided above (particularly stormwater discharges, sedimentation, and hazard and coastal management) to achieve both the requirements of the Freshwater NPS and NRMP objectives and to give effect to both the draft and operative objectives of the NRPS. This work should be considered alongside the Nelson Development Strategy so that future growth areas can be appropriately planned in an integrated manner. This will require inputs from key stakeholders, including Iwi and will be timely to inform the consideration of new water permits, particularly those that are due to expire in 2013, 2014, and 2017.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Establish a cross Council Freshwater working group with a focus on developing a work programme on how to achieve the Freshwater NPS
- Ensure that the Maitai Catchment Management Plan implements the Freshwater NPS by establishing how NRMP freshwater quality and quantity limits can be achieved, having regard to climate change, promoting the efficient use of water, and integrating landuse and freshwater management by anticipating and influencing future landuse change as part of the Nelson Development Strategy.
- Investigate further plan changes to implement the Maitai Catchment Management Plan
- Investigate water quality issues in the Maitai as part of the Maitai Catchment Management Plan including sewer leaks, dam discharge contaminants, and sediment sources.
- Monitor and enforce the NRMP stormwater provisions
- Investigate Nelson's groundwater resource so that it can be appropriately managed
- Contact forestry companies and landowners to ascertain when and where forestry areas are planned to be logged to help determine the potential for future freshwater impacts
- Investigate the causes and actions needed to address contamination in the:
  - Wakapuaka, Lud, and Hillwood streams (high bacteria and nitrates)
  - Lower Poormans stream (high nitrates and poor aquatic animal score)
  - Lower orphanage stream (high nitrates, turbidity, bacteria and poor aquatic animal score)
  - Jenkins stream (high bacteria, nitrates, and turbidity).

In the medium to long term:

- Complete catchment management plans for the remainder of the City
- Investigate further plan changes and other methods to implement Catchment Management Plans.

In general:

- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

THE COASTAL ENVIRONMENT

NATIONAL POLICY DIRECTION

The preservation of the natural character of, and access to, the coast is a matter of national importance. The control of the Coastal Marine Area (in conjunction with the Minister of Conservation) and aquaculture is a core function of regional councils. In 2005 amendments were also made to expand regional functions to include (in conjunction with the Minister of Conservation) the establishment of rules in a regional coastal plan to allocate the taking or use or heat or energy from open coastal water and allocate space in the coastal marine area under part 7A of the RMA. The 2011 aquaculture amendment effectively did away with Aquaculture Management Areas which means that aquaculture applications will be assessed via the standard resource consent process.

The NZCPS 2010 replaced the 1994 NZCPS that was in place at the time of notification of the NRMP. Local authorities must amend regional policy statements, regional, and district plans to give effect to the NZCPS 2010 as soon as practicable. The NZCPS includes seven objectives and 29 Policies that cover matters such as:

- the extent of the coastal environment,
- the need to preserve the natural character of the coastal environment and protect natural landscape values
- Identifying those areas where various forms of subdivision use and development would be inappropriate
- recognition of infrastructure including ports,
- strategic planning around the location of growth,
- renewable energy,
- protection of biodiversity,
- provision for aquaculture, public open space, and pedestrian access,
- control of vehicular access, sedimentation, and discharge of contaminants,
- enhancement of water quality,
- management of coastal hazard risks, and
- the removal of restricted coastal activities.

These policies and objectives are discussed in further details in the relevant topics below.

The NPS Freshwater also includes objectives that seek the integrated management of freshwater and the coastal environment.

The NZCPS 2010 and NPS Freshwater also reinforces Māori participation in decisions relating to the coastal environment and water matters.

RMP'S POLICY DIRECTION

NRPS objective CO1.2 supports the achievement of social, economic and cultural needs of the community within the coastal environment while ensuring a high level of protection for the natural character and natural and physical resources associated with the coast. It is anticipated that the level of protection given to the coast will reflect the RMA and NZCPS, with the maintenance and enhancement of public access to and along the coast and appropriate future development, being provided for.

The NRPS identifies the potential adverse effects as a result of the development of aquaculture as a key issue in the coastal environment. Policy CO1.3.10 states that the occupation of the coastal marine area for aquaculture should be provided where other policies are satisfied and where there is sufficient information to satisfy Council that adverse effects will be avoided, remedied, or mitigated. Other policies discuss the need to prevent development in significant areas (ecological, landscape, cultural, geologic), avoid sprawling development and cumulative effects, maintain and enhance public access, and meet water quality standards.

The Draft 2008 NRPS utilises objectives from the NRMP and seeks that public safety and access, amenity values, natural character, and the life supporting capacity of the coastal environment

is maintained and enhanced. Greenhouse gas emissions and climate change objectives acknowledge the need to be adequately prepared for changing climatic conditions due to sea level rise.

NRMP objectives DO7.1, DO7.2 and CM1-9 support the preservation of the natural character of the coastal environment from inappropriate subdivision use and development, maintain or enhance the life supporting capacity of Nelson's water quality and coastal ecosystems, amenity values, water quality and public access, protection of areas of significant indigenous vegetation, significant habitats of indigenous fauna and outstanding natural features, management of activities to facilitate natural coastal processes, minimise natural hazards, and avoid reclamation.

The description of the Coastal Marine Area in the NRMP provides a useful explanation around the provisions governing aquaculture (see CMd6 in Chapter 13). In summary, aquaculture is controlled by its constituent parts (occupation of space, placement of structures, disturbance of seabed, disturbance of contaminants, deposition of substances on the seabed, reclamation, Introduction of exotic species to Coastal Marine Area, and Maintenance activities). Aquaculture is treated as a discretionary activity throughout the Coastal Marine area to enable each proposal to be considered on its merits and subject to full public scrutiny.

Policy CM7.2 states that exclusive occupation of space in the CMA should not be granted, and constraints on public access should not be imposed, unless there is no practical alternative and the effects on public access would not be significant.

Coastal marine water quality standards are described relating to different classification areas as mapped. FEA involves Fishing, fish spawning, aquatic ecosystems, aesthetic purposes and applies over the entire coastal marine area. CR includes contact recreation and applies at Tahunanui, the Port (opposite the Cut), Haven, Cable Bay, Monaco, and the Glen beach. SG involves shellfish gathering in Tasman Bay between 10-40m depth. C is cultural values applying at Deleware Inlet.

Performance indicators CO1.8 measure the number, type and style of developments and activities locating within the coastal environment, trends in water quality, changes in public access to the coast, species number and diversity in the coastal environment, the preparation of water quality management plans and undertaking of water classifications within annual plan targets.

NRMP performance standards DO7e support maintained or enhanced water quality and natural vegetation and habitats and reduced building and development impacts as measured via water sampling, aerial photos, and Council and census records. CMe performance indicators reflect monitoring information such as Council records, flora and fauna population counts, fishing catch records, water quality data, vegetation quantities, CMA user surveys, GIS, consent and census data.

NRMP RULES

A number of activities are prohibited within the Coastal Marine Area including aquaculture structures in estuaries (see Map A1.3 below), disposal of hazardous substances, introduction or planting of Spartina, and the use or disposal of radioactive material over 1000 terabecquerels.

Other rules generally cover matters such as occupation and structures, disturbance, discharge, hazardous substances, along with general standards for noise, light spill, and heritage sites and buildings.

A number of matters require, as a minimum, a discretionary activity consent including deposit of material on the foreshore and seabed, the general discharge of contaminants, the discharge of human sewage, petroleum or chemical storage and the introduction of exotic plants.

Exclusive occupation, damage to or removal of vegetation, and drilling are non-complying in an Area of Special Conservation Value. The establishment of structures generally and impounding or containing structure and large solid structures, the dredging of foreshore and seabed, disturbance and deposit of material on foreshore and seabed, reclamation, and establishment of exotic plants are also non-complying activities where they are located with estuaries.

Subdivision is generally non-complying unless it is for the purpose of protecting a marine Area of Significant Conservation Value (ASCV). ASCV's are indentified in Appendix 4 and include Back Beach and the Boulder Bank as areas of international significance, and the Waimea Inlet, Nelson Haven, the Glen to Cable Bay, Deleware Inlet, Spit and Pepin Island, The Whangamoa Estuary, and the Whangamoa River mouth to Cape soucis as areas of national significance (see Map A1.2 below). Marine ASCV's provide for the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development, and the protection of indigenous vegetation and significant habitats of indigenous fauna in the Coastal Marine Area while the Conservation Overlay fulfils this role on land.

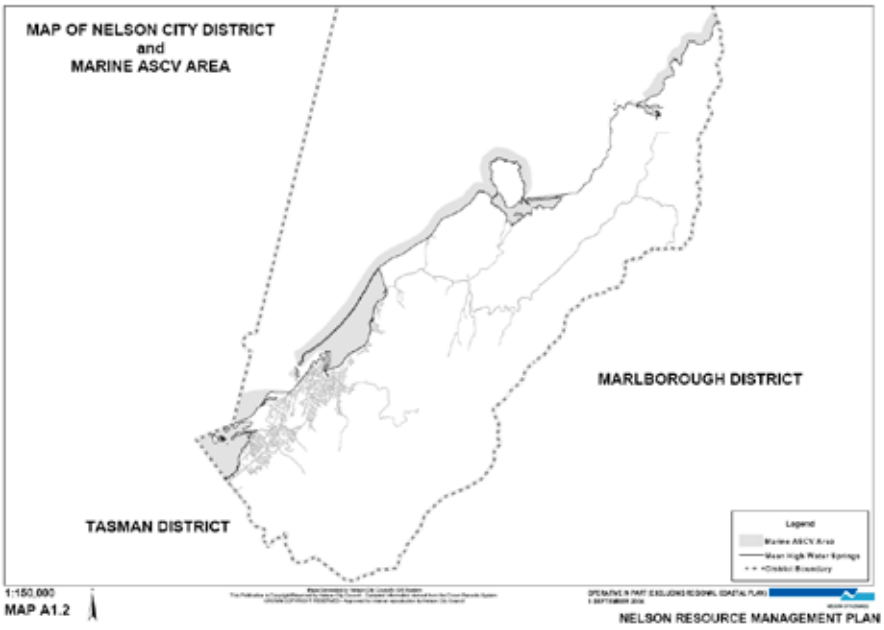
Rather than being managed as a specific activity aquaculture is managed in the NRMP by its constituent parts including:

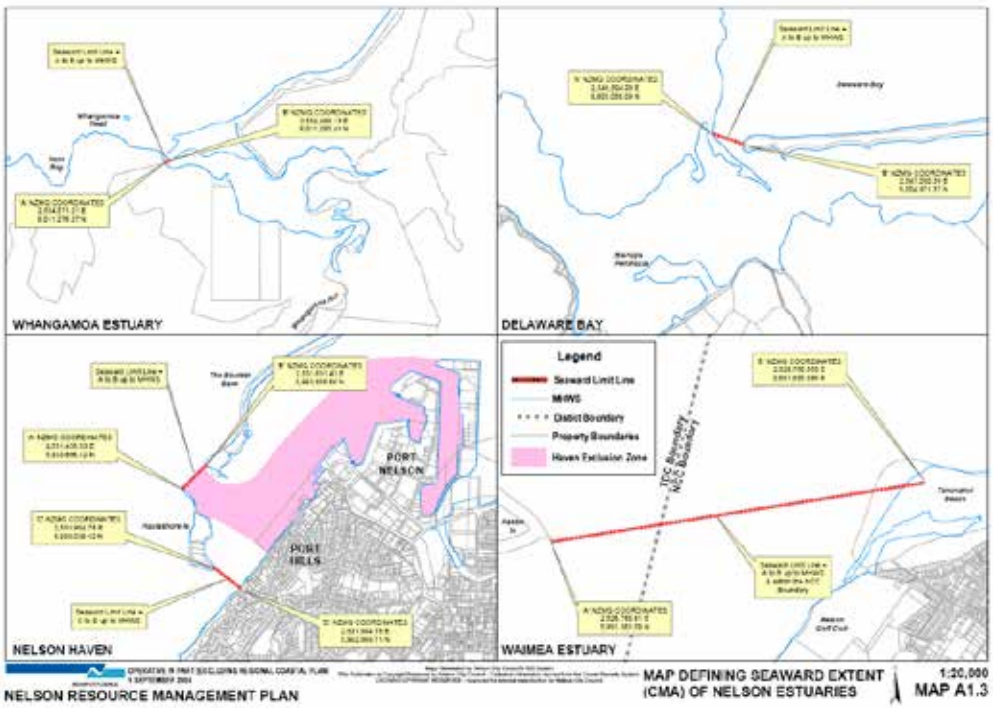
- Occupation of space,
- Placement of structures,
- Disturbance of seabed,
- Discharges of contaminants,
- Deposition of substances of the seabed,
- Reclamation,
- Introduction of exotic species to Coastal Marine Area, and
- Maintenance activities.

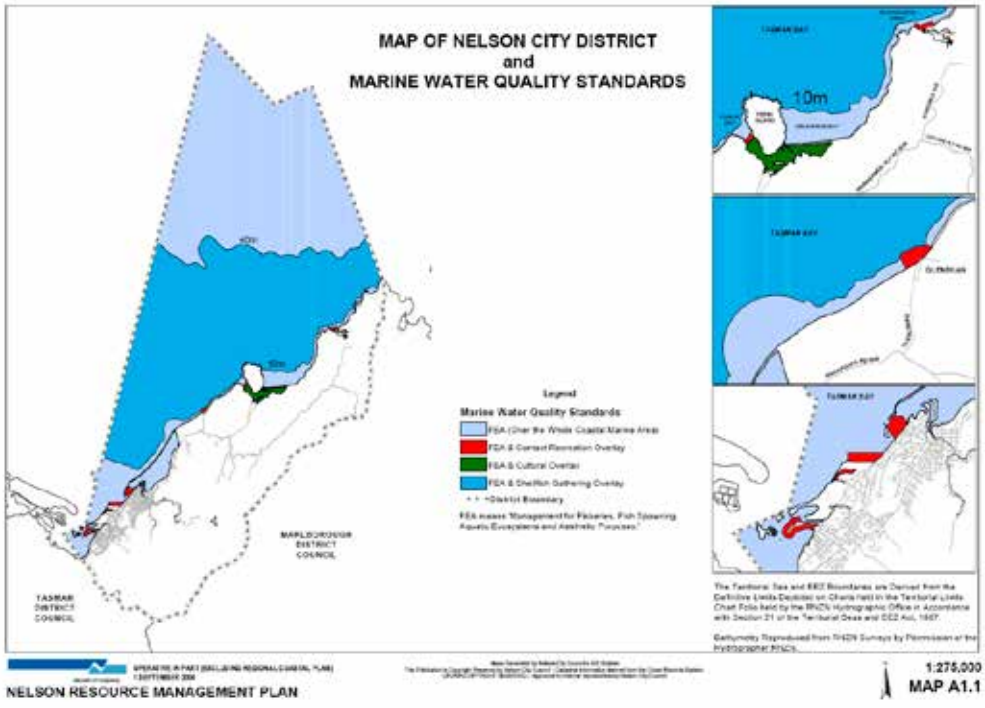
In this regard aquaculture is generally a discretionary activity. Aquaculture activities and development within estuaries (see Map A1.3 below) is a non-complying activity, apart from aquaculture structures themselves which are prohibited. Occupation of the Coastal Marine Area in an Area of Significant Conservation Value (see Map A1.2 below) is a non-complying activity. Discharges not meeting water quality standards (see map A1.1 below) will also be considered as non-complying activities.

The Coastal Marine Area description in the NRMP indicates that aquaculture is treated as a discretionary activity throughout the Coastal Marine Area given the high potential to conflict with other activities and values, the uncertainty surrounding the likely effects of different types of aquaculture in different locations, and to enable each proposal to be considered on its merits and subject to full public scrutiny. The description also notes that, in practice, opportunities for aquaculture in open coastal water in Nelson are likely to be limited by physical suitability (lack of shelter) and navigation constraints.

Land based aquaculture is also not specifically considered in the NRMP as this, like marine aquaculture, will also be managed by its constituent parts depending in which zone it is proposed to be located.







Restricted Coastal Activities are to be removed from the NRMP as a result of the 2010 NZCPS.

MONITORING INFORMATION

State of the Environment Reporting

Coastal matters have been reported in a number of the State of the Environment reports over time. The State of the Environment 2010 Report contains a 2008 snapshot of the Nelson Haven and the Waimea Estuary.

Nelson Haven and the Port Score Card 2008

Result	Score
Nickel was elevated at all sites tested during 2007, and usually above probable effects guideline levels. Levels were no higher than those recorded during previous monitoring rounds.	😐
With the exception of nickel, and consistent with previous monitoring rounds, sites where metal contamination exceeded guideline levels were the Lower Maitai, Saltwater Creek, Brunt/McGlashen Basin, and Kingsford Wharf sites.	😐
Chromium levels exceeded possible effects guidelines at the lower Maitai River and Brunt/McGlashen Basin. These levels are similar to those previously recorded at these sites.	😐
Copper and zinc concentrations at most sites were similar to previous recorded levels, with the exception of Kingsford Wharf, which had higher copper levels than those previously recorded but lower zinc levels.	😐
Lead levels were similar to those previously reported. The Saltwater Creek and Kingsford Wharf sites exceeded possible effects guidelines. Levels at Kingsford Wharf were slightly lower than those previously reported while those at Saltwater Creek were about 20% higher.	😐
Mercury levels were either lower than detection limits or, where detectable, had decreased since previous monitoring.	☺
Anti-fouling compounds including tributyl tin and its breakdown products dibutyl and monobutyl tin exceeded possible effects guidelines at sites monitored around the main wharves and marina basins but were lower than previously recorded levels. The presence of breakdown products suggests much of this contamination is historic and in the process of degrading.	😐
Two sites were tested for shellfish bio-accumulation during 2007. These were Main Wharf East and Dixon Basin. At Main Wharf East zinc, copper, and arsenic levels exceeded safe levels for shellfish consumption, while at Dixon Basin only arsenic levels exceeded those for safe consumption. It should be noted that these contaminents occur naturally in the Nelson area.	☹
Three sites were tested for sediment toxicity. These were Main Wharf East, Dixon Basin and Kingsford Wharf. No significant effect on amphipod survival was recorded for Main Wharf East or Dixion Basin but there was significant amphipod mortality at the Kingsford Wharf site.	☹

Waimea Inlet Score Card 2008

Result	Score
The total area of the estuary mapped in 2007 is slightly larger than it was in 2002, even allowing for changes in tide height or inter-tidal boundaries. It appears the estuary has grown through coastal erosion.	
The area of soft mud has increased between surveys suggesting the estuary may be progressively receiving more fine sediment. Fine sediment has also been noted as an issue in Nelson rivers and streams.	
Herbfields dominated by Glasswort (Sarcocornia quinqueflora) were significantly more extensive in the latest survey. This appears to be associated with habitats created by intertidal erosion.	
Areas of rushland (primarily Junctus marsh), tussock land, grassland and estuarine shrub covered areas seem to have grown slightly.	
Eel grass meadows seem to have decreased slightly although this appears to be a natural fluctuation.	
Removal of the causeway between Rabbit Island and Rough Island appears to have increased tidal flushing and led to local increases in biodiversity including establishment of sponge beds.	
A sponge bed extending over 4.8 ha and containing 69 separate species was located and mapped in the Monaco-Saxton Island channel.	
Re-survey of the four fine-scale monitoring sites showed them to be in a similar condition to 2002 – slightly enriched, but in a healthy state.	
The re-survey did not find any evidence of obvious pollution or nutrient enrichment.	
With the exception of nickel and chromium, which are considered to be naturally occurring, levels of contamination in the sediments were low and similar to other New Zealand estuaries.	
The abundance and diversity of creatures living in the sediment at the monitoring sites was similar to that of other New Zealand estuaries. The density of polychaete worms at one site suggested some enrichment but this was not consistent with laboratory analysis of samples from this site for organic or nutrient enrichment.	

The key points from the scorecards are highlighted below along with key exerts from other State of the Environment Monitoring reports.

- Surveys of the seabed in 1995 and 2005 show a growth in the sand spit at Blind Channel end of Tahunanui beach, a shallowing of the Boultons hole and the old harbour entrance at Fifeshire rock, erosion of the Blind Channel margin of the back beach, and flattening of the seafloor near rocks road.
- In 2010 the Waimea estuary had grown via coastal erosion and fine sediment redistribution and deposition following removal of exotic *Spartina* grass during the mid 1980s. Estuarine plant populations also increased, and monitoring sites were enriched but in a healthy state.
- *Spartina* was being controlled in 1999 and had almost been eradicated in 2003 whilst Undaria was not spreading in 2003 and was included in the Nelson/Tasman Regional Pest Management Strategy as a regional surveillance pest in 2004.

- Chemical contamination in the Port area was confined to three sites in 1999 at the Old Boat Harbour, the Slipway, and Saltwater creek and in 2003 these areas still had elevated levels of contaminant and that in 2004 satisfactory action had been taken to remedy this. However in 2010 it was identified that there was a trend of decreasing species diversity and abundance with increasing sediment contaminent levels and the Old Boat Harbour, Slipway Basin, and the Lower Maitai were areas of concern. Main Wharf East, Dixon Basin, and Kingsford wharf areas had issues in terms of safe levels of shellfish consumption.

Table 6.5 Contaminant Sampling Programme Nelson Haven

		Year:	1 2004	2 2005	3 2006	4 2007
	Site	Reporting:	Data	Data	Data	Full
Priority	PNL-1	Control West	◆	◇	◇	◇
	PNL-2b	Main Wharf West	◆	◇	◇	◇
	PNL-4	Brunt/McGlashen Basin	◆	◇	◇	◇
	PNL-9	Slipway Basin	◆	◇	◇	◇
Secondary	PNL-5	Wood-chip pile		◆		◇
	PNL-10	Sealord Wharf		◆		◇
	PNL-11	Dixon Basin entrance	◇		◆	
	PNL-7	Kingsford Wharf	◇		◆	
	PNL-3	Main Wharf East		◇		◆
Intertidal	PNL-1a	Control	⊛		⊛	
	PNL-8a	Slipway Basin east	⊛		⊛	
	PNL-8b	Slipway Basin west	⊛		⊛	
	PNL-12b	Dixon Basin entrance	⊛		⊛	
Priority	NCC-1	Lower Maitai	◆	◇	◇	◇
	NCC-4	Old Boat Harbour Slipway	◆	◇	◇	◇
	NCC-5	Control East	◆	◇	◇	◇
Secondary	NCC-2	Saltwater Creek		◆		◇
	NCC-3	Dixon Basin boat ramp		◇		◆
Intertidal	NCC-4	Old Boat Harbour Slipway	⊛		⊛	

Key to Monitoring:

◇ Basic Tier: -Sediment physics & chemistry (8 metals, Grain size & % organic)

◆ Comprehensive Tier: -Sediment physics & chemistry (8 metals, Grain size & % organic),
-Macrofaunal sampling (Identify & enumerate biota, 3 replicates),
-Sediment toxicity testing (Toxicity response, composite of 5 cores),
-Bivalve bioaccumulation (11 metals, SVOCs, organotins, lipids, 3 composite oysters),
-Sediment: SVOCs, organotins, tin

⊛ Intertidal Survey: -Identify & estimate relative abundance on shore, includes biosecurity checklist

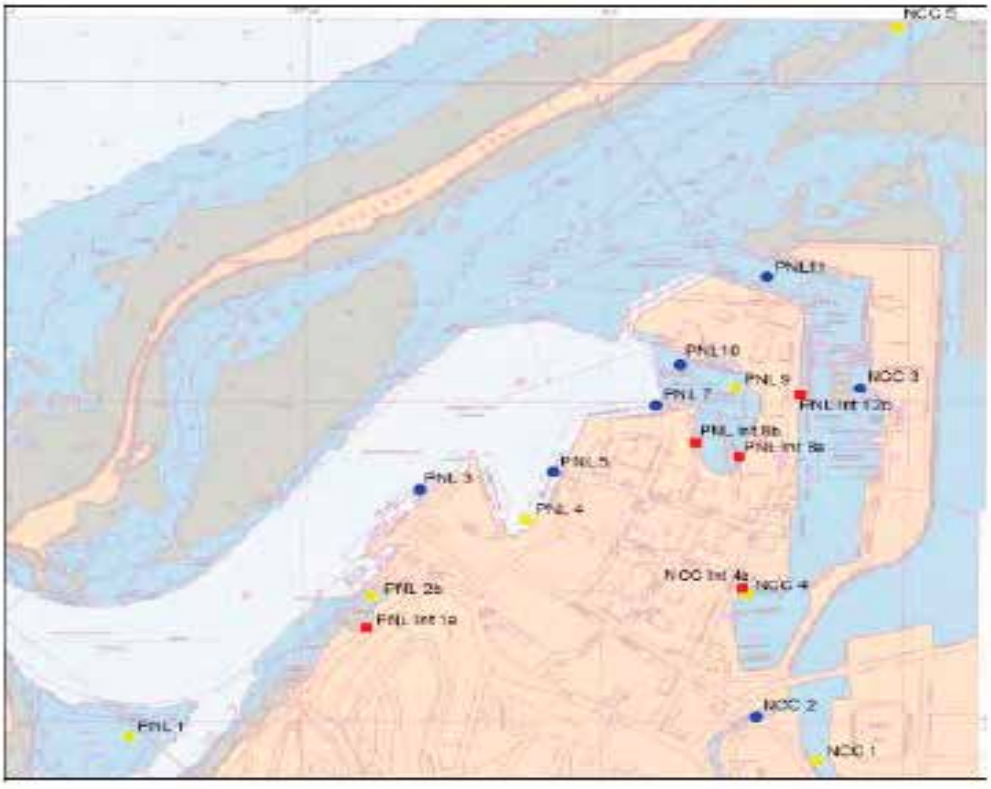


Figure 76.5 Contaminant monitoring sites Nelson Haven.

- No invasive species on the Biosecurity Check Lists were reported during the 2010 sediment contamination survey.
- The MFE Suitability for Recreation Grade for the four marine sites, Monaco, Tahunanui, Atawhai and Cable Bay is Good and has remained the same grade over the last five years of monitoring. Cable Bay is presently graded at Good-Fair because the primary Enterococci source, resulting in occasional elevated levels, has not been identified or fully explained (RAD 1094857).

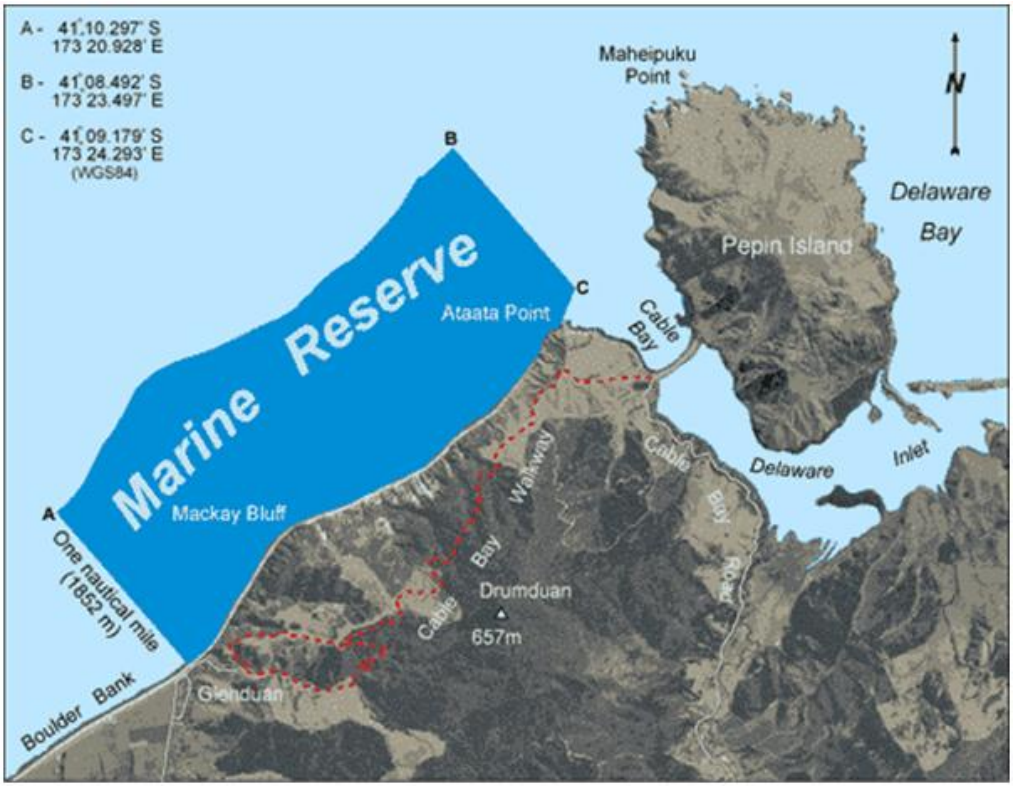
Tab. 1. Recreational Bathing Water Quality Results

Site Name	Bacteria grade 2007/08	Recreation grade	Bacteria grade 2010/11	Recreation grade
Tahunanui Beach	B	Good**	B	Good
Monaco Beach	B	Good	B	Good
Cable Bay	B	Good	C*	Good-Fair*
Atawhai	C	Fair	B	Good
Hira Reserve	D	Very Poor	D	Very Poor
Paremata Flats	D	Very Poor	D	Very Poor
Maitai Camp	C	Fair	C	Fair
Sunday Hole	D	Poor	C	Fair
Girlies Hole	C	Fair	C	Fair
Collingwood St Bridge	D	Very Poor	D	Very Poor

*2010/11 Cable Bay bacteria grade declined from B to C due to one elevated bacteria sample after rainfall. The primary source of bacteria is unexplained.

** Sites with grades Fair to Good are suitable for recreation most of the time. Exceptions may include after rainfall.

- In 2003 a taiapure had been established at Deleware Bay, and the Horiorangi Marine Reserve was proposed which came to fruition in 2006.



The Nelson Biodiversity Strategy Technical Report 2006 (RAD 467041)

The Nelson Biodiversity Strategy Technical Report provides a snapshot of Nelson Biodiversity. Below is a summary of the marine related matters:

Nelson City's significant estuaries are a portion of the Waimea estuary, the Haven, Delaware inlet, and the Whangamoa River mouth. These areas each contain a significant range of invertebrate species, fish species, and water bird (including some of the species identified above as being in decline) with Deleware inlet retaining areas of intact vegetation sequences from coastal forest through to sand flats.

The open waters of Nelson are the south eastern portion of Tasman Bay, one of the largest bays in NZ. The inshore waters and coastline include a varied but mostly rocky coastline, the unusual Boulder Bank, the Pepin Island tombolo, and sand dominated areas at Tahunanui, Deleware, and Whangamoa.

The Nelson City region inter-tidal and shallow near shore areas have been extensively modified by reclamation, sediment runoff from the land and fishing activity. In most cases communities of plants and animals that are sensitive to these changes have been replaced by communities that thrive in more disturbed sediment and nutrient laden environments. Recently exotic organisms are becoming more observed. Extensive development of the Nelson Haven has left it with little saltmarsh habitat. Historically, reclamation and port development has resulted in 40% of the intertidal area being lost with all of the eastern shoreline being modified by road development. The Horoirangi Marine Reserve has been established to provide for the recovery of plant and animal communities. The Wakapuaka taiapure covers the area from Ataata Point to Whangamoa Head, including cable bay and Pepin Island. The dredge dumping area at the western edge of the Council area will result in sea floor communities to be continually modified.

In summary Nelson retains a high level of marine biological diversity but the content and pattern of this diversity has been modified by human activity due to the effects of land run off resulting in nutrient rich sediment deposits in the near shore environment, removal of biomass and alteration of seabed habitat from fishing, dredging and trawling, and the introduction of exotic organisms.

Nelson Landscape Study Identification of Outstanding Natural Features and Landscapes and other Landscape Sensitive Areas for Nelson City Council – Boffa Miskell Limited 2005 515751

As noted in the Landscape section of this report a number of coastal areas have been identified as being of outstanding and significant landscape value.

OUTSTANDING NATURAL FEATURES

The Boulder Bank, Haulashore Island, and Fifeshire Rock have been identified as Outstanding Natural Features due to their geological significance, undeveloped nature, historical significance, landmark status and visual prominence. They are particularly sensitive to landform modifications, in particular vertical structures given their horizontal nature and wide viewing audience. Amendments to assessment criteria in the Conservation and Open Space Recreation Zones respectively are recommended to recognise their landscape value.

The northern coastline from Glenduan to Cape Soucis has been identified as an outstanding natural landscape due to the unmodified coastal environment, significant landforms and features, high natural coastal character, estuarine environments with significant conservation values (wide range of coastal vegetation), historical associations, and high amenity values. This area is particularly sensitive to forestry, aquaculture, subdivision, buildings and structures. It is recommended that all subdivision in the area, and earthworks and vegetation clearance be classed as a discretionary activity to more closely align with the Coastal Environment Overlay.

COASTAL MARGINS LANDSCAPE OVERLAY

The Boffa Miskel landscape report identified the coastal areas of the Nelson Haven from Maitai river mouth to Boulder Bank Road and Saxton Creek to Rocks Road as Coastal Margins Landscape Overlay areas. This classification is largely due to the areas having national and international ecological values (Haven, Tahunanui Back Beach, and Waimea inlet), natural and visual values, a high profile and visibility, recreational and amenity values and a dynamic shoreline and seascape. Visual amenity with vast horizontal surface and foreground views to Tasman Bay means visual sensitivity to all vertical structures as well as sensitivity to reclamation and modification of the shoreline due to the presence of industrial and infrastructure activities. The report

indicates that the current NRMP provisions are sufficient to control development in these areas generally although amendments should be made to recognise the landscape values of these areas.

Building Consent Data

A review of building consents issued for buildings between 1996 and 2011 indicates that of a total of 3852 consents, 5% (179) of consents were issued for buildings within the Coastal Environment Overlay, and less than 0.1% (9) in Areas of Significant Conservation Value, and 2% (89) were located within Coastal Margin Landscape areas identified by Boffa Miskell. Building consents within the Land Management Overlay, partly utilised to identify low lying sites vulnerable to sea level rise, made up 11% (a total of 407) of consents issued.

Hazards

In the Hazards section of this report it is indicated that further work is underway to map a broader range of hazards such as sea level rise and Tsunami followed by a review of building consent data to assess the level of risk and to inform future plan development. As noted above there is an increasing number of buildings being located on sites within the Land Management Overlay, which is utilised as an indicator that sites may be subject to sea level rise where they are located in low lying areas.

Coastal Access

GIS analysis outlined in the Riparian and Coastal Margins section of this report indicates that the City has relatively good access to Coastal areas in key locations. Ninety-five percent of land from Richmond and Tahunanui beach, along rocks Road and Wakefield Quay, and Cable Bay to Cape Soucis has a 20m width within public ownership.

SUMMARY – COASTAL ENVIRONMENT

The objectives and policies of the NRMP align with those of the NRPS and the national policy to the extent that Areas of Significant Conservation Value are identified and protected and good coastal access is provided. Activities that can occur within the Coastal Marine Area are also relatively restricted. This direction is supported by existing rules as, in both cases, there is a limited range of permitted activities. Building consent monitoring data also confirms a limited number of buildings are constructed within areas of significant landscape and conservation value.

There are however some gaps in the NRMP in terms of alignment with current national policy direction, particularly the NZCPS. There is little provision for aquaculture in the plan, discharges of contaminants appear to be impacting on marine receiving environments, the management of coastal hazard risks such as sea level rise and Tsunami is limited, and limited strategic planning around the location of growth and future impacts on outstanding natural features and landscapes is in place.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Review the provision for aquaculture within the coastal environment, particularly on the landward side
- Clearly define the coastal environment from a landscape perspective
- Incorporate investigating the potential impacts on marine receiving environments into catchment management planning
- Analyse sea level rise and Tsunami modelling work
- Incorporate the above in planning for growth within the coastal environment as part of the Nelson Development Strategy.

In the medium term:

- Incorporate the findings of the above into the NRMP.

In general:

- Continue Coastal State of the Environment Monitoring and consider extending to remaining significant estuaries
- Compile further coastal monitoring work to determine potential impacts on shell fisheries and marine ecology in Tasman Bay including coastal habitat mapping and consent monitoring data
- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

RIPARIAN AND COASTAL MARGINS

NATIONAL POLICY DIRECTION

The preservation of public access to and the natural character of the coastal environment, wetlands, lakes, and rivers and their margins is a matter of national importance. Regional Council functions include the maintenance and enhancement of ecosystems and the quality of water bodies. The management of riparian and coastal margins helps to achieve these matters of national importance and regional council functions.

The NPS freshwater Management 2011 covers water quality, water quantity, integrated management, tangata whenua, and a progressive integration plan. The NPS directs regional Councils to safeguard the life supporting capacity ecosystem processes and indigenous species and associated ecosystems of freshwater in sustainably managing water quality. In particular the integrated management of freshwater and landuse and whole catchments (including interactions between freshwater, land, associated ecosystems and the coastal environment) is required.

The NZCPS requires the maintenance and enhancement of public walking access and the control of vehicle access to, along, and adjacent to the coastal marine area (policy 19 & 20) and the enhancement of water quality in the coastal environment via methods such as stock exclusion.

RMP'S POLICY DIRECTION

NRPS objectives outlined in NA5.2 anticipate that riparian and coastal margin management will protect and enhance significant habitats, natural features and functions, character and amenity, cultural features, water quality, and public access and recreational opportunities. Natural processes such as floods and erosion will not damage structures or result in danger to human health and safety.

NRMP objective DO6.1 envisages riparian and coastal margins where natural character, public access, natural functions, landscapes, heritage values, water quality and ecological values are protected and enhanced. Policies within DO6 seek that priority margins should be identified and acquired at the time of subdivision, activities should respect margin values, and access to the Costal Marine area should be maintained and enhanced particularly along the foreshore between Richmond and Tahunanui beach, along rocks Road and Wakefield Quay, Cable Bay to Cape Soucis, and along the lower reaches of the Maitai and Wakapuaka rivers.

NRPS performance Indicators NA5.8 monitor changes in the proportion/length of riparian and coastal margins under formal protection, changes in the volume of sediment entering rivers and the coast and changes in the bacterial, viral, and chemical contamination of water in rivers and in the near shore area, and the extent of public access available along riparian and coastal margins has been provided. NRMP performance indicators DO6e seeks the retention of significant natural and conservation value margins by avoiding margins along with increased public ownership of esplanade reserves/strips on priority margins as determined by a review of council records.

NRMP RULES

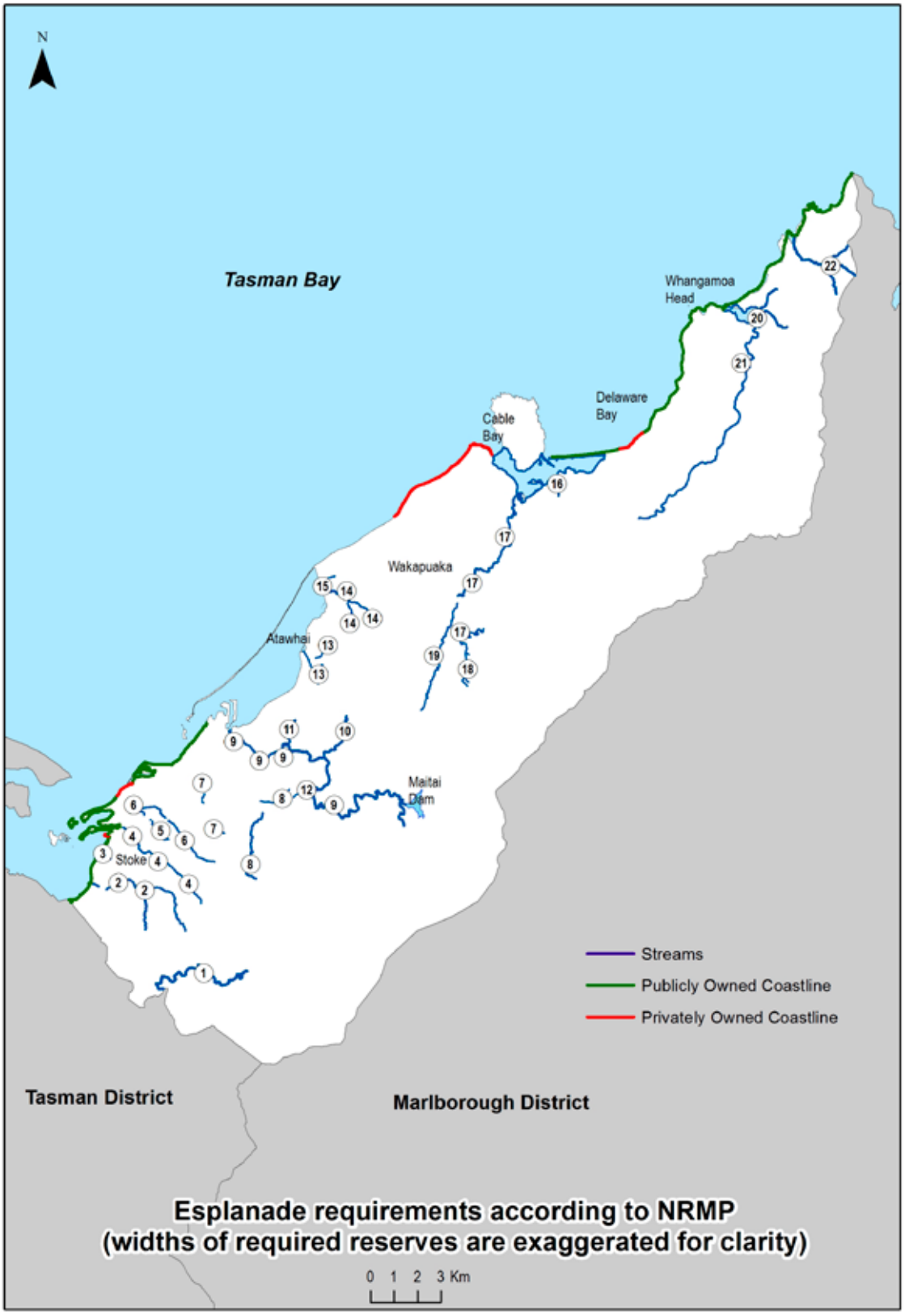
The erection of structures (other than fences) or activities resulting in adverse effects on indigenous vegetation or the disturbance of river banks generally requires consent as a discretionary activity on land identified in Appendix 6(riparian and coastal margin overlays). The extension of a utility service line or structure requires consent as a controlled activity. In the Rural zone single storey non-habitable buildings of less than 40m^2 also requires a controlled activity consent.

Vegetation clearance and earthworks controls limit works within proximity to coastal and riparian margin overlays across most zones.

Esplanade strips or reserves in accordance with Appendix 6 are also required to be provided at subdivision stage across all zones.

MONITORING INFORMATION

The map below identifies the streams and coastal edges that the NRMP anticipates will have esplanade reserves or public access. The red lines indicate the extent of key parts of the Coast that are in private ownership and the green lines indicate public ownership. The Blue lines indicate stretches of streams where esplanade reserves/strips are anticipated.



The following table outlines the esplanade reserve requirements indicated within Appendix 6 of the NRMP and the extent to which the area is vested as esplanade reserve or is in public ownership across different streams (See RAD 1273865 for further detail).

Reference	River	Required Area (ha)	Achieved Area (ha)	Required Minimum	Actual Minimum	Actual Maximum
1	Roding	41.2	33.3	20	0	20
2	Orphanage Creek	20.6	9.9	15-25	0	25
3	Orchard Creek	1.24	1.18	25	0	25
4	Poorman Valley Stream	10.56	7.86	5-20	0	10
5	Arapaki Stream	1.76	0.44	5-10	0	10
6	Jenkins Creek	7.63	3.04	5-20	0	10
7	York Stream	3.35	1.19	5-10	0	10
8	Brook Stream	14	12.04	5-30	0	30
9	Maitai River	81.59	56.68	5-20	0	20
10	Maitai River (sharlands)	11.13	0.13	20	0	20
11	Maitai River (Kaka Hill)	5.99	0.09	20	0	20
12	Maitai River (Groom)	1.66	0.13	5	0	5
13	Oldham Creek	4.09	0.67	5	0	5
14	Todds Valley Stream	8.71	4.79	5-20	0	20
15	Wakapuaka Drains	1.3	1.3	5	5	5
16	Deleware Inlet	38.5	5.71	20	0	20
17	Wakapuaka Main Stream	28.53	9.15	5-20	0	35
18	Teal River	4.34	0.14	5	0	5
19	Lud River	7.53	0.87	5	0	5
20	Whangamoa Inlet	23.65	2.51	20	0	20
21	Whangamoa River	33.97	18.50	5-10	0	10
22	Omakau Bay Stream	28.98	17.62	20	0	20
Total		**380.31**	**187.2**			

Overall 49% of the target for public ownership is currently achieved. In some cases it will be difficult for Council to achieve public ownership/access due to the level of existing residential development and the inability to subdivide, such as in the Oldham Creek example below:

As noted above Policies within DO6 seek that access to the Costal Marine area should be maintained and enhanced particularly along the foreshore between Richmond and Tahunanui beach, along Rocks Road and Wakefield Quay, and Cable Bay to Cape Soucis. GIS analysis indicates that there is good public access (95% success) in these areas as outlined below:

Coastal Reach	Required area (ha) at 20m width	Achieved area (ha)
Richmond to Tahunanui	45.9	43.3
Rocks Road and Wakefieled Quay	4.9	4.8
Cable Bay to Cape Soucis	46.5	44.2
Total	**97.3**	**92.3**

While public access is a key function of riparian and coastal margins they also play broader functions such as hazard mitigation, conservation, aquatic habitat enhancement, and recreation. The public ownership of margins will generally increase the potential for these broader functions to be achieved particularly where margins are taken and zoned as reserve. This zoning provides for a more conservative range of activities and uses. The Coastal, Contamination, Freshwater, Significant Vegetation and Fauna, and Natural hazards sections of this report provide an assessment of whether these broader functions are being achieved.

A review of these sections suggests that coastal and freshwater quality could be improved across a number of areas, the potential for natural hazards could be reduced, and natural values improved if significant natural areas and biodiversity corridors were identified and protected, pests species and contaminants were controlled, and development was further restricted within and adjacent to margins.

For example the following streams have the lowest water quality ratings in the City:

- Saxton at Main Rd
- Orphanage at Saxton Rd East
- Poorman at Seaview Rd
- Jenkins at Pascoe St
- York at Waimea Rd
- Brook at Manuka St
- Maitai at Riverside
- Todds at SH6
- Hillwood at Glen Rd.

A review of the esplanade reserve table above indicates that only approximately 65% of the area anticipated as esplanade reserve on these streams is currently in place.

SUMMARY – RIPARIAN AND COASTAL MARGINS

Riparian and Coastal Margins provide a range of functions in seeking to achieve the NRMP and NRPS objectives of protected and enhanced public access, natural areas, water quality, and ecological values and the avoidance of damage from natural processes.

Limited success has been attained in terms of securing esplanade reserves, and in some cases this will be difficult to achieve in the future due to the existing level of development adjacent to streams. Conversely coastal margins are largely in public ownership.

A review of other monitoring data suggests that existing NRMP rules have not been effective as coastal and freshwater quality could be improved across a number of areas, the potential for natural hazards could be reduced, and natural values improved if significant natural areas and biodiversity corridors were identified and protected, pests species and contaminants were controlled, and development was further restricted within and adjacent to margins.

RECOMMENDATIONS FOR FURTHER WORK

- Review the function of, and ability to achieve, esplanade reserves as part of the Catchment Management Plan programme and Nelson Development Strategy.

BEDS OF RIVERS AND LAKES

NATIONAL POLICY DIRECTION

The purpose of the RMA includes the need to safeguard the life supporting capacity of water while avoiding remedying or mitigating adverse effects on the environment. Regional council functions include the control of the bed of water bodies.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

NRPS objective NA6.2 seeks minimal adverse environmental effects from structures on river and lake beds. Policies under NA6.3 seek to support the natural functioning of rivers and associated ecosystems and to manage structures and physical works on river or lake beds, and recognising the importance of flood carrying capacity of rivers.

NRMP objectives DO17.1 and DO17.2 outline that activities should be undertaken in a way which manages adverse effects on freshwater bodies and their uses and values and on lawfully established network utility operations. Policies generally seek to avoid the disturbance of (including structures within or under, deposition of materials, stock access, realignment and reclamation) river and lake beds, protect natural character, avoid flood damage, control diversion and damming of surface water and planting along margins and within rivers and lakes. Activities, works, or structures should manage impacts on network utility operations.

NRPS performance indicators NA6.8 utilise recorded instances of adverse effects on natural processes as a result of works and structures as well as flood events made worse by structures or works within river beds. NRMP performance indicators include stream health monitoring and fish surveys, new planting in riparian margins, improved fish passage due to removal and modification of structures, and reduced stock access to rivers and lakes.

NRMP RULES

The rules governing the management of the beds of rivers and lakes are contained in the Freshwater provisions which are generally consistent across the zones.

A number of matters are provided for as permitted activities in the beds of Rivers and Lakes where performance measures are met including:

- Removal of pest plants and litter
- Restoration or enhancement of natural in-stream or out of stream values including fish passage
- The use of vehicles in river beds associated with lawful activities
- Planting in river beds and margins where willow species and plantation forest is at least 5.0m from river banks and riparian overlays and no pest plants are utilised
- The maintenance and replacement of lawfully established structures
- the placement and erection of a new culvert in the rural zone
- Removal of obsolete structures
- Aggregate extraction by Nelson City Council for the purpose of maintaining flood capacity
- Deposition of materials related to protection of an out of stream structure, habitat enhancement, or forestry slash
- The realignment or piping of beds where the river does not have a continuous base flow and where there is no water in the bed.

Performance measures generally relate to provision of public access, design standards, and where flooding is avoided, and water quality and aquatic habitats are not adversely affected. These are in effect permitted activities subject to performance standards that are sometimes difficult to quantify prior to development occurring (eg – adverse effects on water quality and aquatic habitats, down-stream flooding, fish passage etc). The consent threshold generally increases based on the

degree to which these performance standards are exceeded.

Consents for extractions that do not meet permitted standards are either a, restricted discretionary activity, a discretionary activity, or a non-complying activity. This depends on the degree to which volume and location requirements are exceeded.

The following are discretionary activities:

- Vehicle crossings
- planting in, on, or under the bed of any river of lake
- In stream dams for reticulated urban water supply on the Roding and Maitai rivers
- The realignment or piping of beds of rivers or lakes and wetlands where permitted standards are not met.

The planting of exotic plants in, and disturbing the bed of, a natural wetland is non-complying. In stream dams in the Whagamoa, Wakapuaka, or Teal Rivers is also non-complying.

The planting of willow species within 5.0m of riverbanks and any pest plant is prohibited.

The placement or deposition of any waste, toxic, or radioactive material is also prohibited.

MONITORING INFORMATION

NRPS performance indicators NA6.8 utilise recorded instances of adverse effects on natural processes as a result of works and structures as well as flood events made worse by structures or works within river beds. NRMP performance indicators include stream health monitoring and fish surveys, new planting in riparian margins, improved fish passage due to removal and modification of structures, and reduced stock access to rivers and lakes.

Water quality

A detailed assessment of water quality issues is presented in the Freshwater section of this report. Key causes for degraded stream health were identified in state of the environment monitoring as being due to fine sediment deposition as a result of forestry clearance and earthworks associated with urban development via surface runoff, unrestricted live stock access to waterways in rural areas and upper catchments of the urban area, and runoff and discharges carrying contaminants in urban areas. Consequently, monitoring information indicates that:

- nine of the 28 sites monitored in 2011 had degraded water quality,
- three of the eight freshwater recreational bathing sites historically have high bacteria counts and were identified as "Very Poor" in 2010/11,
- overall, urban sites had a lower than expected number of fish taxa compared to other urban sites surveyed, there has been a decline in fish and invertebrate communities in the Maitai, and toxicity to aquatic life in the Maitai, Jenkins, and York streams,
- Improvements to fish passage to streams are occurring due to Council initiatives.

Flooding

A synopsis of flooding issues is provided in the Freshwater and Natural Hazards section of this report. While this information highlights Nelson's susceptibility to flooding, no data is provided regarding the impact of structures or works within river beds and their impact on flooding apart from limited gravel extraction information.

Bed Levels

River cross-sections were established in 2007 to measure bed-level trends in the Whangamoa and Wakapuaka rivers (RAD 1197226). Hilltop Reach software was used to manage the data and calculate the changes in volumes for each defined reach, from five annual surveys (2007-11). Annual bed-level plots derived from the gravel cross-section are also available in Excel RAD 675808.

There was minimal change in bed-levels (less than 0.5 m elevation) at most cross-sections between 2007 and 2011. However, localised erosion and natural changes in river course from flooding were noted at cross-section sites and elsewhere along both rivers.

Regional natural resource consents are summarised in a spreadsheet (RAD 984448). Consented volumes and actual volumes extracted are not summarised from NCS consent files and therefore not readily available. There is no system for managing records of gravel removed by Council in response to flood control measures. Consequently there is insufficient information to adequately assess and manage annual gravel abstraction against changes in gravel volumes for any of Nelson's rivers.

The report (RAD 1183354) recommended that NCC establish:

- a system for investigating bed-level trends, through visual inspection (including photographs and file notes) and from bed-level cross-section surveys.
- a system for archiving with options for management of gravel extraction returns and compiling annual estimates of gravel extraction volumes.

Further information will be gathered in 2012 as part of the consent to remove gravel accumulated from the December 2011 Rain Event. As noted in the Natural Hazards section of this report a review of the natural hazard overlays in the NRMP is planned for 2012/2013 in response to the December 2011 Rain Event and a programme of Catchment Management Planning is also proposed. This work should consider the management of Nelson's in-stream environments.

SUMMARY – BEDS OF RIVERS AND LAKES

Monitoring information appears to indicate that the impacts on the beds of rivers and lakes are largely due to works occurring outside these environments themselves. This may be due to a paucity of monitoring information relating to activities occurring in streams rather than a clear signal that in-stream activities are not causing impacts. Available information relating to riverbed levels in the Whangamoa and Wakapuaka rivers suggests that there have not been significant changes. There is the possibility that further monitoring could be undertaken as part of a planned review of the Natural Hazards Overlay and as part of the Catchment Management Plan programme. Until further monitoring work is provided it is difficult to ascertain whether the objectives of the NRMP are being effectively achieved.

The current rules in the NRMP would make it difficult to monitor impacts as permitted activities are subject to performance standards that are sometimes difficult to quantify prior to development occurring. Therefore this monitoring information needs to be considered through a wider lens that incorporates water quality, flooding, fish passage, and impacts on aquatic habitats and the link with works within watercourses as well as works outside.

RECOMMENDATIONS FOR FURTHER WORK

In the Short Term:

- Establish a methodology for monitoring gravel extractions as part of the consent process, and
- Ensure that further monitoring work undertaken as part of a planned review of the Natural Hazards Overlay and the Catchment Management Plan programme considers the potential impacts of in-stream and stream margin development.

SIGNIFICANT VEGETATION AND FAUNA

NATIONAL POLICY DIRECTION

Section 6c of the RMA identifies the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna as matters of national importance, and section 7(d) requires particular regard to be had to intrinsic values of ecosystems. Amendments to the RMA in 2003 have added a definition of indigenous biodiversity, and amended sections 30 and 31 to clarify that managing biodiversity is an explicit function of both regional councils and territorial authorities. Councils must provide for the maintenance of biodiversity in regional and district plans.

The NZCPS 2010 requires the protection of indigenous biological diversity (biodiversity) in the coastal environment particularly of threatened, rare or nationally significant species (Policy 11). Policy 6 also requires, where appropriate, buffers for areas and sites of significant indigenous biological diversity.

A draft NPS on Indigenous Biodiveristy was consulted on in the first half of 2011. The Government intends to consider the report from the Waitangi Tribunal on claim 262 before finalising the NPS as this relates to the rights in respect of indigenous flora and fauna. The objective of the NPS is to promote the maintenance of indigenous biological diversity by protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, and to encourage protection and enhancement of biodiversity values more broadly while supporting best practice, recognising the contribution of landowners and kaitiaki/guardians of their land, and recognising reasonable use.

The NPS contains eight policies which provide guidance on the types of significant indigenous vegetation or significant habitat of indigenous fauna including naturally uncommon ecosystems, sand dune, wetland and threatened and at risk species habitats, and LENZ level 4 environments with 20% or less indigenous vegetation cover. The NPS also requires the inclusion of significant habitat criteria, their identification and mapping/scheduling within district and regional Plans within five years of effect, no net loss of biodiversity (or biodiversity offsets), maintenance of biodiversity outside s6c areas, encouragement of ecological linkages and buffers, establishment of indigenous riparian vegetation, recognition of the role of Māori, and the requirements for wider consultation.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

NRPS objective NA3.2 requires the protection, restoration and rehabilitation of areas of significant indigenous flora and significant habitats of indigenous fauna. Objective NA4.2 concerns the management of pests and seeks that natural and physical resources are not subject to significant adverse effects as a result of existing pest infestation and the prevention of new infestation of pest species.

The Draft 2008 NRPS biodiversity objectives seek that Nelson's biodiversity is maintained or enhanced and established pests and weeds are managed and new populations eradicated before they become established. Greenhouse gas emissions and climate change objectives acknowledge the need to be adequately prepared for changing climatic conditions due to sea level rise and seek the stabilisation or reductions of greenhouse gas emissions. Unavoidable greenhouse gas emissions should be offset via carbon sequestration projects.

NRMP objectives (DO5, CM1, CM3, and CO2) anticipate an environment within which natural values and coastal ecosystems are preserved and enhanced including safeguarding the viability of natural features and systems, the life supporting capacity of ecosystems, and natural and cultural features, and degraded areas (particularly in the coastal environment) are restored and rehabilitated. Notably, policy DO5.1.4 states that plan provisions related to protection and

enhancement of significant natural areas will be reviewed and a plan change will be notified not later than 5 years from those provisions becoming operative. This is as a result of Environment Court Decision W72/2001 which required Council to review the criteria contained in table DO5.1 following independent advice and consultation with all affected parties. The method specified in the Environment Court decision is to establish a working party, consult with landowners and the public, initiate a review of plan provisions, and then initiate a plan change within five years of the NRMP becoming operative, ie 2009.

Of note, natural values policies under DO5 highlight the need for additional mapping of Significant Natural Areas to be carried out in accordance with the values identified in table DO5.1, the promotion of linkages and corridors between areas of natural vegetation, along with additional work with landowners to facilitate non-regulatory methods to promote significant natural area protection.

The administration section of the plan (Chapter 3) outlines that the Conservation Overlay (749 ha of a total land area for Nelson City of 42 275ha) covers Areas of Significant Conservation Value (ASCV), outside the Conservation zone, to, in part, protect significant indigenous vegetation and habitats of indigenous fauna. These overlay areas are described in Appendix 5 of the NRMP and includes sites at Oananga Bay, the Whangamoa River Mouth, Pepin Island, Deleware Bay, Cable Bay, The Glen, Wakapuaka, Sharlands Creek, Marybank, Saxton Island, and Aniseed Valley. The Marine ASCV overlay relates to the protection of significant indigenous vegetation and habitats of indigenous fauna within the Coastal Marine Area.

The purpose of the Conservation zone, as described in Chapter 14, is to maintain the area in its natural state with the majority of land being under some form of protection being forest park and other reserve land administered by the Department of Conservation (including the Nelson Boulder Bank, other areas of coastal reserve, and the Nelson Mineral Belt), and the waterworks reserves areas and other reserves administered by Nelson City Council. The conservation zone covers 14 164 ha and includes the most distant series of ranges in Nelson (the Bryant Range), running along the backbone of the City from the catchment boundary of the Roding river to Cape Soucis in the north. The land is generally unmodified or regenerating vegetation and often has high conservation values.

NRPS performance indicators (NA3.8) highlight the need to monitor progress towards the formal protection of priority areas (indigenous forest, Ultramafic Communities (Dun Mountain),coastal, and water related habitats), changes in the area of, and restoration of, significant indigenous vegetation and fauna habitat. Performance indicator NA4.8 anticipates that monitoring of pest numbers and the extent to which pest eradication land use practices occur.

NRMP performance indicators (DO5e, COe, and CMe) highlight measures such as retention of areas of significant natural and conservation values via the avoidance of development, regular flora and fauna surveys to gauge health and viability of plants and animals, and the extent of flora and fauna within the Coastal environment utilising fish counts.

NRMP RULES

Vegetation clearance is typically split between the clearance of indigenous forest and general vegetation clearance but there is no particular distinction between areas of significant indigenous vegetation and significant habitats of indigenous fauna (Significant Natural Areas) and other areas.

Indigenous vegetation is defined as an area of naturally occurring vegetation where the area covered by plant species indigenous to the District is the same as or greater than the area covered by other plants. Indigenous forest is defined as naturally occurring woody vegetation that has a canopy predominantly formed by trees over 6.0m high, has more than 80% canopy closure, and comprises plant species indigenous to the district. Vegetation clearance is defined as any activity which results in the removal or reduction in vegetation cover from an area of land other than that caused by grazing animals or domestic

gardening, except for the purpose of controlling or eradicating pest plants or trimming of vegetation (other than indigenous vegetation).

In most zones general Vegetation Clearance in Biodiversity Corridors or within 5.0m of a river identified in Appendix 6 (other than for domestic gardening, fire breaks, fencing, maintenance of state highways, and utility services) or within 20 m of the Coastal Marine Area is not permitted. The introduction of exotic species in the Coastal Marine Area is a discretionary activity as a minimum with new species being non-complying and Spartina being prohibited.

In Riparian Overlays structures, the disturbance of river banks, and actions resulting in adverse effects on indigenous vegetation requires resource consent.

Trimming of heritage and landscape trees is permitted if sensitively undertaken and if not will be a discretionary activity or controlled activity respectively. Activities within the dripline of a heritage or landscape tree are only permitted where works meet certain standards. Removal of a landscape tree is discretionary while removal of a heritage tree is non-complying. Removal of local trees is permitted where one weeks' notice is given to Council.

Subdivision controls do not generally reference impacts on areas of significant vegetation and fauna although subdivision of land within the Conservation, Coastal or Heritage Overlay are generally discretionary activities across the zones which allows for a broad assessment of effects. However, the matters of discretion in the Rural zone Coastal Environment Overlay (RUr.79.3(xiii)) subdivision rule does reference the "protection of significant indigenous vegetation and significant habitats of indigenous fauna" as a matter that discretion is restricted to. The protection of natural features and vegetation and the effects of vegetation clearance is also identified as a matter of control for all subdivision generally. All subdivision in the Conservation zone is discretionary and consideration of the values that the zone seeks to protect is required.

Indigenous forest clearance is not permitted in the Residential zone and would require consent as a restricted discretionary activity. General vegetation clearance in the Residential zone is not permitted where it is greater than 5.0m from a riverbank identified in the Riparian and Coastal Margin Overlay (Appendix 6) or greater than 20m from the Coastal Marine Area unless it is for minor activities associated with servicing or domestic gardening. Vegetation clearance in the Conservation Overlay is not permitted unless it is hand clearance of exotic vegetation. Vegetation clearance is a discretionary activity apart from the clearance of Indigenous Forest which is a non-complying activity.

Vegetation clearance controls in the Open Space and Recreation Zone are similar to the Residential Zone. There are no controls on vegetation clearance in the Industrial, Suburban Commercial, or Inner City Zones unless there are adverse effects on Indigenous vegetation within the Riparian Overlays or Heritage trees are affected.

In the Rural zone clearance of indigenous vegetation is permitted where it is not within a Riparian Overlay, is less than 0.2ha or is in accordance with a approval under the Forests Act 1949, and it complies with all other rules in the plan including appendices. Vegetation clearance in the Conservation Overlay is only permitted for hand clearance of exotic vegetation. Other vegetation clearance is restricted discretionary apart from clearance of Indigenous Forest which is discretionary.

In the Conservation zone indigenous vegetation clearance generally requires a discretionary activity consent, apart from clearance of Indigenous Forest which is non-complying.

MONITORING INFORMATION

A number of reports have been completed that assess ecological values and extent of biodiversity in Nelson City.

The Nelson Biodiversity Strategy Technical Report 2006 (RAD 467041) provides a snapshot of Nelson Biodiversity. Below is a summary:

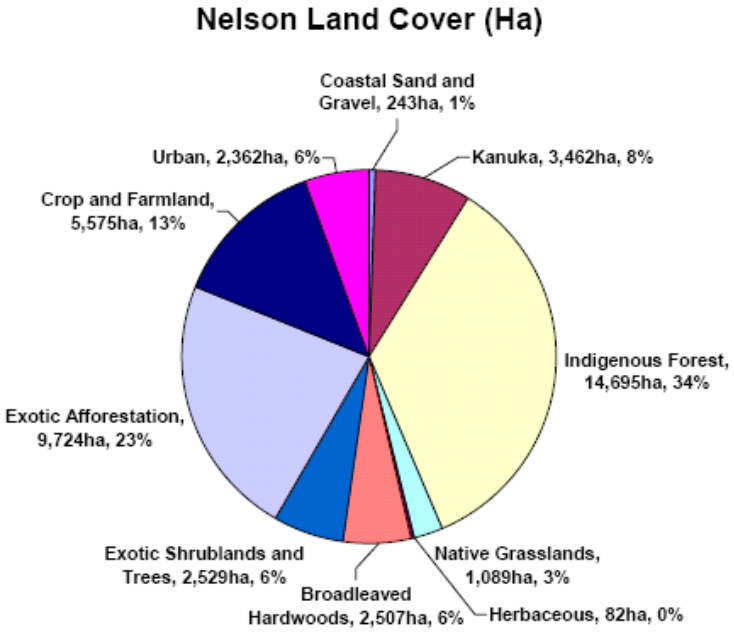
Land

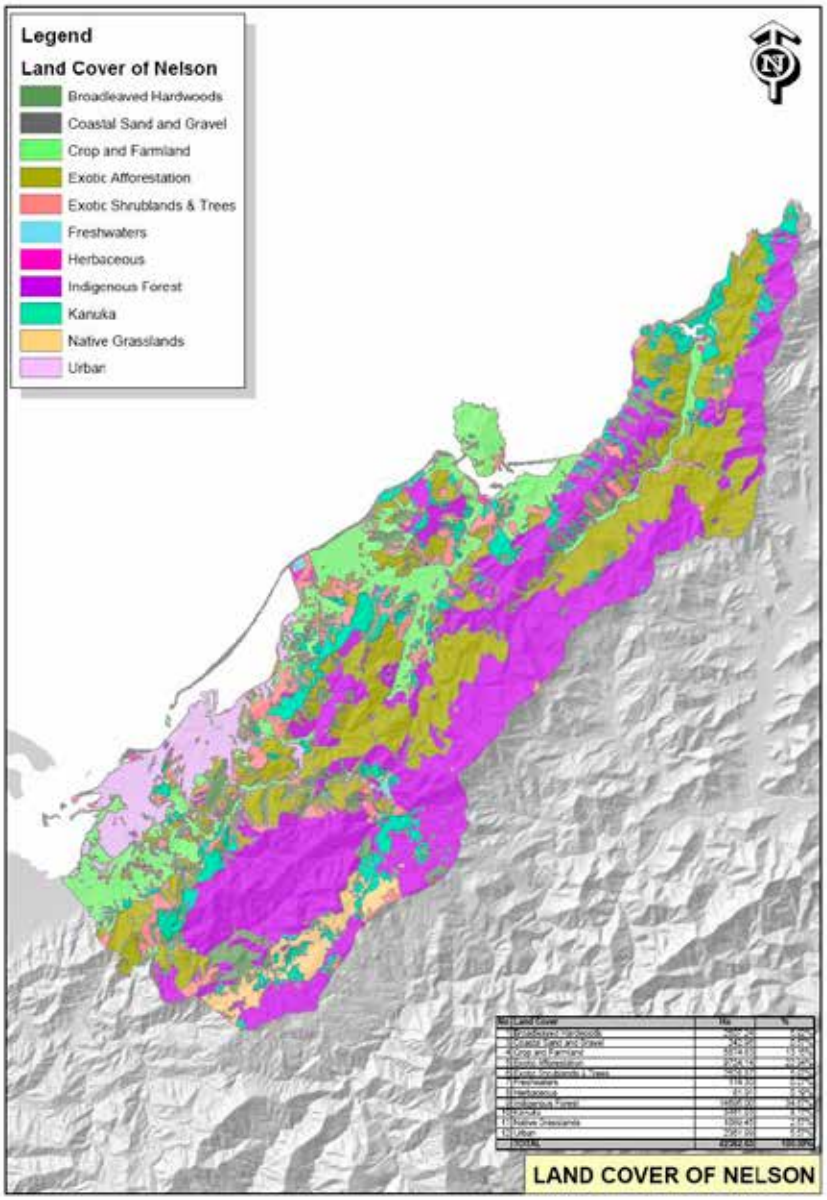
Historically indigenous biodiversity (particularly in coastal flats) has been vastly reduced as a result of development and the introduction of pests and weeds. It is noted that these are long term historical patterns and recent studies show little native vegetation loss from Nelson City over the last ten years.

"Land clearance, land disturbance, land contamination and native forest harvest have slowed in recent decades as most valued areas have been developed and legal controls have tightened. Satellite data collected in the NZ Land Cover Database suggests that only 1ha of native forest has been lost in the last six years. But the same report suggests that continuing loss nationally is focused in the most threatened lowland ecosystems."

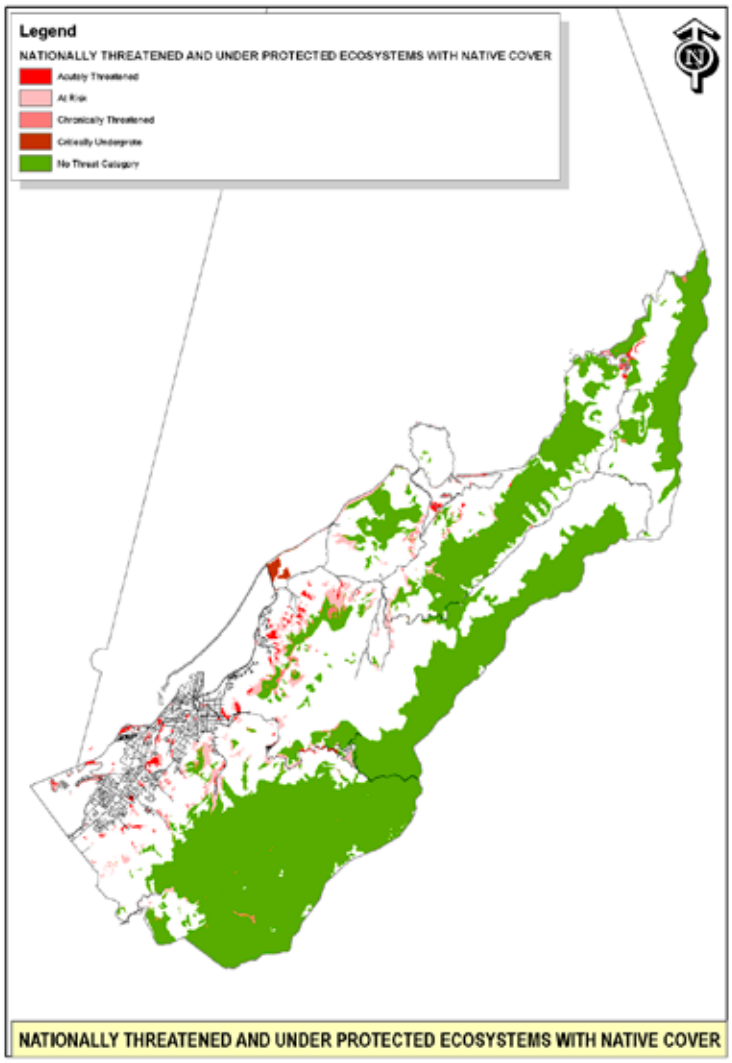
Apart from development, pests, weeds and fire remain the significant threat to indigenous biodiversity on Land.

The NZ Land Cover Database 2, has been used to calculate the 2006 cover of the land area within the Nelson City boundary. Only 6% of the land area of Nelson City is an urban environment of houses, factories, shops and parks. Native forest covers 34% of the land area of the city, with regenerating kanuka on hill slopes covering 8% of the total city area. In addition, areas of gorse and other exotic woody vegetation (6%) could regenerate into native forest depending on the interplay of fire, land disturbance and weeds and pests. Most of the remainder has been developed as crop and farm land (13%) and as exotic production forest (22%). This is depicted in the graph and map below.





The Land Environments of NZ (LENZ) system identifies 26 environments in Nelson. Of these, 12 are identified in the at risk category in Nelson. The following map indicates which at risk categories have native cover.



Fauna species loss is also a significant issue in Nelson. The report highlights that currently in Nelson:

There is only one fernbird population remaining

- There is no breeding population of Australian Bitten and South Island Kaka
- The NZ falcon, Banded Rail, and Green Gecko are in low numbers and declining
- The Flax weevil is extinct
- Current weed and pest control measures have limited success with new pests such as Argentine Ants being introduced.

The state of biodiversity in various land areas is also described in the report.

Hill country forests are largely intact in area at higher altitudes but quite fragmented around the coast. Active regeneration is occurring in many areas where hill farms have become uneconomic and grasslands are being replaced by woody shrubs and young trees. The intact forests have a wide range of animal pests but few weeds. Forest margins and regenerating areas can be very weedy with even the goarse becoming overwhelmed by old man's beard and banana passion fruit vinelands in many places. Considerable areas of hill country have been converted into exotic pine plantations.

In lowland and coastal flats the old growth forests are almost completely gone. Tiny remnants remain in a few scattered locations. The remnants assessed by Harding in 2004 were mostly less than 5ha with the largest being less than 25ha. The forests have long margins relative to their area and are very subject to weed invasion. The city hosts a huge variety of exotic plants, many valued for ornamental or practical uses and some potentially destined to explode into our future worst weeds.

In Coastal margins intact native sand dune communities are almost extinct and the boulder bank communities and estuary backshores are highly modified by introduced pests and weeds. By comparison coastal cliffs have fared better and form a natural refuge from many browsing pests. On the dunes a handful of individual native plants survive in a few localities. Fore-dunes are dominated by marram grass and back-dunes by other exotic species or converted to pasture or parks. Dune-lands and the Boulder Bank continue to be important for coastal processes and reducing natural hazards in the coastal zone.

The overall conclusion is that if Nelson is to support national priorities for protecting and restoring its native ecosystems it should focus its efforts on lower elevation rolling hills and flats.

The overall outcome desired is:

- Nelson's native hill forest communities are sustained as naturally functioning ecosystems and preserved and enhanced by development of linked plantings as a defining aspect of the natural character of Nelson City,
- Plantation forests are managed for sustainable production in a way that sustains downstream ecosystem services and supports the ecological health of native biodiversity,
- All remaining native forest on lowland flats and plains are preserved and protected, and
- Native ecosystem types that are rare or extinct are replanted and restored over 10% of their original range.

Freshwater

The Nelson freshwater environment is a tiny portion of the Nelson land area comprising about 0.25% of the total. Freshwater resources include rural rivers and streams. Some of those flow through exotic forestry plantings such as the Whangamoa, Wakapuaka and Upper Maitai. There are urban rivers and streams such as the Brook Stream, Lower Maitai River and Poorman's Valley Stream. Nelson has some almost unmodified streams. There is just one lake, the artificial impoundment of the Maitai water supply dam. Freshwater in Nelson include springs and wetlands such as the upper Maitai Rushpools, as well as groundwater. Natural freshwater boundaries cross territorial boundaries and as such should be seen in a wider regional context.

There are currently 15 freshwater fish species found in streams in Nelson. A number of species are now extinct (NZ Grayling, Brown Mudfish) and small in number (only one known population of Giant Kokopu). Species richness within small streams is influenced by human activities (construction of overhanging culverts, weirs, tidal gates, bridge aprons, reductions in water quality, and loss of instream and riparian habitats) and weeds and pests (weeds such as didymo, Eegeria, entire marchwort, and Senegal tea, and pests such as Mosquitofish, koi carp, rudd, and tench)

Many freshwater systems in Nelson are degraded. The most degraded rivers and streams are those in the urban area, especially small streams in Stoke, Bishopdale, Atawhai, and the Glen. Conversely the rivers and streams with the highest water and habitat quality are in the rural areas, with upstream sites being less impacted than down stream. Monitoring and classification results under a national classification system for most major rivers and streams in Nelson are given in the Council's Freshwater Plan. Aquatic habitat and biodiversity matters are included within priorities for improvement.

In summary, Nelson freshwater ecosystems are under increasing pressure as the human population grows. We have drained and developed almost all our freshwater wetlands and swamp forest is one of our most threatened habitats. Much of the biodiversity in our remaining streams and rivers has been retained. With careful management many of the smaller streams and wetlands could be restored and the life supporting capacity of our larger rivers sustained.

Marine

Nelson City's significant estuaries are a portion of the Waimea estuary, the Haven, Deleware inlet, and the Whangamoa River mouth. These areas each contain a significant range of invertebrate species, fish species, and water bird (including some of the species identified above as being in

decline) with Deleware inlet retaining areas of intact vegetation sequences from coastal forest through to sand flats.

The open waters of Nelson are the south eastern portion of Tasman Bay, one of the largest embayments in NZ. The inshore waters and coastline include a varied but mostly rocky coastline, the unusual Boulder Bank, the Pepin Island tombolo, and sand dominated areas at Tahunanui, Deleware, and Whangamoa.

The Nelson City region inter-tidal and shallow near shore areas have been extensively modified by reclamation, sediment runoff from the land and fishing activity. In most cases communities of plants and animals that are sensitive to these changes have been replaced by communities that thrive in more disturbed sediment and nutrient laden environments. Recently exotic organisms are becoming more observed.

Extensive development of the Nelson Haven has left it with little saltmarsh habitat. Historically, reclamation and port development has resulted in 40% of the intertidal area being lost with all of the eastern shoreline being lost to roading development. The Horoirangi Marine Reserve has been established to provide for the recovery of plant and animal communities. The Whakapuaka taiapure covers the area from Ataata Point to Whangamoa Head, including cable bay and Pepin Island. The dredge dumping area at the western edge of the Council area will result in sea floor communities to be continually modified.

In summary Nelson retains a high level of marine biological diversity but the content and pattern of this diversity has been modified by human activity due to the effects of land run-off resulting in nutrient rich sediment deposits in the near shore environment, removal of biomass from fishing, dredging and trawling, and the introduction of exotic organisms.

State of the Environment (SOE) Reporting

The 2000 SOE report noted that of the 29 Areas of Significant Conservation Value (ASCV) surveyed in 1999, 18 met the criteria for ASCVs. The relatively small size of most ASCVs, and their isolation from one another, makes the sites vulnerable to activities occurring on adjoining lands. The major management issue affecting all ASCVs is plant and animal pest control.

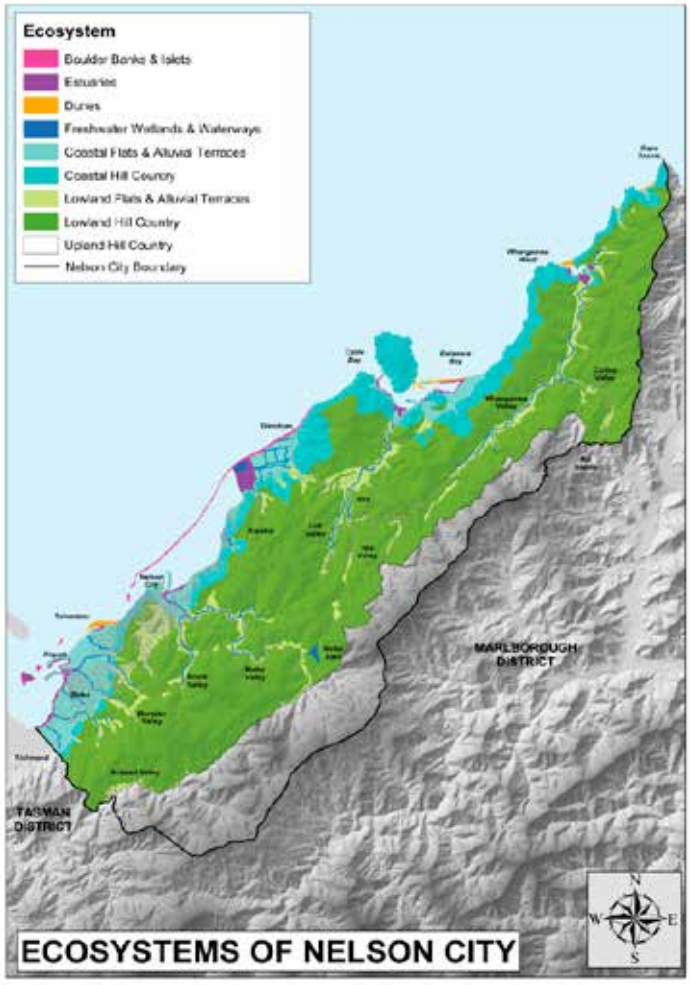
The 2010 report provided an overview of the Significant Natural Area surveys. Over 190 sites had been considered for inclusion as potential Significant Natural Areas (SNA) with 134 sites surveyed since 2000. The SNA survey complemented earlier surveys of indigenous vegetation on private land undertaken in 1999, which identified 29 sites for inclusion in the Conservation Overlay of the NRMP (outlined in the above paragraph). The survey results would help Council to work with landowners to ensure the survival of these areas. The results would also allow Council to set priorities for providing assistance to landowners. A need to review the existing objectives, policies, and rules in the NRMP regarding the protection of SNA's was also identified.

The 2010 SOE report also indicated that:

- Loss of native vegetation from Nelson City has declined appreciably over the last ten years, relative to the historical clearances associated with human settlement in the area.
- Only about 17% of the original extent of estuary margin vegetation remains, largely due to reclamation and farm development.
- Dunes and freshwater wetlands are the two most depleted ecosystem in the Nelson area with less than 1% of the original extent of native vegetation remaining.
- About 2% of the original extent of native coastal flat vegetation remains.
- About 22% of the original extent of the native vegetation remains.
- About 6% of the original extent of lowland flat vegetation remains.
- About 36% of native vegetation cover is remaining on lowland hill country.
- 84% of original cover is remaining in upland hill country.

Survey of Significant Natural Areas 2006/7 Summary Report (RAD 774234)

A survey of 74 areas of indigenous vegetation and habitat on 20 privately owned properties in the Nelson City area was carried out by Mike North between November 2006 and June 2007. Indigenous vegetation in eight broad ecosystem types were surveyed. Most sites are in lowland hill country ecosystems, on hill slopes below 600m in elevation and sheltered from coastal influences. A number of other sites surveyed are in coastal hill country and lowland flats and terraces. Fewer sites are in estuary, dune, wetland, coastal flat and upland ecosystems.



Of the sites surveyed over 70 areas of remnant and regenerating indigenous forest, shrubland and wetland were assessed as significant. These areas, covering over 1600 hectares, include valuable remnants of indigenous vegetation populations of threatened plants and animals and species previously regarded as extinct in the Nelson City area.

The conclusions of the survey work were:

- Survey work undertaken during the summer of 2006-2007 complements existing data confirming the picture of local species and habitat loss described by earlier surveys (e.g. Walker 1987) where coastal and lowland areas have suffered almost total loss of indigenous plant and animal species and many surviving remnants are under threat by pests (plant and animal).
- The extensive species and habitat loss means that those remnants which still exist have an even greater significance. They are often one of the few remaining refuges for nationally and regionally rare and endangered species and the future hope for enhancement and restoration activities in the Nelson area.

- The continued survival of remnants is usually dependant on the landowner actively maintaining the remnant and controlling pests and weeds. The demands placed on landowners may be beyond the resources of some landowners.
- The 2006-2007 survey work has substantially improved our knowledge of the significant natural areas of Nelson. It has provided information on species composition, extent, condition and threats. It will provide a sound basis for both landowners and Council to discuss active biodiversity management and how best to preserve and enhance these important areas.
- It has furthered dialogue between landowners and Council which will assist future discussion of common issues and concerns. Now that a better understanding of values and threats within these areas exists, Council is better positioned to develop an assistance package to help protection and enhancement.
- The information collected will allow priorities to be established and where necessary good decisions made between competing projects. It will also assist landowners to access assistance from other funding sources such as the Government's Biodiversity Condition fund.
- The 2006-7 biodiversity survey has also identified other potentially significant natural areas where (subject to access approvals) future field survey work is warranted.

The report "**New Zealand's remaining Indigenous Cover: Recent Changes in Biodiversity protection Needs**", produced by Walker et al for the Department of Conservation in 2008 (RAD 1205407), was an analysis of the protection and trends in threatened ecosystems throughout New Zealand including analysis by Council area. The results for Nelson were that between 1996 and 2001 there was a loss of 7 ha of indigenous cover. While this is comparatively small all of the removal was within the five most threatened environment categories. This placed Nelson at rank 41 (total 61) in terms of its contribution to the loss of indigenous biodiversity.

The **Nelson Biodiversity Forum Report on the City Backdrop** November 2010 (RAD 1083724) provided an analysis of the need for biodiversity corridors within Nelson.

Participants indentified a range of values that biodiversity corridors in the City can contribute to. These included:

- Increasing the flow of indigenous species and biological resources into Nelson City
- Habitat for threatened species and species of regional significance
- Maintenance and restoration of threatened ecosystems
- Contribution to the aesthetic harmony of the City
- Supporting human health (e.g. increasing buffer from pines for pollen sufferers)
- Supporting cultural values and providing cultural resources
- Providing recreational opportunities
- Contributing to carbon sinks and offsetting the effects of global warming including providing buffers for sea level rise
- Providing fish corridors through shading and sustaining base flows in watercourses
- Changing citizen's concepts of what is possible by seeing indigenous elements in their urban environment
- Iconic species
- Iconic and regionally important landscapes.

Participants identified an overall strategic approach:

1. Strengthen indigenous biodiversity on the fringes (both lowland hills and coastal margins) of the City to anchor connections
2. Develop vegetation corridors around key waterways
3. Develop a vegetation corridor on public land through the middle of the City
4. Encourage private landowners into husbandry that brings native biodiversity back into the city
5. Secure, consolidate, enhance and link native biodiversity "anchor" areas

A map was produced (below) that identified areas for Coastal edge strengthening, terrestrial edge strengthening, high priority remnants for protection, priority river corridors, and landscape amenity.

Waimea Inlet Management Strategy 2010

The Waimea Inlet Management Strategy is an interagency strategy that includes Tasman and Nelson Councils, statutory agencies, non-statutory groups and organisations, businesses and residents. As noted in the Nelson Biodiversity Strategy report above the Waimea inlet (from the Tasman Bay shoreline of Mapua, Rabbit Island and Tahunanui Beach) has a significant range of species that make the inlet worthy of protection.

The Waimea Inlet strategy identifies a number of issues and opportunities for the inlet that provide a useful stock-take, summarised below:

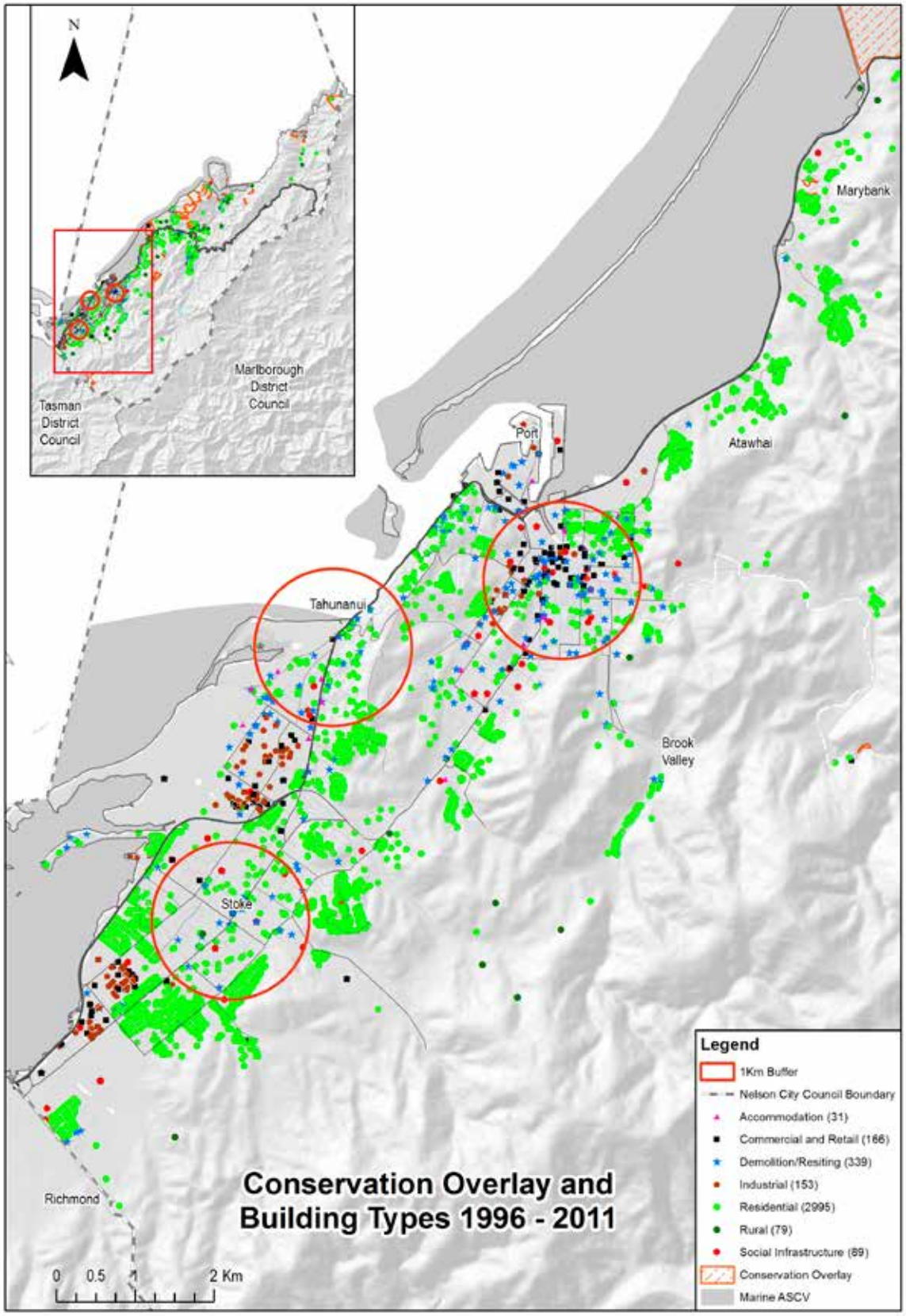
- Loss of Coastal Margin Indigenous vegetation – Less than 0.25% of native terrestrial forest remains within 700 meters of the inlet, in nine remnant sites totalling less than 10ha
- Loss and Importance of Margin and Intertidal Habitats – 90% of estuary saltmarsh has been lost and only 277 ha of estuarine vegetation remains in the 3455ha of the inlet
- Sedimentation – Landuse change has altered sedimentation and removed filtering forest and wetland, mud is becoming more compacted and less aerated
- Bird Disturbance, Predation and Loss of Habitat – Bird habitat is being lost and exposure to predators is increasing
- Migratory Species – Birds are at risk from disturbance associated with proposed walkways/cycleways which leaves them undernourished for migratory flights
- Contamination – Toxin levels are generally low but are elevated at urban and industrial stormwater discharge points, area is safe for swimming but not shellfish gathering, stock access to streams and farm effluent management are rural sources of faecal contaminants
- Eutrophication – Nutrient inputs are highest where streams enter the inlet or after rainfall
- Loss of High Shore Habitat – results from hardening of coastal margins by tide banks, roads, and protection works
- Loss of Freshwater Fish Habitat – stream modification such as fish barriers, channel re-alignment, and vegetation changes have resulted in flow-rate, temperature and light changes which impact on in-stream diversity
- Damage to Archaeological sites – Further work is needed to identify additional heritage sites
- Weed and Pest Species – need better management
- Marine Fish – further study of marine fish is necessary
- Providing for a range of uses – Segregation of landuses may be necessary
- Evaluating New Proposals – Strategy provides a framework for evaluating activities within the inlet by stakeholders working together
- Providing for Public access – needs to consider the maintenance of habitat
- Recognition of Existing Assets and Land Use – Infrastructure and industry exist but their effects should be mitigated
- Airport:Reducing Risk of Bird-Strike – Bird habitat enhancement should seek to avoid or reduce bird-strike to aircraft risk
- Supporting Planting, Trapping, and Rubbish Removal – landowner efforts need recognition
- Managing Future Landuse – Contaminants from rural and industrial landuse need better management along with the increased source of predators from residential activities.
- Landscape, Vistas, Visual Amenity – The landscape qualities of the inlet need to be retained.

The Sustainability Stock-take 2011

The Sustainability Stock-take included an excerpt from the Ministry for the Environment's 1997 State of New Zealand's Environment Report that identified the decline of indigenous biodiversity as New Zealand's "most pervasive issue".
The Stocktake indicates that Biodiversity has an important role in terms of New Zealand's economy, quality of life and identified that many initiatives, both nationally and locally, have been undertaken to halt the decline. The key challenge remains however, to enhance these initiatives and ensure that the values of biodiversity are maintained into the future.

Building Consent data

An analysis of building consent data overlaid on the NRMP Conservation Overlay and the sites identified in the 2006/2007 SNA survey sites (RAD1267151) indicates that 26 buildings have been built on these sites since 1996. 18 buildings were located on sites containing Potential Significant Natural Areas, four on Surveyed Significant Natural Areas, and four sites on Conservation Overlay.



Forestry

As noted in the Landscape, Freshwater, and Natural Hazards section of this report, a better understanding of forestry operations in the Nelson area would be useful to ascertain the future impacts on ecology as well as landscape and flooding. Between 2012 and 2021 287ha of forestry is planned to be logged on Council land in the Brook, Marsden, Maitai, and Roding Valleys. It appears that some of these Council forestry areas are in the vicinity of areas identified as potential Significant Natural Areas, particularly the Roding and Maitai forests. These forestry areas are also in close proximity to rivers.

Tasman-Nelson Regional Pest Management Strategy

The purpose of the Regional Pest Management Strategy (the Strategy) is to provide a framework for efficient and effective pest management in the Tasman-Nelson region so as to:

- minimise actual and potential unintended effects associated with the organisms identified as pests; and
- maximise the effectiveness of individual pest management action by way of a regionally co-ordinated response.

There are many introduced plants and animals in the Tasman-Nelson region that are considered undesirable. The majority of these are best dealt with on an individual property basis, but there are several that justify a regional response.

Both the 2000 and 2007 strategies have a list of pests and have categorised these based on different management approaches. These pests are classified in an Appendix to those plans.

Total Control Pests refer to high risk pests which are pests of limited distribution or density in a region, or part of a region, and for which the ultimate goal is eradication.

Progressive Control Pests are pests that are unlikely to be eradicated because of their biological characteristics (such as long-term seed viability) but it is still feasible to reduce the density and distribution of the pest.

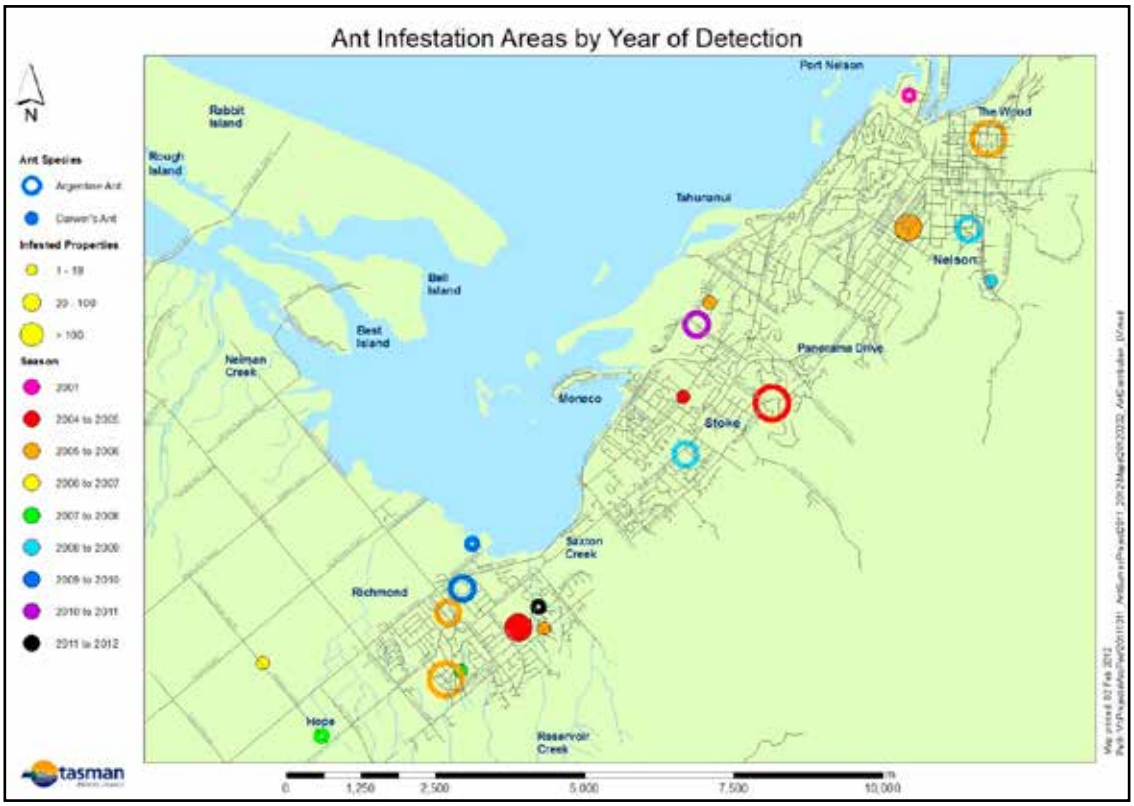
Containment Pests are pests that are abundant in a region, or a part of a region, where the long-term goal is to prevent the pest spreading to new areas or neighbouring properties.

Boundary Control Pests are a group of horticultural, agricultural or forestry pests of generally widespread distribution and for which the goal is to control the spread of the pest to land that is clear, or being cleared of the pest.

General Surveillance is work that is undertaken to identify new pests and changes in distribution of existing pests. Regional surveillance pests are four pests which may pose a future risk but there is limited information on pest distribution. These are being monitored and advice is provided to landowners to promote voluntary control.

The review of the Tasman-Nelson Regional Pest Management Strategy 2007-12 has highlighted some key points in relation to Nelson City. In summary:

- Gum leaf skeletoniser and Great White Butterfly is in the early stages of establishment in Nelson City
- Undaria is well established in Tasman Bay
- Old Mans Beard and Banana Passionvine is present throughout Nelson and there are no effective bio-control agents yet available
- Progress is being made on most total control pests particularly African Feather Grass, Bathhurst Bur, Entire Marshwort, and Saffron Thistle
- There has been a significant reduction in the distribution and density of Progressive control pests on individual properties and DoC are making progress on pest fish although new sites have established in the last two years
- Containment pests are being contained on private land although Argentine Ants and Darwins Ants are continuing to spread (see map below)
- Boundary control pests rarely require legal intervention.



Plan Changes

Biodiversity corridors have been introduced into the NRMP through Plan Change 13 and have been included in Proposed Plan Change 17. Dr Philip Simpson's evidence as part of Plan Change 17 (RAD1091770) endorses the current NRMP approach. Dr Simpson identifies that the 20m width of biodiversity corridors is needed to avoid excessive edge effects. The values or attributes of Biodiversity Corridors are described as:

- Corridors can provide habitat in itself but also link natural areas over adjacent properties or within an entire district or region
- They are not uniform but vary in ecological parameters such as wetness, light, soil, chemistry and texture and hence provide differing niches for different species
- Corridors are often located long streams
- Corridors do not have to be along natural features and landscapes but would include roadsides, fence lines, farm shelter belts and forestry woodlots.

SUMMARY – SIGNIFICANT VEGETATION AND FAUNA

While the existing rules in the plan relating to vegetation clearance and subdivision go some way to protecting significant vegetation and fauna, progress has been slow in achieving the objectives of the NRMP as further work is needed to better identify areas of significant vegetation and fauna habitat. The introduction of biodiversity corridors and the commencement of mapping potential Significant Natural Areas is a positive step in the right direction. However Biodiversity corridors have not been considered on a citywide scale and areas of significant vegetation and fauna habitat (Significant Natural Areas) do not have formal protection within the NRMP as directed by the Environment Court and anticipated in the NRMP objectives and policies. Furthermore, buildings are starting to be built on sites identified as potential Significant Natural Areas.

While the rate of vegetation clearance appears to have slowed pest and weed management needs to improve as this has been identified as the largest threat to significant vegetation and

fauna habitat within Nelson in a number of studies identified above.

A significant area of high conservation value land is protected via public ownership in the Conservation zone (approximately 14 000ha out of 42 000 ha or one third of the land area).

A number of studies have also highlighted the risk to coastal and freshwater habitat from increased intensification and expansion of urban areas and poor rural land and water management.

A better understanding of forestry operations will also help anticipate future ecological, flooding, and landscape impacts.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Work closely with the Nelson Biodiversity Forum to determine which initiatives should be progressed
- Undertake a comprehensive analysis between NZ Land Cover Database 2 & 3 to determine overall vegetation loss
- Progress the Significant Natural Area Mapping and associated Plan Change
- Assess initiatives to improve Pest and Weed management via the consultation with landowners required as part of the Significant Natural Area Mapping
- Investigate the inclusion of additional biodiversity corridors in the NRMP in the remainder of the city as part of the Nelson Development Strategy.
- Contact Forestry companies to ascertain when and where forestry areas are planned to be logged to help determine the potential for future ecological impacts.

In the medium term:

- Implement the NZCPS and, once finalised, the NPS Indigenous Biodiversity.

In general:

- Explore opportunities to work with Tasman and Marlborough District Councils and Te Tau Ihu iwi.

LANDSCAPE VALUES AND NATURAL FEATURES

NATIONAL POLICY DIRECTION

In achieving the purpose of the Resource Management Act the preservation of the natural character of outstanding natural features and landscapes and the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development shall be recognised and provided for as a matter of national importance.

A key focus to the New Zealand Coastal Policy Statement 2010 (NZCPS) is on preserving the natural character of the coastal environment and protecting natural features and landscape values through identifying these features and protecting them from inappropriate subdivision, use, and development and encouraging restoration of the coastal environment. Policy 13 provides further guidance on what elements are included in natural character and Policy 15 provides further guidance on identifying natural features and natural landscapes.

Policy 8 of the National Policy Statement for Electricity Transmission requires that the transmission system should avoid adverse effects on outstanding natural landscapes and areas of high natural character.

RESOURCE MANAGEMENT PLANS POLICY DIRECTION

The Nelson Regional Policy Statement (NRPS) objective relating to landscape (NA2.2) states that the aim is to have a landscape which preserves and enhances the character of the natural setting and in which significant natural features are protected.

Policies NA2.3.1-NA2.3.4 seek:

- the preservation of the natural landscape character and vegetation cover of the backdrop to Nelson,
- the encouragement of landuse practices in rural areas that manage impacts on landscape values, and
- the avoidance of development which detracts from the amenity afforded by dominant ridgelines and viewshafts within the urban area and gateways between urban and rural areas and between landscape units.

Policies NA2.3.5-NA2.3.7 state a desire to identify and protect significant landscape and natural features throughout the city and provide criteria for identification. Policies NA2.3.8 and NA2.3.9 seek the management of activities on or adjacent to any significant landscape or natural feature and the preservation of the natural character of the costal environment respectively. DH1.3 indicates that outstanding landscapes and features should be identified and protected.

The Draft 2008 NRPS landscape objectives are consistent with NRMP objective DO9.1 and seeks a landscape that preserves and enhances the character and quality of Nelson's setting, and in which outstanding natural features and landscapes are protected.

The Nelson Resource Management Plan (NRMP) objectives relevant to landscape include DO9.1, CM2, and CO2. DO9.1 states that a landscape that preserves and enhances the character and quality of the setting of the city and in which its landscape components and significant natural features are protected, is desirable. Policies DO9.1.1-DO9.1.4 seek the protection of significant landscape and coastal features (particularly ridgelines, the coastal environment, and riparian margins) and the management of development to achieve this (particularly when viewed from primary road routes). It is also noted that aquaculture should be avoided adjacent to headlands for visual safety or navigation reasons.

Objective CM2 requires the preservation of the natural character of the coastal environment and objective CO2 requires the maintenance and enhancement of the natural values contained within the Conservation Zone, including natural features.

The administration section of the plan (Chapter 3) outlines that the Conservation Overlay (749ha of a total land area of 42 275ha) covers Areas of Significant Conservation Value (ASCV), outside the Conservation zone (14 164ha), to, in part, protect outstanding natural features and landscapes from inappropriate subdivision, use, and development. The Marine ASCV overlay relates to the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development within the Coastal Marine Area.

The Coastal Environment Overlay (6 710ha) has both ecological and landscape significance and extends to follow the line of the nearest dominant ridge inland from the sea in the northern rural areas of the city but has been drawn to generally exclude urban built areas. The exceptions in the Urban area are the port and the state highway due to potential impacts on the coastal environment, and the Nelson Airport and Golf Course and Tahunanui Beach due to their public ownership, conservation value and coastal erosion issues.

The Landscape Overlay (2 959 ha) includes all areas adjacent to the city, coast and main traffic routes which are highly sensitive to development and comprise mainly the ridge tops together with the most sensitive shoulder slopes.

The Open Space and Recreation zone covers approximately 723 ha and is intended to recognise and protect land already used for open space and recreation purposes. The majority of land in this zone is reserve land vested in, and administered by, Council under management plans prepared under the Reserves Act 1977.

The purpose of the Conservation zone, as described in Chapter 14, is to maintain the area in its natural state with the majority of land being under some form of protection being forest park and other reserve land administered by the Department of Conservation (including the Nelson Boulder Bank, other areas of coastal reserve, and the Nelson Mineral Belt), and the waterworks reserves areas and other reserves administered by Nelson City Council. The conservation zone covers 14 164 ha and includes the most distant series of ranges in Nelson (the Bryant Range), running along the backbone of the City from the catchment boundary of the Roding river to Cape Soucis in the north. The land is generally unmodified or regenerating vegetation and often has high conservation values.

When taken collectively the Conservation, Coastal, and Landscape Overlays along with the Open Space and Recreation and Conservation zone (25 305ha out of 42 275ha) cover over half the Nelson land area, even when allowing for some overlap in zonings. These zones all aid in maintaining a natural open backdrop and foreground to the city.

NRPS performance indicators NA2.8 highlight the need for positive protection being introduced, and development, that preserves significant landscape and natural features. NRMP indicators include the retention of unobstructed views of significant features (including ridgelines/skylines, seaward facing slopes, estuaries, shorelines and riparian margins, coastal headlands/promontories and adjacent sea, and relatively unmodified parts of the costal environment) and buildings that are unobtrusive, as measured by observation, photographic records, Council records, and media reports. Similar measures apply to development in the Coastal Marine Area and Conservation areas.

NRMP RULES

Landscape is generally managed through the NRMP via the Landscape Overlay controls and, to some degree, by the Coastal Environment Overlay and the large tracts of land that are identified as Conservation and Open Space and Recreation zone.

In the Residential zone subdivision in the Landscape Overlay is a discretionary activity where a landscape assessment is provided (Plan Change 14 has amended this to restricted discretionary). The only controls on structures relate to above ground network utility structures and transmission

lines. Minor alterations are provided for above ground utility structures and electricity lines and support structures, otherwise discretionary activity consent is required.

In the Open Space Zone limited earthworks are provided in the Landscape Overlay where areas do not exceed 1.2m in height, width, or depth and where no road formation is required. Otherwise earthworks require consent as a discretionary activity. All subdivision is a discretionary activity and not anticipated within the zone, however assessment criteria do not specifically mention landscape matters. The Coastal Environment Overlay rule states that in the case of discretionary applications consideration will be given to the nature of the activity and its effect on the natural character of the coastal environment.

In the Rural zone portion of the Landscape Overlay, structures (other than fencing) require a controlled activity consent where they are a residential unit or farm structure, otherwise discretionary activity consent is required. Earthworks are generally discretionary in the Landscape Overlay area unless they are for maintaining roads. Minor upgrading of electricity transmission lines is permitted. Subdivision is a controlled activity if accompanied by a landscape assessment.

In the Rural Zone portion of the Coastal Environment Overlay subdivision is discretionary. Limited additions to buildings and structures are provided for where set backs from mean high water springs are achieved generally, and on the site located between Cable Bay Road and Delaware Inlet specifically, as well as areas outside an Archaeological Overlay. Limited earthworks are also provided for in these areas as long as they are outside the Land Management Overlay area.

Subdivision in the Coastal Marine Area is generally non-complying other than where the subdivision is for protecting an Area of Significant Conservation Value. Again landscape matters are not specifically identified as a matter of assessment.

All subdivision in the Conservation zone is discretionary and the impact on existing character is a matter of assessment. The overlay control notes that any relevant overlay control will be taken into account when assessing resource consents.

MONITORING INFORMATION

Landscape Assessments

A number of landscape assessments have been undertaken to inform the establishment and ongoing development of the NRMP. These include:

April 1994:	Nelson City Council, Recreation, Conservation and Landscape Study Appendix 3: Landscape Survey and Assessment Works Consultancy Services Limited 1176380
March 1995:	Supporting material to Landscape Study, provided by William Hansen Works Consultancy Services. Includes Objectives and Policies 1175966
November 2003:	Stoke Foothills and South Nelson Landscape Assessment Boffa Miskell Limited 527005
November 2005:	Nelson Landscape Study Identification of outstanding natural features and landscapes and other landscape sensitive areas for Nelson City Council Boffa Miskell Limited 515751 543780 contains photos from the flyover for this study.

The 1994 and 1995 Works Consultancy reports appear to have informed the landscape provisions in the NRMP today, in particular the location of the Landscape Overlay. The Stoke Foothills and South Nelson Landscape Assessments in 2003 was undertaken by Boffa Miskell to review landscape issues relative to urban growth pressure in the Stoke Hills area and provided a conceptual structure plan to guide future development in the area. The key features of this plan were:

- The creation of a greenbelt separating Stoke and Richmond
- The containment of the eastern edge of Stoke urban area
- Protecting the rural and open character of the foothills
- Expanding development opportunities in Ngawhatu Valley, Marsden Valley, and Champion Road

This report applied the existing NRMP landscape framework rather than testing it.

By contrast, the purpose of the 2005 Nelson Landscape Study was to identify and recommend actions for better defining the landscape overlays and improving the landscape management provisions in the plan. While the Nelson Landscape Study was made public in 2007, the study, unlike earlier landscape assessments, was not received by Council or consulted on with relevant landowners. Nevertheless, the study provides a useful monitoring tool to gauge the degree of change between 2005 and the future and as a record of the landscape issues at the time.

The study also provided a synopsis of the landscape issues in 2005:

- The boundary of the urban residential area is being pushed out in what appears to be ad hoc and uncoordinated pattern and more intensive development is occurring in rural areas
- The remote rural part of the district has become more vulnerable to development pressure as a result of population expansion and the property boom
- Marine farms represent potential threats to the natural coastal character of the northern coastal environment
- Despite growth pressures, large areas of the landscape resource remains protected due to public ownership

The 2005 Nelson Landscape Study was critical of the NRMP provisions and earlier studies as:

- The existing overlay boundaries are not clearly defined and do not extend to the remote and extensive rural hinterland to the north of the urban area,
- The existing provisions in the NRMP need to be more focussed on managing the effects of change and do not currently identify outstanding natural features and landscapes, and
- The Works Consultancy Services report does not reflect current landscape planning practice by addressing the cumulative effects of a wide range of scientific and socio-cultural factors – the value of which needs to be considered in preparing a landscape assessment; or consider the relative importance of these landscape areas in terms of the requirements of section 6(b) and 7(c) of the RMA.
- The plan also identifies some notable landscape areas such as the Boulder Bank, have not been included in the landscape overlay as they are covered in the Conservation zone – but they should be in landscape overlay too in order to recognise their dual role. The Coastal overlay in the northern rural area from Glenduan to Cape Soucis is consistent with a landscape understanding that the extent of the coastal environment extends to the top of the first dominant ridge and in the urban and peri-urban areas are more narrowly focussed on the immediate coastal margins, and the remnant conservation and ecological values in these locations rather than emphasising their landscape values.

The study then goes on to recommend replacing the existing landscape overlay with five new overlays and associated provisions that better provide for the particular landscape values within the Nelson City Council boundaries.

The overlays identified in the Nelson Landscape Study are:

Outstanding Features and Landscapes:

- Boulder Bank (feature)
- Haulashore Island and Fifeshire rock (feature)
- Northern Coastline from Glenduan to Cape Soucis (Landscape)
- Dun Mountain and Upper Maitai Catchment (Landscape)

Ridgelines and Hilltops Landscape Overlay

- Barnicoat Range
- Neson-Richmond Town Belt
- Town Belt Hills – Grampians, Shrland Hill, Botanical Hill
- Port Hills Ridge
- Kaka Hill to Gentle Annie
- SW face of Drumduan

Lower Foothills Landscape Overlay

- Stoke foothills
- Nelson Haven Foothills to Wakapuaka

Coastal Margins Landscape Overlay

- Nelson Haven from Maitai river mouth to Boulder Bank Road
- Saxton Creek to Rocks Road

Amenity Landscapes Overlay – Note s7 (c)

- Maitai River Valley
- SH6 Highway Amenity Landscape
- Northern Coastal Linkages
- Wakapuaka Flats

Building Consent Data

As noted above, performance indicators highlight the need for development to preserve significant landscape and natural features. One measure for this is the extent of building consents issued between 1996 and 2011 within the Landscape and Coastal Overlay areas identified in the NRMP.

Analysis of this data indicates that, of the 3852 building consents issued between 1996 and 2011, 297 were located within a Landscape Overlay identified in the NRMP (257 in the Residential zone where buildings are not restricted and 40 in the rural area where buildings are restricted).

An additional 179(5%) building consents were granted for sites in the NRMP Coastal Environment Overlay.

While this information is purely quantitative and is limited by the fact that it does not identify the exact location of the buildings, it is a useful snapshot to compare future monitoring against. It also highlights that there has been only 8% of development within Landscape Overlay areas since the NRMP was notified in 1996 but 13% when the Coastal Environment Overlay is considered as well.

No significant development has occurred in areas currently identified in the NRMP as features of international and national significance such as the Boulder Bank, Nelson Mineral Belt or on the potential outstanding natural features identified in the Nelson Landscape Study (which are in public ownership), although there is currently a proposal to establish a sculpture on Haulashore Island.

Portions of Plan Change 13 (Marsden Valley), 17 (Enner Glynn and Upper Brook Valley Structure Plan) and 18 (Nelson South) are identified as Lower Foothills area in the Nelson Landscape Study.

Photographic Records

Aerial Photos in combination with the flyover photos taken for the Nelson Landscape Study in 2005 provide a snapshot of the qualitative impacts of development. A later snapshot would provide an opportunity to show the degree of change and provide the basis for a qualitative analysis of the effectiveness of the NRMP at achieving the objectives of the District Plan, the Regional Policy Statement, national policy, and the RMA.

Harris Hill – Atawahi

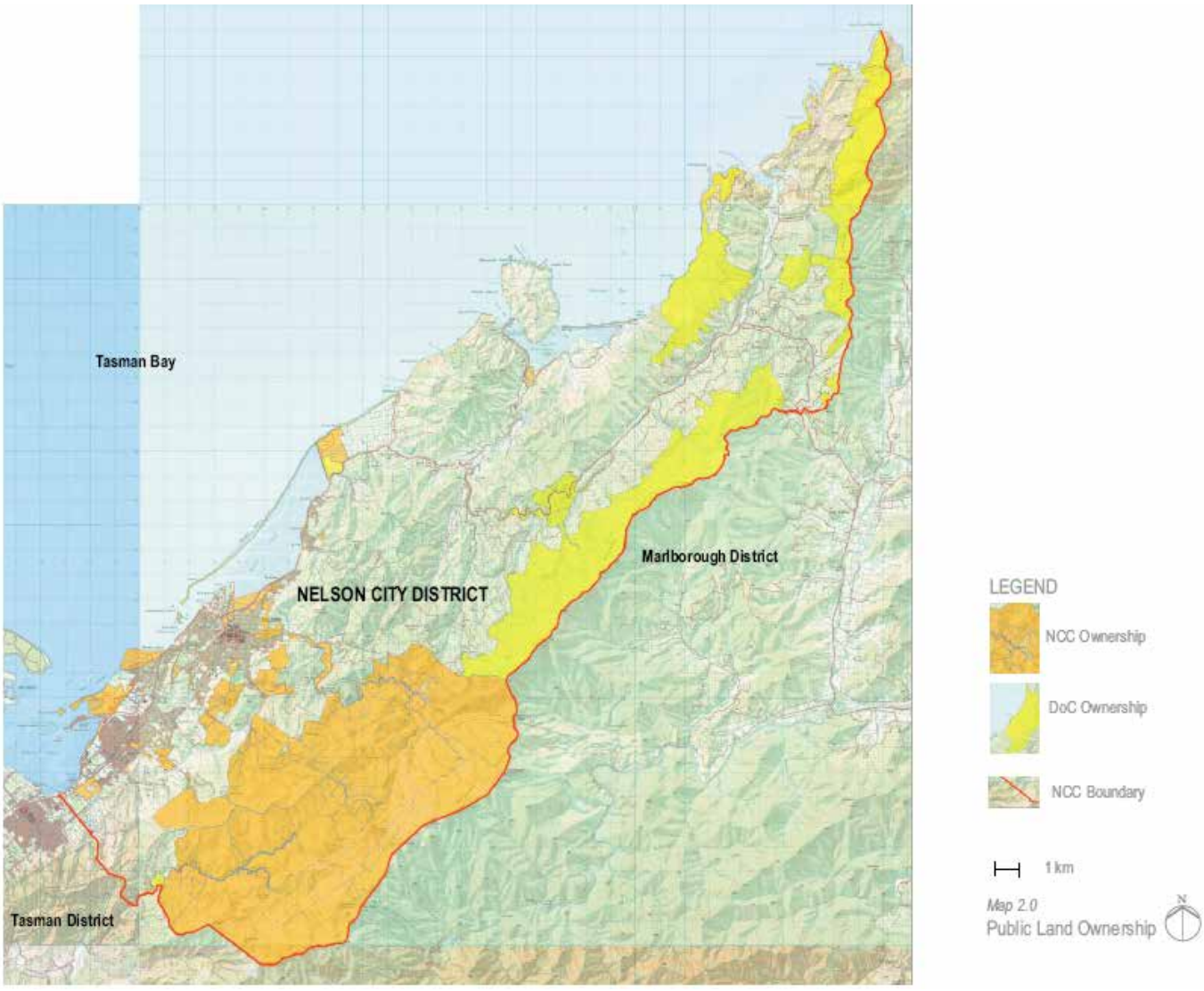
Bay View

Resident Surveys

The Nelson Residents Survey asked questions relating to development of the hillsides around Nelson City. The 2010 survey (RAD 968281) found that 76% of respondents would prefer if Council prevented or limited further development of the backdrop hills. The figure in the 2004 survey (RAD 648971) was 73%.

Public Ownership

As noted in the Nelson Landscape Study "a considerable portion of the town belt hills and coastal escarpment in the northern part of the district have the good fortune of being largely in public ownership". This is depicted in the Map below:



The majority of this land is zoned, Coastal Environment Overlay, Conservation Zone, or Open Space Recreation which are zones with some of the most restrictive development controls. A break-down of the various zone land areas across the city is detailed in the tables below:

Zone	Area ha
Commercial Leisure	1 540
Conservation	14 164
Inner City Centre	19
Inner City Fringe	26
Inner City – Intense Development	4
Industrial	294
Industrial Nayland South	52
Open Space Recreation	723
Residential	1 966
Residential Higher Density	102
Residential Lower Density	179
Residential Lower Density (Stoke)	7
Rural	21 959
Rural Higher Density Small Holdings	143
Rural Lower Density Small Holdings	1 644
Suburban Commercial	31
Road/Hydro	956
Ocean	81 167
Grand Total	**123 444**

Overlay	Area	% Land Area
Landscape	2 959	7.00%
Coastal Environment	6 710	15.87%
Conservation	749	1.77%

Plan Changes

In a recent hearing for Plan Change 13 the hearings panel criticised the NRMP Landscape objectives and policies to be unhelpful in assessing the merit of the Landscape Overlay proposed on the ridgeline between Enner Glynn and Marsden valleys. This was partly due to the change in landscape that had occurred between when the landscape provisions were drafted and the date of the hearing – some 15 years. The Committee decision was therefore based on an assessment of the existing environment. The committee "respectfully requested that a review of the Nelson Resource Management Plan's landscape provisions should be undertaken as a district-wide exercise given the extent of rezoning and development that has occurred since the Plan was notified in 1996."

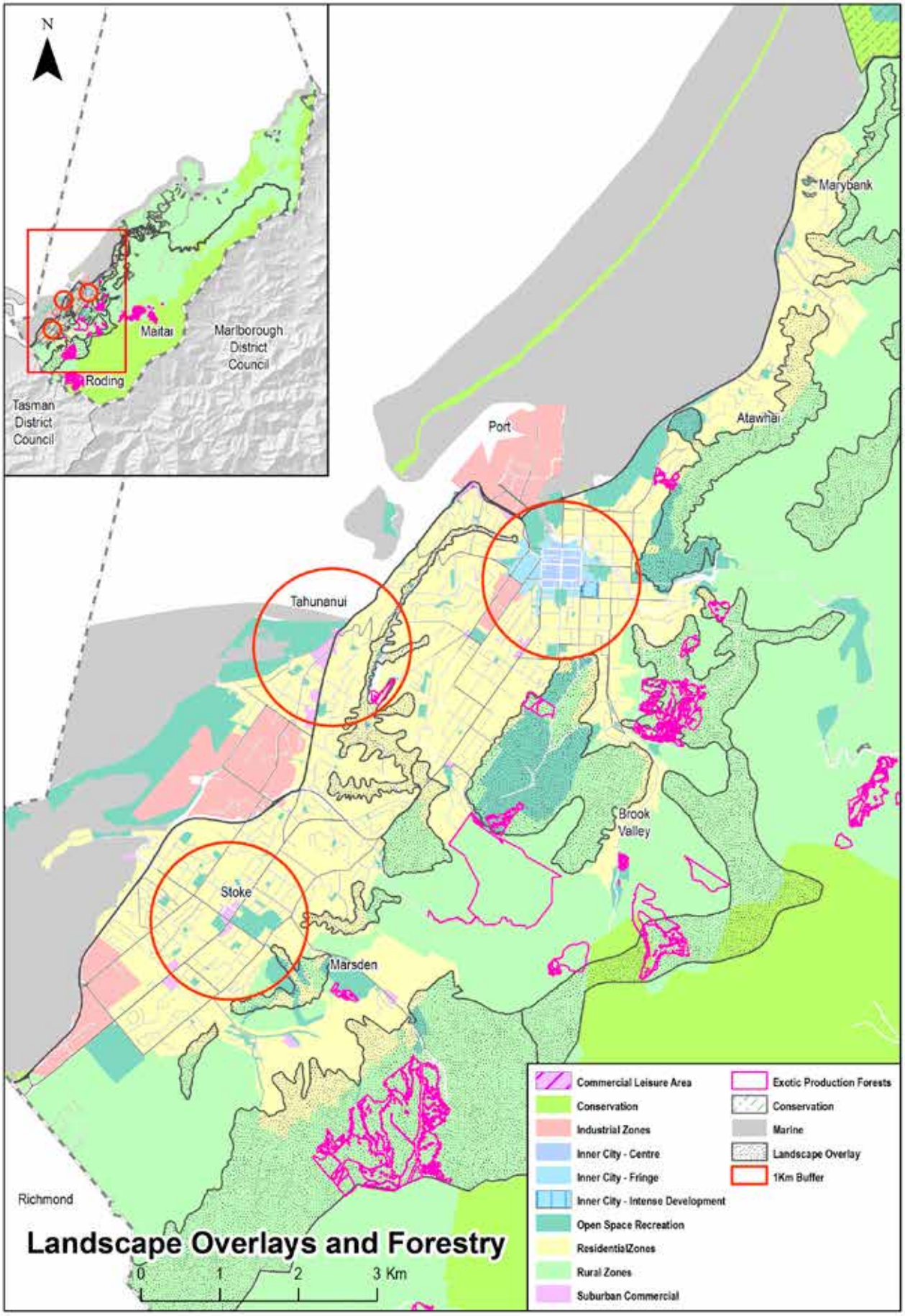
More recently Plan Change 17 has also utilised the landscape provisions in the NRMP to help distinguish the boundary between residential and rural areas.

Council Forestry Plans

As noted earlier forestry has the potential to create landscape impacts and is not currently controlled for landscape matters. The table below shows Councils 10 year harvest plan with a focus in the Marsden, Maitai, Roding, and Brook Valleys.

Year	Location	Age (oldest)	Cut area (total ha)
2012	Marsden (42.03, 42.03A, 42.04, 42.04A)	27	26
	Maitai (1.01, 2.02)	31	9
2015	Maitai (3.03)	27	6
2016	Roding (53.01)	27	25
	Maitai (3.02, 4.05)	30	30
	Brook (21.04)	30	19
2017	Maitai (9.03, 10.03, 9.02)	30	27
	Brook (22.05, 22.06, 26.02)	30	11
2018	Roding (51.01, 51.02, 52.02, 55.02, 55.06)	30	79
2019	Roding (52.01)	30	24
	Maitai (1.02, 1.03, 1.04)	34	16
2020	Roding (51.03, 55.01)	28	11
2021	Maitai (8.02)	30	4
2012-2021			**Total – 287ha**

The map below indicates where these sites are (refer purple hatching).



Of note the Brook and Marsden Valley forest are currently located within NRMP Landscape Overlay.

In order to gauge the potential landscape impacts of wider forestry operations in the city it would be useful to obtain this information from other forestry operators within Nelson.

SUMMARY – LANDSCAPE VALUES AND NATURAL FEATURES

NRMP landscape controls do not meet the intent of the NRMP objectives in that landscape matters are identified as important considerations in the Coastal and Conservation zone objectives but there is little or no reference to landscape matters in the relevant rules. It is also unclear why there is a distinction in consent category for subdivision (discretionary in the residential zone and controlled in the rural zone), structures, and earthworks controls in the Landscape Overlay between the zones.

While a significant portion of the City is covered by a landscape or conservation zoning the current landscape provisions in the NRMP do not meet the intent of national and regional policy direction as outstanding natural features and landscapes, and natural coastal character areas, have not been appropriately identified and protected.

A review of landscape assessments undertaken to inform and develop the NRMP suggests that the policies and methods need review in order to better achieve the purpose of the RMA, and the key national, regional and district objectives, particularly in relation to identifying and protecting Outstanding Natural Features and Landscapes. In particular the NRMP rules make no distinction between significant landscapes and landscapes of outstanding quality, warranting protection rather than management.

A review of the available quantative data suggests that the plan is effective at achieving the general objectives of the plan by limiting the extent of development in significant landscapes as currently identified but has less effect at controlling development in other important landscapes identified in the Boffa Miskell studies. Recent plan changes (PC13, 17, and 18) will also result in an increased density of development in the Lower Foothills areas. Accordingly, there is a need for further qualitative analysis due to the limitations of the quantitative analysis undertaken as part of this s35 report, and given that the last landscape assessment is over seven years old and has not been considered by the public or Council.

RECOMMENDATIONS FOR FURTHER WORK

- Develop GIS maps showing where buildings have been built in relation to the existing Landscape Overlay and in relation to the five proposed Landscape Overlay areas as shown in the November 2005 Nelson Landscape Study.
- Drape older aerial photo series over existing GIS information to allow comparison between 'then and now'.
- Select individual areas of change within the existing Landscape Overlay and assess how this change has, or has not achieved the Objectives and Policies of the RPS and the NRMP. After initial assessment this will probably need a Landscape Architect to assess or confirm to give it more validity.
- Carry out a photo series to record the current state of the existing Landscape Overlay (ideally one while the grass and vegetation is at its greenest; and another taken from the same places while the grass and vegetation has browned off). This will ensure that the impact of structures and development can be recorded in both states. Record the points the photos are taken from with GPS and the camera settings/ zoom.
- Contact Forestry companies and landowners with forestry blocks to ascertain when and where forestry areas are planned to be logged to help determine the potential for future landscape impacts.
- Explore opportunities to work with Tasman and Marlborough District Councils.

- Undertake further landscape analysis, in consultation with the community, as part of the Nelson Development Strategy and to inform a response to the NZCPS.
- Following further landscape analysis, review the landscape provisions in Resource Management Plans to ensure that they meet national and regional policy direction and reflect the current state of the environment.

AIR

NATIONAL POLICY DIRECTION

Safeguarding the life supporting capacity of air and having particular regard to the finite characteristics of natural and physical resources and the maintenance and enhancement of amenity values are Part II RMA matters. Natural resource allocation is a key regional Council function.

The National Environmental Standards for Air Quality came into effect on 8 October 2004. The NES for Air Quality are regulations made under the Resource Management Act 1991 which set a guaranteed minimum level of health protection for all New Zealanders.

The NES is made up of 14 separate but interlinked standards. The 14 standards in the NES include:

- seven standards banning activities that discharge significant quantities of dioxins and other toxics into the air
- five standards for ambient (outdoor) air quality
- a design standard for new wood burners installed in urban areas
- a requirement for landfills over 1 million tonnes of refuse to collect greenhouse gas emissions.

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

Nelson Regional Policy Statement Objective DA1.2 seeks improvement in Nelson's ambient air quality. Policies require the:

- Setting of minimum ambient air quality standards,
- Control of the volume or concentration of point source discharges,
- Management of industrial, commercial and rural discharges,
- Requirement for discharge activities to locate away from residential dwellings, educational facilities, hospitals, shops, or other public buildings unless effects can be managed,
- Promotion of energy conservation in buildings, and
- The minimisation of vehicle emissions while recognising the incompatibility between some landuse and primary transport corridors.

A key method highlighted in DA1.4.2 is for Council to prepare a regional air quality management plan.

The Draft 2008 Nelson Regional Policy Statement seeks the maintenance and enhancement, where it is degraded, of Nelson's ambient air quality and the management of adverse effects of localised discharges to air.

Nelson Regional Policy Statement performance indicators (DA1.8) requires that the air quality monitoring programme shows a decline in mid winter particulate matter levels and monitoring of industrial and commercial emissions shows compliance with standards and/or consent conditions being met.

MONITORING INFORMATION

Air Quality Plan

The Nelson Air Quality Plan (NAQP) was notified in 2003, having immediate legal effect and was made operative on 3 November 2008.

The context for development of the Nelson Air Quality Plan was that in 2001, in the worst affected areas of the city, PM_{10} levels (24 hour average) as high as 165ug/m^3 were measured. This is 3.3 times the national standard. There were 81 breaches in that year (compared to 1 allowed by the NES). In 2001 PM_{10} levels in the city put Nelson in the three worst urban areas in New Zealand, along with Christchurch and Alexandra.

The operative Air Quality Plan has a single objective, A5-1 Air Quality:

The maintenance, and the enhancement where it is degraded, of Nelson's ambient air quality, and the avoidance, mitigation or remediation of any adverse effects on the environment of localised discharges to air.

The strategy developed was that because the assimilative capacity of the air was substantially over allocated, reductions in emissions by 70% would have to achieved to comply with the NES for PM_{10}. Emissions from existing domestic and industrial sources, outdoor burning and vehicles would all need to be reduced to varying degrees (as set out in Policy A5-1.4).

Consequently, as the air was already very polluted, any new discharges needed to be carefully managed to ensure that the required improvement in air quality was not compromised, or once achieved, not worsened to again breach the NES. Hence considerable attention was paid to the thresholds for permitted discharges when the operative Air Quality Plan was developed.

The Plan includes rules in the Urban Area to:

- Largely ban outdoor burners from 2003
- Phase out the use of open fires (enforced from 2007)
- Progressively phase out the use of enclosed burners (oldest first 2010 and 2012)
- Restrict installation of fires/burners in new houses/those without pre-existing fire to ultra low emission pellet burners
- Require resource consent for commercial/industrial discharges of PM_{10}
- Regulate emissions of new burners installed

Financial assistance was also provided for the replacement or upgrade of pre-existing fires or burners. The NAQP fulfils the requirements of the NRPS outlined above and establishes its own monitoring requirements.

Plan Changes A1 and A2 to the NAQP were notified in September 2010 and 2011 respectively. Plan Change A1 sought the following amendments:

- A new rule to deal with the use of wood pellet fuel in industrial-scale fuel burning appliances.
- Transitional provisions for domestic open fires and enclosed burners in rural properties which, through change in land use or rezoning, become subject to the Air Quality Plan's 'Urban Area' controls. The new rule allows such fires to continue to be used and replaced in the future with clean air approved burners if the owners wish.
- An update to the map showing what is 'Urban Area'.
- Correcting an error that prevents existing 'Jetmaster'-type fires within the Urban Area (which can be used until 1 January 2013) from being replaced with a complying woodburner.
- Deleting rule AQr.55A which allows the burning of certain agricultural plastics. There are now two product stewardship programmes that operate in the region enabling the recycling rather than burning of bale wrap and agrichemical containers.
- A minor change to allow different stack (flue) arrangements for domestic burners running on diesel.

The operative provisions (12 March 2012) were largely unchanged from the notified version apart from some minor grammatical changes and replacing the word "diesel" with the words "liquid-fuelled appliances" in rule AQr.23.

Plan Change A2 sought to align the NAQP with the NES for Air Quality, as amended in 2011, by increasing the time for compliance with the standard for particle matter (PM_{10}). The Plan Change proposed to:

- Amend the target dates for compliance with the PM_{10} standard in Policy A5-1.4 to align them with the new NES dates, and
- remove that part of the rule requiring the compulsory phase-out of domestic enclosed burners in Airsheds A and B1 installed after 1 January 2000 and which are not compliant with the emission requirements in the Air Quality Plan i.e. essentially burners installed 2000-2003 (when the Air Quality Plan was notified).

Nelson Air Emissions Inventory

Two inventories of emissions to air have been completed on a five yearly basis in accordance with method A5-1.9.iv of the Nelson Air Quality Plan. The first in 2001 and the second in 2006. The 2011 inventory was deferred to 2012 due to timing and resourcing constraints.

2001 Inventory (1209407):

The purpose was to estimate what sources were producing various air pollutants (PM_{10} & $PM_{2.5}$, carbon monoxide, nitrogen oxides, sulphur oxides, volatile organic compounds, carbon dioxide and benzene). The sources looked at were domestic fires, outdoor burning, industry & commercial, motor vehicles. For domestic fires and outdoor burning the estimate was by household survey (a sample); industry by questionnaire to all dischargers (plant size, amount of fuel burnt, allows discharge to be estimated); and for vehicles emissions were calculated by a model that uses 'vehicle kilometres travelled', the composition of Nelson fleet (from registrations) and apply emission factors to different types and ages of vehicles).

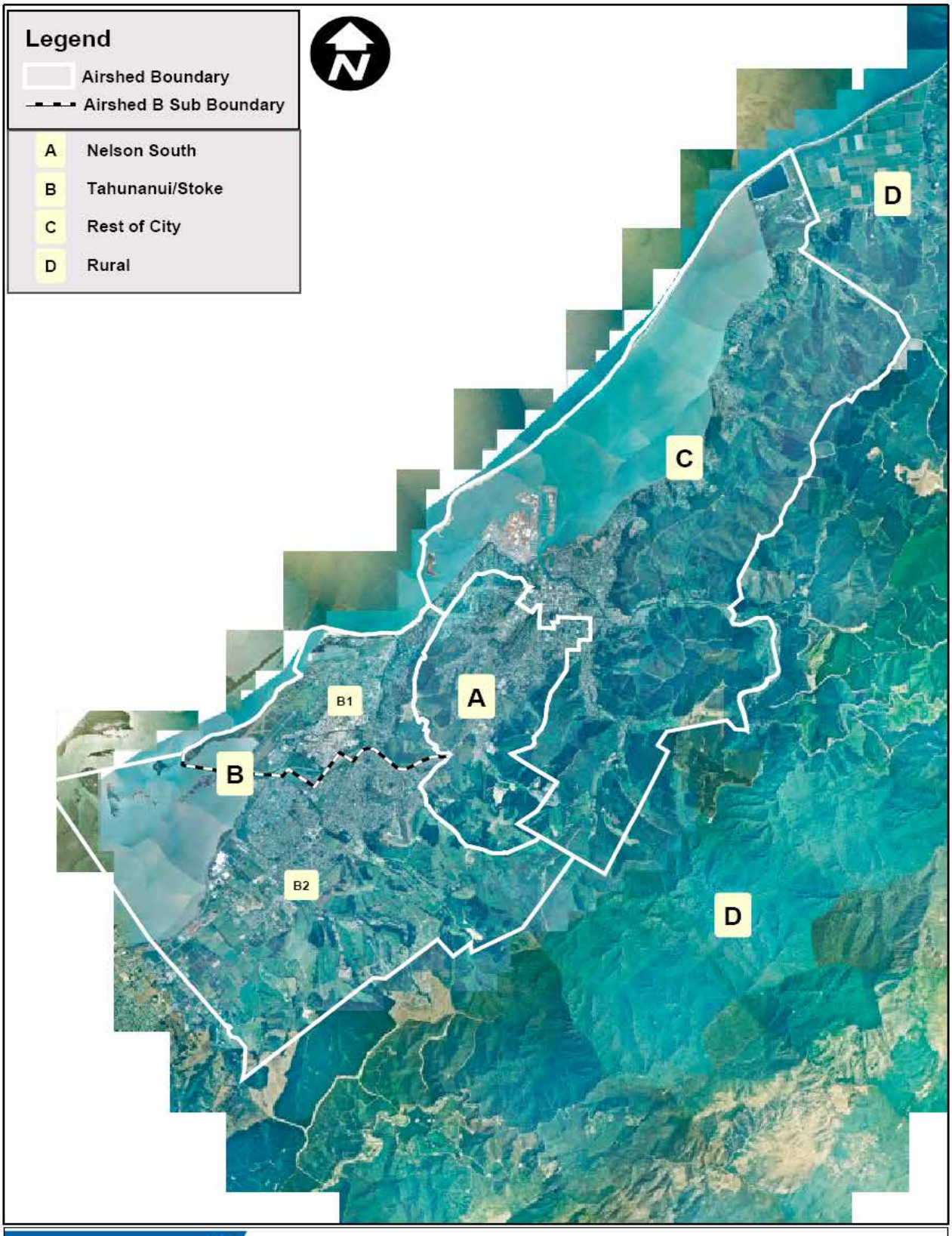
The inventory also discussed other sources such as marine aerosols (salt etc), dust, and other vehicles (lawn mowers, ships and pleasure craft).

The inventory is typically done in winter and estimates the share of emissions from the various sources on a typical winter's day for each pollutant. It also looks at diurnal variations i.e. when peaks occur during the 24 hour period.

The survey found that the most predominant forms of heating in Nelson were electricity (68%) and wood burners (40%). About 26% of households relied on unflued gas heating and many households used more than one method to heat their homes.

The majority of the anthropogenic (human induced) PM_{10} emissions (78%) across the whole Nelson area result from emissions from domestic heating, with 14% from industry and the remainder from motor vehicles and outdoor burning. The industrial contribution is dominated by emissions from airshed two (now called Airshed B1), which includes the airport and Tahunanui census area units, and contributes 73% of the total PM_{10} emissions from industry. In most other areas the domestic heating contribution to PM_{10} emissions is around 85-93%. Exceptions included the Port area, which has very little domestic housing, and airshed five (Airshed A), which includes Toi Toi, Broads, Kirks, Bronte, Grampians and part of Britannia Heights. In the latter area (Airshed A), 88% of the PM_{10} emissions are from domestic heating, 2% from motor vehicles and 6% from industry.

It should be noted that the city was divided into eight airsheds for the inventory. Airshed 5 survives as Airshed A, gazetted under the NES, and Airshed 2 is B1. The other airsheds amalgamated form the rest of Airshed B, and Airshed C. The current airsheds are depicted below:


Legend
Airshed Boundary
Airshed B Sub Boundary
A Nelson South
B Tahunanui/Stoke
C Rest of City
D Rural
N
A
B
B1
B2
C
D
D
NELSON CITY COUNCIL
AIRSHEDS FOR NELSON CITY

Across the whole of Nelson just under two tonnes of PM_{10} are emitted per night during the winter months. Emissions of the finer $PM_{2.5}$ size fraction (1.7 tonnes) are similar to the PM_{10} size fraction, with the majority of these emissions also arising from domestic heating. Domestic heating and motor vehicles contribute the bulk of the carbon monoxide (52% and 46% respectively) and benzene (57% and 39%), although the uncertainties surrounding benzene estimates are high.

On average around 205 grams of PM_{10} are emitted per hectare across the whole of Nelson. However, the density of emissions varies considerably depending on the amounts of unoccupied land. For example, the density of emissions is highest in airshed two (~630 g/ha) because it contains more occupied land and because of the additional impact of industry.

2006 Inventory (1209420):

This focused just on PM_{10} as it was the only contaminant in breach of the national environmental standards. The study looked at the same source categories (domestic; industry & commercial; vehicles) as the 2001 study. The 2006 inventory showed reductions in PM_{10} emissions in all airsheds, with an 18% reduction overall. The majority of the reduction came from changes to domestic heating. This is offset slightly by predicted increases in motor vehicle emissions from 2001 to 2006.

Contaminants included were particles (PM_{10} and $PM_{2.5}$), carbon monoxide, nitrogen oxides, sulphur oxides, volatile organic compounds and carbon dioxide. This report primarily focuses on emissions of particles (PM_{10}), as the only contaminant in breach of the NES in Nelson. Sources included in the inventory were domestic heating, motor vehicles and industrial and commercial activities. Four separate study areas were examined. These were referred to as Airshed A – Nelson South, Airshed B1 – Tahunanui, Airshed B2 – Stoke and Airshed C – Rest of Nelson.

A domestic home heating survey was carried out for each area to determine the proportions of households using different heating methods and fuels. Results showed that electricity was the most common method of heating the main living area being used by 57 – 65% of households depending on the study area. Wood burners were used by 34-38% of households and gas by 20-27% of households. Many households used more than one method to heat the main living area of their home.

The main source of PM_{10} emissions in all four areas during the winter was domestic home heating, which accounted for 92%, 70%, 89% and 88% of total emissions in Airsheds A, B1, B2 and C respectively. Motor vehicles contributed around 10%, 8%, 9% and 10% and industry 2%, 21%, 2% and 2% of total emissions in Airsheds A, B1, B2 and C respectively.

Nelson State of The Environment Reports

In 1999:

Trends from monitoring since 1983 showed a steady decline in the winter smoke levels in Nelson since 1983. However, the 1999 results still show high winter smoke levels at the Vanguard Street and Quarantine Road monitoring sites, in terms of the World Health Organisation guidelines. Council was about to begin collecting information on PM_{10} and $PM_{2.5}$.

In 2001:

PM_{10} particles identified as the major issue, and PM_{10} levels exceeded guideline levels on 81 occasions (51% of the days that were monitored). The combination of emission estimates from all sources indicates that domestic heating is the main contributor to PM_{10} and $PM_{2.5}$ emissions across Nelson (see figure 13). Almost two tonnes of PM_{10} is produced in Nelson per day and 78% of this comes from domestic heating. Of this, 18% come from open fires, 41% from burners installed prior to 1990 and the remainder from other wood and multi-fuel burners.

- CO reached the good and acceptable EPI for the 1- and 8-hour averaging periods respectively.
- NO2 reached the acceptable EPI for both the 1- and 24-hour averaging periods

- PM_{10} exceeded guideline levels on 81 occasions (51% of the days that were monitored).

The combination of emission estimates from all sources indicates that domestic heating was the main contributor to PM_{10} and $PM_{2.5}$ emissions across Nelson (see figure 13). Almost two tonnes of PM_{10} was produced in Nelson per day and 78% of this came from domestic heating. Of this, 18% came from open fires, 41% from burners installed prior to 1990 and the remainder from other wood and multi-fuel burners.

In 2004:

- PM_{10} guideline values had 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 had been recorded.
- Although sampling had not been taken daily at Stoke and Tahunanui, trends showed that Tahunanui levels were around 83% of those at the St Vincent St site, and Stoke levels were around 67% of the St Vincent St site.
- Particles of less than $PM_{2.5}$ were of concern because they can lodge deeper into the lungs. Due to the high use of wood in Nelson, approximately 90% of 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.

In 2010:

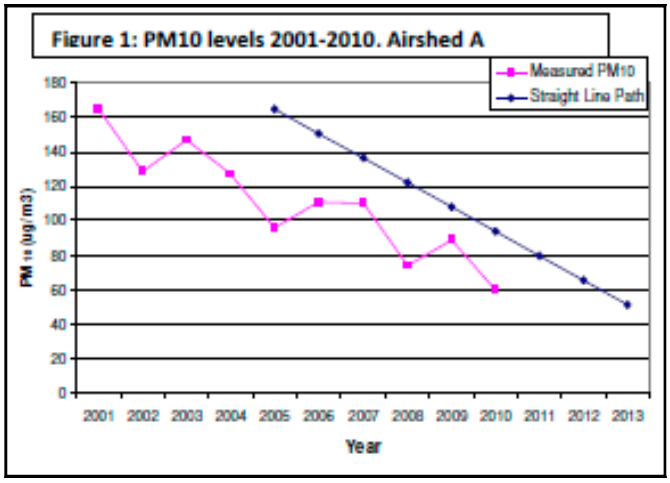
Nelson air quality has improved from 2001 to 2008, demonstrated by a gradual fall in both PM_{10} concentrations and the number of times the guideline value in Airshed A (Nelson South) and B (Tahunanui – Stoke) was exceeded. The guideline value was not exceeded in Airshed C (rest of Nelson) in 2008.

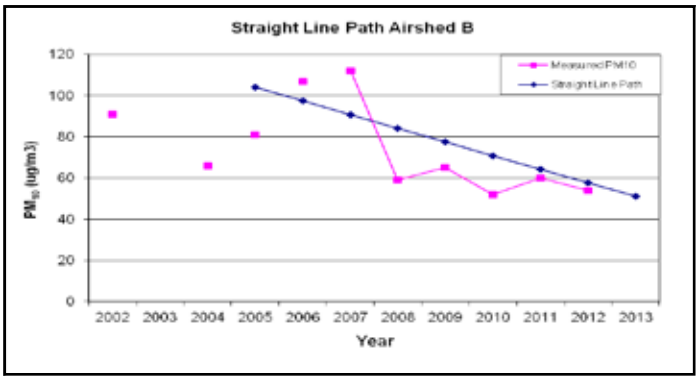
The Council was currently on track to meet its air quality goals as defined by the Straight Line Path and the 2013 National Environmental Standard. However, significant reductions in domestic emissions are still required to achieve this target for Airsheds A and B.

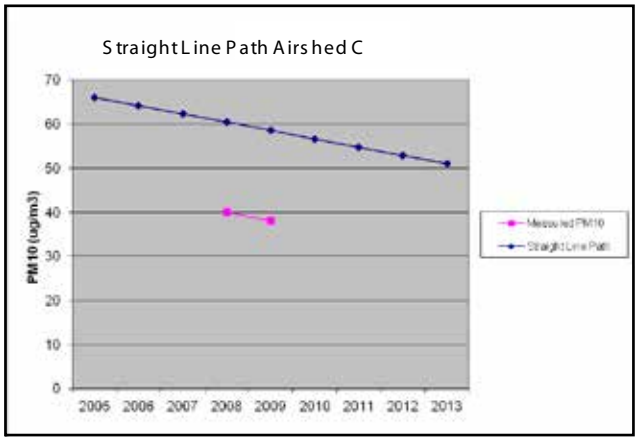
There had been a gradual reduction in the number of exceedances in Airshed A (St Vincent Street) from 81 in 2001 to 24 in 2008. The number of exceedances in Airshed B (Blackwood St Reserve) was similar over the two years, 9 in 2007 and 11 in 2008. There were no exceedances in Airshed C (Brook St) during the first complete monitoring season in 2008.

PM_{10} Monitoring Data

The Figures below indicate that for PM_{10} the objective of the Air Quality Plan (degraded air quality being enhanced), and Policies A5-1.3 and A5-1.4 (compliance with the national standard for PM_{10} by 2013) are on track to be achieved.

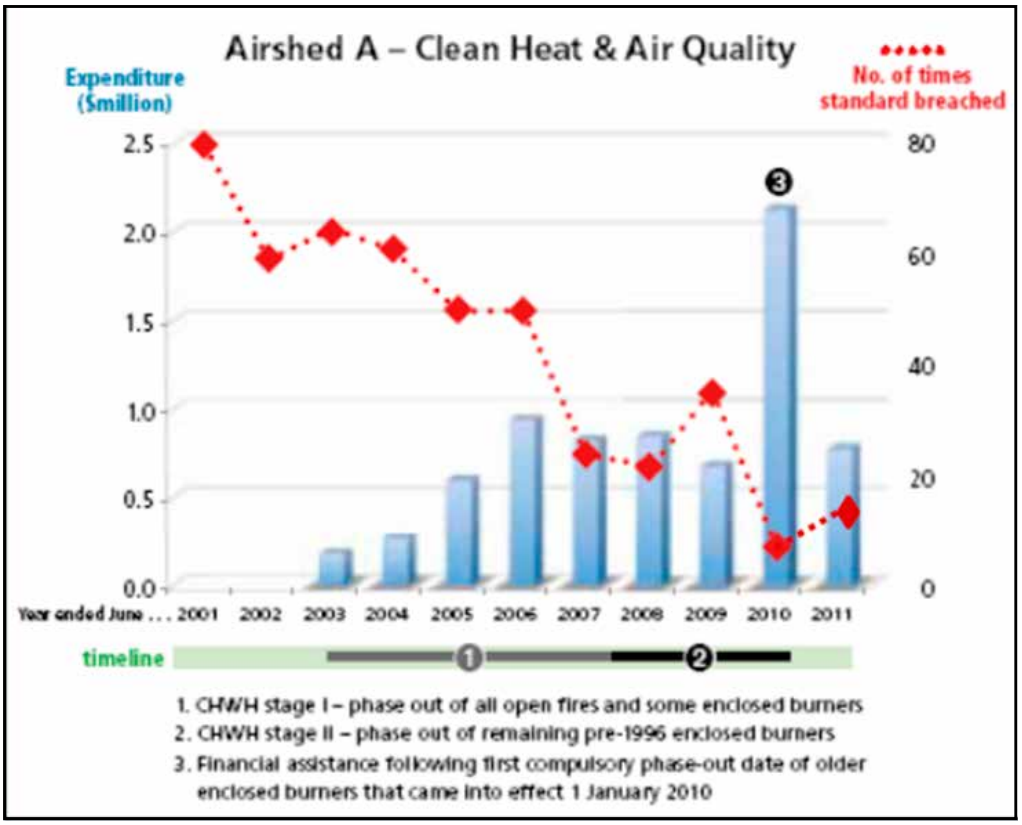






Nelson City Council Annual Report 2011 (1122479)

The graph below shows the investment that Council has put into improving air quality since the monitoring programme began in 2001. The programme included a new air quality plan, promotions, a ban on open fires and funding for the Clean Heat Warm Homes Scheme to help owners to replace old enclosed burners with cleaner alternatives. The dotted line shows the number of times the target is exceeded (50 micrograms of PM_{10}). Councils goal is to have no more than three breaches per winter by 2016 and not more than one breach from 2020 onwards.



Overall the Investment that Council has put into cleaning up Nelson's air quality has been effective at achieving the NRPS objective that seeks improvement in Nelson's ambient air quality, and is on track to achieving the NES Air Quality standards.

Home Insulation

The NRMP includes a performance indicator seeking the promotion of energy conservation in buildings. As noted in the energy section of this report, according to the EECA "Warm Up NZ:Heat Smart" newsletter of February 2012, Nelson has had the second highest percentage (17.2%) of housing stock retrofitted with insulation in NZ. This is just below Gisbourne at 18.8%.

SUMMARY – AIR

A mix of regulation and incentive has seen air quality improve significantly in Nelson since 2001. PM_{10} concentrations have fallen from levels of 165ug/m^3 in Airshed A in 2001, to 58ug/m^3 and 15 breaches in 2011. Airshed B concentrations have fallen from 100ug/m^3 in 2007 and 9 breaches to not more than one breach per year and compliance with the national standard. Airshed C is fully compliant.

Overall the NRPS objective, that seeks improvement in Nelson's ambient air quality, and the NES Air Quality standards are being effectively achieved.

RECOMMENDATIONS FOR FURTHER WORK

- That a full assessment of the efficiency and effectiveness of the Air Plan be carried out in 2013 in accordance with the s35 requirements of the RMA.
- To ensure on-going compliance with the NES Air Quality, it is recommended that the five yearly emission inventory continue.

ENERGY

NATIONAL POLICY DIRECTION

Pursuant to Part 2 of the Resource Management Act consideration of the effects of climate change (RMA s7i), the efficiency of the end use of energy (RMAs7ba), and the benefits derived from the use and development of renewable energy (RMAs7j) is required in achieving sustainable management (the purpose of the RMA). Regional functions under the RMA include the strategic integration of infrastructure with landuse. Renewable energy is defined in the RMA as "energy produced from solar, wind, geothermal, hydro, biomass, tidal, wave, and ocean current sources". The definition of infrastructure in the RMA also includes pipelines that distribute or transmit natural and manufactured gas, petroleum, or geothermal energy, and facilities for the generation of electricity and associated conveyance infrastructure.

As a result of the 2004 amendment to the RMA the regulatory means of controlling greenhouse gases were removed as at the time fiscal measures (carbon tax) were being introduced to have the same effect. Consequently Councils cannot make rules which control the discharge of greenhouse gases on the basis that they contribute to climate change, nor can they consider climate issues in relation to resource consents (see s70A RMA).

The NPS for Renewable Electricity Generation 2011 recognises:

- the benefits of renewable electricity generation activities,
- the practical implications of achieving targets such as the need to protect assets,
- capacity and resource limitations,
- the practical constraints associated with new and existing generation activities such as logistical and location matters and provision of offset or environmental compensation measures,
- the need to manage reverse sensitivity effects,
- the need to incorporate provisions for renewable electricity generation activities into resource management plans including solar, biomass, tidal, wave, ocean current, hydro-electrical, wind, and geothermal resources and provision for small and community scale generation, and
- the need to enable future generation opportunities.

The NPS Renewable Electricity Generation requires that Changes will be made in a staged manner where required to the RPS by April 2013 and then the District plan 12 months after the RPS provisions become operative.

The National Policy Statement on Electricity Transmission 2008 objective is to recognise the national significance of the electricity transmission network by facilitating the operation, maintenance, and upgrade of the existing transmission network and the establishment of new transmission resources to meet the needs of present and future generations, while managing adverse effects on, and of, the network. There are a number of policies that seek recognition of the national benefits of transmission, management of environmental effects of transmission and the adverse effects on third parties, identification of the network on planning maps, and the facilitation of long term planning for the network.

The National Environmental Standards for Electricity Transmission Activities came into effect on 14 January 2010. The NES applies to activities concerning existing electricity transmission lines. It sets out a framework of permitted activities and resource consent requirements for the operation, maintenance and upgrading of such lines including the trimming of trees and earthworks. Vegetation clearance associated with transmission lines in a "natural area" is a restricted discretionary activity whilst earthworks are permitted where certain area, location, and construction standards are met.

A report entitled "Report to the Minister for the Environment's Infrastructure Technical Advisory Group" was developed in 2010 as part

of the phase 2 reforms to the RMA. Amongst a number of other recommendations the report recommended that s 6 be amended to include an additional matter to the matters of national importance as follows:

"The development and operation of regionally and nationally significant infrastructure"

It was felt that this would help enable key infrastructure projects and provide more of a social and economic balance to the environmental matters currently considered of national importance.

The NZCPS 2010 requires that the potential of renewable resources in the coastal environment, such as energy from wind, waves, currents, and tides, to meet the reasonably foreseeable needs of future generations be taken into account when making decisions in the Coastal environment (Policy 6).

RESOURCE MANAGEMENT PLAN POLICY DIRECTION

NRPS objectives within EN1.2 promote the sustainable use of energy through an orderly transition from non-renewable to renewable resources and the stabilisation of greenhouse gas emissions below the 1990 levels by the year 2000.

The Draft 2008 NRPS objectives require the efficient use of energy, greater use of local renewable energy sources including solar energy, and greater security of supply. Greenhouse gas emissions and climate change objectives seek the stabilisation or reductions of greenhouse gas emissions and indicate that unavoidable greenhouse gas emissions should be offset via carbon sequestration projects.

It is anticipated in the NRPS that there will be a reduction in non-renewable energy and carbon dioxide emissions and an urban form will develop that reduces dependence on non-renewable sources of energy. Performance indicators (EN1.8) highlight the need for an increase in energy conservation buildings, increased patronage on public transport and walking and cycling and an increase in the area of production forestry and amenity planting in Nelson City.

In the NRMP, Operative Objective DO14.1 encourages subdivision and development that recognises the orderly and efficient use of land. DO 14.3 encourages the provision of services to subdivided lots and developments in anticipation of the future land use activities. DO14.4 requires the efficient use of network utilities infrastructure while managing adverse effects on surrounding environments. DO 14.5 indicates the importance of appropriate provision of community services and facilities in the district.

Plan Change 14 introduces a number of new urban design objectives that relate to energy use. In particular Objective DO13A.2 seeks to improve connections by ensuring that subdivision and development in urban areas creates interconnected structures and spaces to ensure that people find it easy to get around. Policies seek subdivision and development that provides for multimodal transport. Objective DO13A.6 seeks urban development that meets the community's current needs without compromising future needs. Policies require environmentally responsive subdivision and development through the efficient use of infrastructure, containment of urban sprawl, reduction in vehicle dependence, the solar orientation of buildings and sites, and the encouragement of the use of renewable energy sources and sustainable building materials.

NRMP RULES

In terms of the transmission of electricity there are various rules in the NRMP that control how close buildings can be located to electricity transmission lines as well as the provision of new electricity services.

Discretionary activity consent is generally required for development in the vicinity of transmission lines, which are shown on the NRMP planning maps. Buildings near transmission lines in the Rural and Residential zones require residential units or education facilities to be located greater than 20m from an existing above ground, or 10m of any existing underground, electricity transmission line with a capacity of equal to or greater than 66kV. In the Conservation zone and

Coastal Marine Area most building/structures require consent as a discretionary activity. In the Open Space zone residential accommodation, not meeting required setbacks outlined above, and places of assembly require consent as a discretionary activity.

Electricity transmission is therefore catered for in the NRMP as there are generally no transmission lines that pass through the Inner City, Suburban Commercial, and Industrial zones and Transpower is not anticipating expansion of the network in the future.

Network utility rules control above and underground utilities. Underground utilities are generally permitted while above ground network utilities are generally discretionary in the Inner City, Suburban Commercial, Industrial, Rural, and Open Space zones. In the Coastal Marine Area the maintenance and operation of network utilities is permitted where there is no disturbance of bed required. controlled activity consent is required if cable is buried otherwise discretionary consent is required. In the Conservation zone maintenance and upgarading of existing infrastructure is permitted, while the installation of new network utilities requires controlled activity consent.

Rules in the NRMP do not typically encourage the provision of renewable energy although daylight standards do provide for adequate daylight access to buildings as well as exemptions for solar cells (via Plan Change 23) which promotes opportunities to be less reliant on non-renewable energy sources. Furthermore, subdivision and development controls allow for higher densities of residential development in close proximity of community facilities and transport nodes and encourage the provision of access along esplanade reserves and connected street networks. These controls, along with design standards and no carparking minimums in the Inner City area, as well as parking reductions in other zones via Travel Management Plans, promote the use of alternative transport modes. This, in turn, may result in a potential reduction in the use of non-renewable energy sources.

MONITORING INFORMATION

There is a limited amount of information relating to energy use in Nelson.

According to the EECA "Warm Up NZ:Heat Smart" newsletter of February 2012, Nelson has had the second highest percentage (17.2%) of housing stock retrofitted with insulation in NZ. This is just below Gisbourne at 18.8%.

REGION	JANUARY-TOTAL RETROFITS	2011/12 YEAR - TOTAL RETROFITS	PROGRAMME TO DATE - TOTAL RETROFITS	% TOTAL DWELLINGS RETROFITTED
Auckland	939	10,502	31,928	7.3%
Bay of Plenty	195	2,365	10,122	10.5%
Canterbury	240	3,294	23,915	11.8%
Gisborne	90	939	2,969	18.8%
Hawke's Bay	194	1,978	8,190	14.7%
Manawatu-Wanganui	201	1,964	6,684	7.8%
Marlborough	5	412	1,356	8.0%
Nelson	22	311	2,985	17.2%
Northland	124	1,645	6,788	12.1%
Otago	143	2,156	7,543	9.9%
Southland	51	847	4,282	11.9%
Taranaki	106	1,229	4,546	11.2%
Tasman	10	192	1,196	6.8%
Waikato	198	3,149	13,114	9.3%
Wellington	463	5,894	20,941	12.4%
West Coast	35	205	660	5.1%
Un-confirmed Region	-55	-674	3,632	
Total	**2,961**	**36,408**	**150,851**	**10.2%**

The Journey to work data provided in the Transport section of this report shows that there are improvements in the number of people using alternative transport options to travel to work.

Renewable Energy Assessment Tasman District – July 2006 – Sinclair Knight Mertz

This study indicated that New Zealand's primary energy sources in 2004 were:

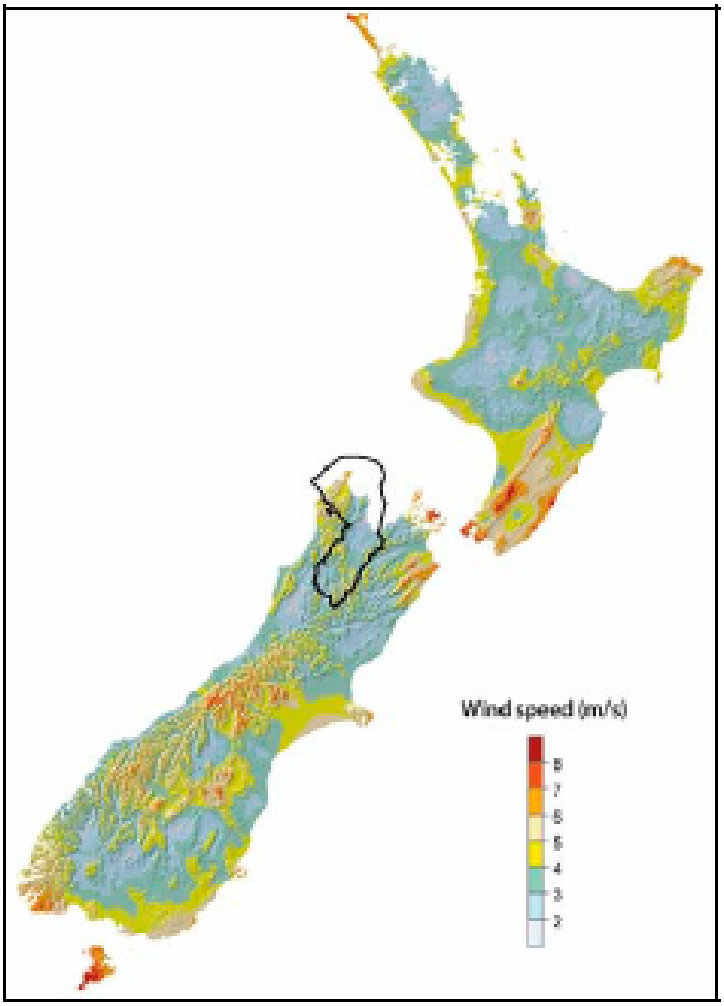
- 33% Imported Oil and Oil Products
- 21% Gas
- 13% Hydro
- 12% Coal
- 11% Geothermal
- 8% Other renewables (wind, biogas, industrial waste and wood, and solar water heating)
- 2% Indigenous Oil.

The study aimed to identify and assess the renewable energy potential in the Tasman District. The report also assessed potential changes that could be made to regional policy statements and Resource Management Plans to assist in the establishment of renewable energy within Tasman and across New Zealand.

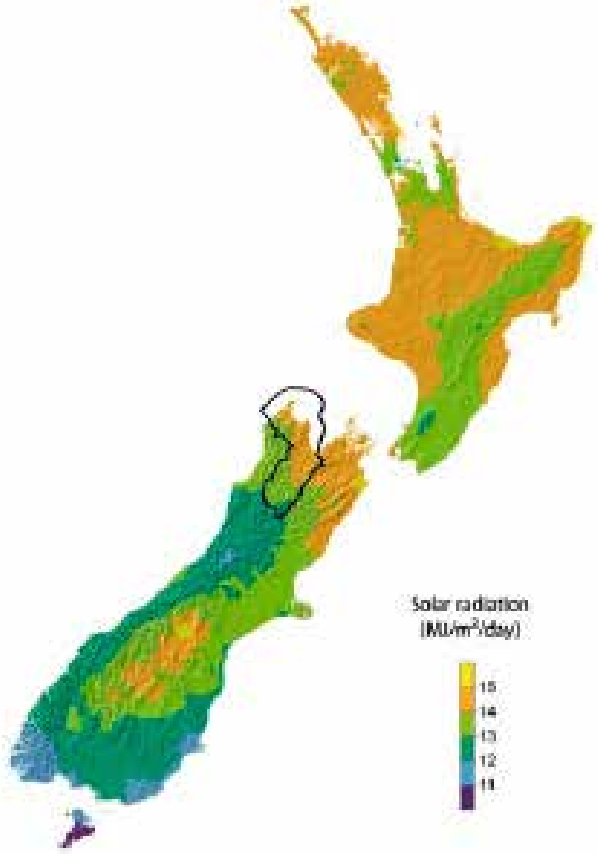
The study was part of a wider study that assessed potential across eight Council areas in New Zealand including Environment Canterbury, Environment Waikato, Horizons Regional Council, Marlborough District Council, Northland Regional Council, Taranaki Regional Council, Tasman District Council, and Greater Wellington Regional Council.

For the Tasman District, the report indicated that renewable energy potential comprises:

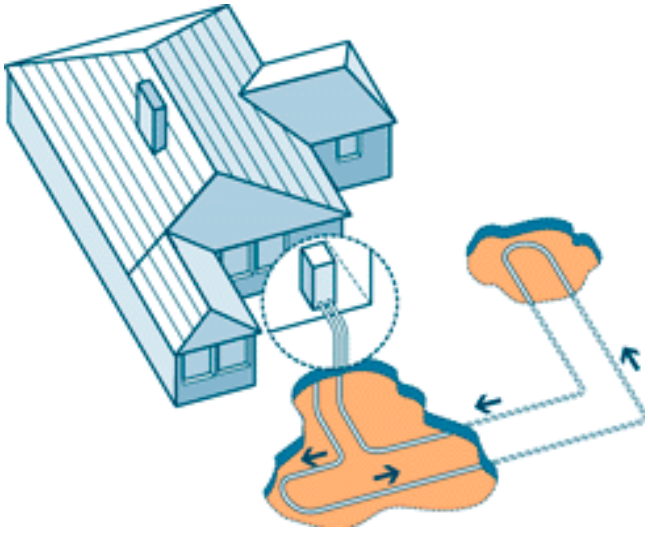
- Remaining hydro potential of about 45MW, in mini, small, and medium scale projects that lie outside the Department of Conservation land and Native Forest areas, compared to existing installed capacity of 32 MW on the Cobb.
- About 27 million litres of ethanol per year for transport fuel from energy crops using around 25% of the available arable land in the region. About 60 million litres of ethanol per year or 250 GWh per year of electrical energy from low-grade forestry.
- With a coastline of 100km wave energy in the order of several hundred megawatts could be generated, ignoring environmental constraints and conflicts with other maritime users.
- Potential for small scale wind power generation, based on current technologies and prices.



- Significant potential for solar thermal systems (hot water), considerably less for solar photovoltaics (electricity).



The report also stated that Ground Source Heat Pumps (GSHP) constitute a largely untapped resource, and can be used throughout the district, not directly restricted to areas of warm ground.



In 2004 a GSHP cost approximately $12,000 and saved $800 per anum so was not particularly economical at the household level but economies of scale apply to commercial buildings which may make GSHP's more economic. Typically they are used on a large scale in North America and Europe where the climate, high electricity prices and subsidies make this technology economic.

Households account for 48% of electricity demand in Tasman (EECA 2004). Of this about one third is usually for water heating (BRANZ 2004). A standard solar thermal system can produce around 55% of a households water heating. Solar systems are most economic when installed in new buildings. The number of occupied dwellings has increased by app 1400 (2001-2006). The high demand for new housing makes Tasman best suited for the promotion and installation of solar thermal systems. Overall there is potential for substantial increase in the uptake of solar thermal systems. The current high costs of solar photovoltaic means that large scale grid connected uptake in the region is unlikely, however small scale applications, particularly for remote power supply are expected to become more popular.

On the basis of the findings of this report it would appear that solar energy (including passive solar heating via improved building and subdivision design) is the best option for renewable energy sources in Nelson and Ground Source Heat Pumps may be an option in the future. This would be largely due to the fact that Wind farms would be ruled out due to environmental constraints given difficult access to offshore locations and landscape impacts on land, distance to transmission lines and associated upgrade costs, the limited wind resource, and other areas in NZ are more attractive as they do not have the same constraints. There is limited rural land to generate significant biomass energy supply although utilising methane gas from landfills is currently occurring and may have the potential to develop further in the long term particularly as the NES Air requires the destruction of methane either by flaring the gas or using it as an energy source. Furthermore there may be the option to utilise forestry waste products to also produce ethanol or methanol. Like Tasman, Nelson

does not contain any of New Zealand's high temperature geothermal fields which only occur in the Taupo Volcanic Zone and in Northland.

However as power prices increase and non-remewable energy sources become scarcer it is more likely that other renewable energy options will become more viable.

Communities for Climate Protection Programme Local Action Plan – Nelson City Council, October 2008 (RAD 625843)

This action plan outlined a range of targets and actions that would help reverse climate change trends in Nelson. The key targets and actions relating to energy are outlined below:

	Medium term (2012 target)	Long term (2020 target)
Corporate	Stabilise at 2004 levels by 2012	Reduce emissions to 40% below the 2004 level by 2020
Community	Stabilise at 2001 levels by 2012	Reduce emissions by 40% below the 2001 level by 2020.

Nelson City Council activities resulted in 1,096 tonnes of CO_2 equivalent emissions in 2004. These emissions were forecast to increase to 1,461 tonnes in 2010, an increase of 33%.

The community's activities resulted in 400,534 tonnes of CO_2 equivalent emissions in 2001. These emissions were forecast to increase to 413,010 tonnes by 2010, an increase of 3%.

Key short term actions identified are as follows:

- Monitor and report on Council's greenhouse gas emissions, assess opportunities for reductions, and take action to achieve these reductions.
- Set up a robust data collection and reporting process for the community's emissions, including fuel, electricity and waste.
- Carry out a feasibility study to assess the costs and benefits of installing solar energy systems in Nelson, and how best to encourage their installation, through
- Waive cost for building consent when installing solar water heating (current cost is $100 per consent).
- Such things as an adaptation of the Council's Clean Heat Warm Homes scheme that reduces the burden of the up-front cost of solar systems.
- Assess feasibility of solar water heating for Council facilities.

There were also a number of actions for investigation as follows:

Investigation
A hydro-generation scheme associated with the water supply from the Maitai River.
Investigate the establishment of an anaerobic digestion plant when the Bells Island wastewater treatment plant is upgraded. This would produce and capture methane.
Options for progressive replacement of energy inefficient streetlights with more efficient bulbs, (e.g. LED) starting with the least efficient.
Investigate the cost-benefit of measures to reduce greenhouse gas emissions from existing Council facilities, including the Civic House renovation. For instance, converting the diesel heating system to a lower carbon footprint alternative.
Investigate making new Council facilities state of the art eco-buildings with passive solar design, energy efficiency, and solar power e.g. the proposed Performing Arts Centre.
Investigate making Council buildings net energy producers when mass-produced thin-film photovoltaics and other technological advances are made.
Detailed planning by Parks and Facilities staff to find ways to reduce greenhouse gas emissions caused by their activities.
Eco burials, as part of the overall cemetery operation.
Opportunities for carbon sequestration and earning carbon credits will be investigated when making land management decisions, including decisions on future re-vegetation and forestry land use.
Investigate providing incentives / disincentives and rewards for staff and councillors to use active transport and car pooling – both to and from work and in the course of work.
The Central City Strategy will direct the review of the car parking provisions in the Nelson Resource Management Plan, options for improved pedestrian access, and inner city living.
Investigate providing incentives for developers that incorporate sustainability measures to reduce greenhouse gas emissions in their developments.
Investigate opportunities for bulk purchase of solar power/water heating to reduce the cost per unit.
Investigate methods the Council can use to encourage more use of passive solar energy, insulation and solar water heating.
Feasibility of collecting greenwaste and processing it to capture methane e.g. using an anaerobic digestion plant rather than sending to the landfill.
Most up to date information is used to review impact of climate change and make required changes to planning requirements and service provision.

Sustainability Stock-take of Nelson City – April 2011 (Cawthron)

This report indicated that:

- Climate change is a major issue for Nelson both now and in the future due to increase in temperature, rainfall, and severity and intensity of extreme weather events resulting in more severe floods (particularly in the Nelson CBD, the Wood, the port and Tahunanui) and droughts, increase in pests, and impacts on Nelson's most valuable economic sectors (forestry, horticulture, fishing, aquaculture, and tourism)
- The largest greenhouse gas emitting sectors are industrial and transportation, followed by waste, commercial and residential respectively (see graph below)
- Increases in the price of oil will effect Nelson significantly as the Nelson economy relies heavily on imported oil (annual petroleum consumption per person in Nelson is 2.5 tonnes while NZ average is 1.42 tonnes)
- Climate change will affect the security of energy supply due to reductions in rainfall impacting on southern lake levels and reduced temperatures increasing demand
- Earthquakes could knock out transmission lines that run along fault lines leaving Nelson reliant on the insufficient energy supply from the Cobb Dam.
- The Solar Saver Scheme has reduced demands and mitigated the effects of climate change as solar hot water installations have increased from between 40-80 up until the beginning of 2010 with 227 in 2010 (197 as part of solar saver).

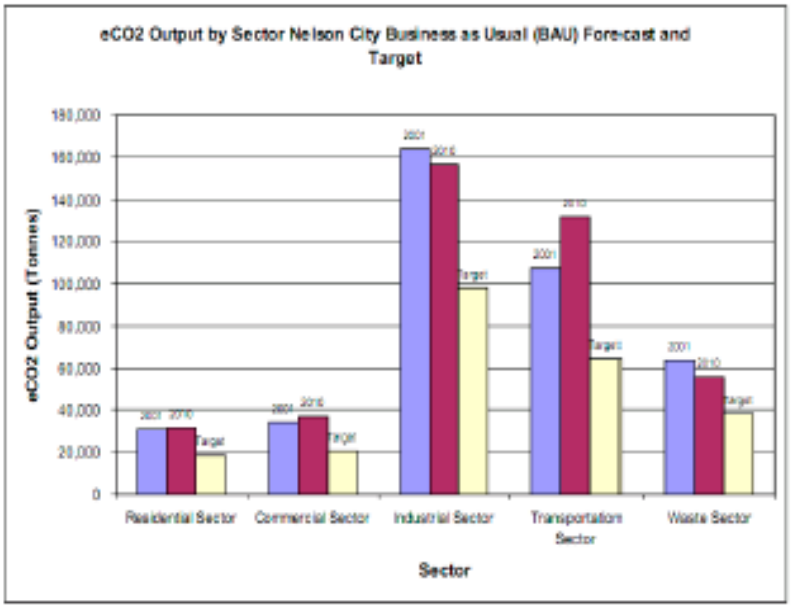


Figure 4. Equivalent CO_2 emissions from Nelson City (Nelson City Council, 2008: 2). Note Nelson's emissions in 2001 are in blue, projected emissions in 2010 in maroon (report written 2008) and the future target in beige.

SUMMARY – ENERGY

While efforts are being made to reduce non-renewable energy use by promoting alternative means of travel, solar hot water heating, and insulation retrofits, it is unclear whether the objectives of the NRPS are being achieved in terms of green house gas emissions as 1990 emission levels are not defined in the NRPS. However data included in the Communities for Climate Protection Programme Local Action Plan suggest that greenhouse gas emissions are increasing.

While Plan Change 14 and 23 have recently introduced a range of new provisions to support reductions in energy use it is too soon to measure their effectiveness.

While there are NRMP provisions in place that provide for the transmission of electricity in accordance with the National Policy Statement on Electricity Transmission 2008, further work may be required to implement the NPS for Renewable Electricity Generation 2011. Based on a review of the Renewable Energy Assessment – Tasman District, it appears that the focus on support for independent renewable energy sources such as solar energy (and potentially Ground Source Heat Pumps), landfill gas transfer, and alternative transport modes, should be the main focus for the future. Consideration should also be given to exploring the potential for forestry waste to create energy. On the basis that this is correct, it appears that the provisions in the NRMP (following Plan Change 14 and 23) are effective and efficient as they do not significantly constrain, and in some cases promote, these forms of renewable energy. This does need to be reviewed over time and would benefit from a renewable energy assessment specific to Nelson City. However, the trend in relation to transport emissions is a particular concern. Clear emission targets and a plan to achieve these would also be a useful addition to the Resource Management Plans.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Update NRPS objectives to reflect more measureable and up to date greenhouse gas emission targets.
- Undertake a renewable energy assessment for Nelson City with reference to the Tasman and Marlborough reports.
- Where possible, work in conjunction with TDC and MDC to prepare a change to the NRMP to implement the National Policy Statement Renewable Electricity Generation

In the medium term:

- Monitor greenhouse gas emissions and amend the NRPS controls to achieve targets where required.

In general:

- Explore opportunities to work with Tasman and Marlborough District Councils.

SOLID WASTE

NATIONAL POLICY DIRECTION

The purpose of the RMA includes the need to utilise resources efficiently while maintaining and enhancing the quality of the environment.

RMP'S POLICY DIRECTION

NRPS objectives (WM1.2) for solid waste seek that waste streams will be managed to the highest practical level of clean production, waste reduction, reuse, recovery, and recycling to dispose of residual wastes and a 20% reduction by weight in solid waste requiring landfill disposal per head of population by the year 2000 compared to 1993.

The Draft 2008 NRPS utilises the objectives from the Solid Waste asset management plan 2005-2008 and seeks stabilisation of the amount of waste disposed to landfill by 2009, as well as a reduction in commercial and industrial waste.

NRMP objective DO3.2 seeks the highest practical level of waste reduction, reuse, recovery, and recycling and appropriate management of impacts from waste disposal. Plan Change 14 introduced objective DO13A.6 that indicates that urban development should meet the community's current needs without compromising future needs. Policy DO13A.6.1 requires that development should be environmentally responsive by considering sustainable options for the minimisation and treatment of waste.

Relevant environmental results anticipated in the NRMP indicate that there will be a substantial reduction in waste per head of population as measured by a reduction received by the York Valley landfill site, better management of landfill impacts, and an increase in percentage of re-use, recycling and recovery of waste.

NRMP RULES

Landfills are controlled across the zones, apart from the Costal Marine Area and Conservation zones, via specific landfill rules. Landfills meeting height and volume restrictions and accepting only cleafill require consent as a restricted discretionary activity. Where these controls are not met a discretionary activity consent is required. Landfills would be managed in the Conservation Zone via soil disturbance controls which require consent as a discretionary activity. In the Coastal Marine Area deposition of material and reclamation are generally discretionary activities apart from where this is located in estuaries which would be non-complying.

As noted in the Freshwater section of this report there are numerous rules governing the discharge of contaminants to water. Of note, the deposition of waste, toxic, or radioactive material is prohibited, and the discharge of sewerage to freshwater and point source stormwater discharges containing contaminants requires consent as a discretionary activity. The disposal of hazardous substances in the Coastal Marine Area is a Prohibited activity.

The hazardous substances use and storage rules are repeated across all zones and refer to Appendix 21 for guidance. Appendix 21 outlines a range of permitted, controlled, and discretionary activities. To be permitted, an activity must comply with design standards and the permitted effects ratio in the relevant zone.

Design standards include matters such as storage requirements, site design to contain effects (including contaminated discharges) on site, underground storage standards, adequate provision for signage, waste management, maintenance of site records, emergency and contingency plans, and information requirements.

The effects ratio's are the lowest in the most sensitive zones such as the conservation and residential zones and highest in the industrial and rural zones. Ratios typically increase as consent

thresholds increase (eg – permitted industrial ratio is 0.75 and discretionary is greater than 1.5).

Other than controls relating to landfills and the effects of disposal of solid waste there are no rules that specifically seek to manage solid waste.

MONITORING INFORMATION

The annual tonnage of waste to the York Valley landfill decreased from approximately 55,000 tonnes in 1997 to approximately 40,000 tonnes in 2000. The population in 1997 was approximately 40,000 (1.375 tonnes/person) and 42,000 (0.95 tonnes/person) in 2000. Annual York Valley Landfill tonnage has continued to decrease to approximately 30,000 tonnes in 2011.

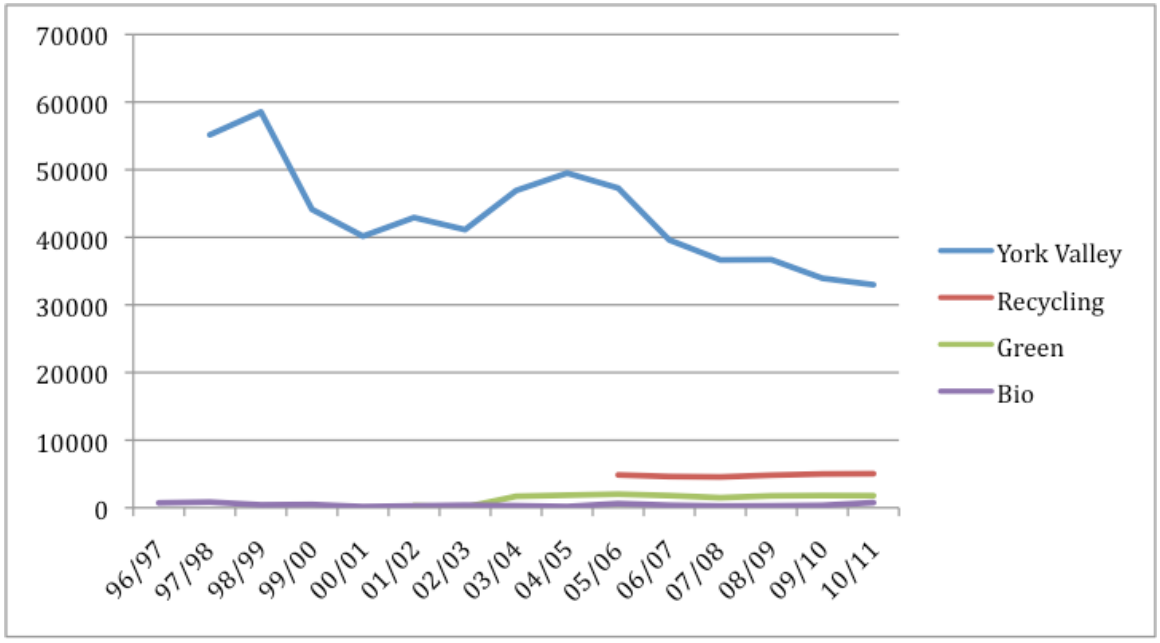
Waste to landfill volumes across the wider Nelson-Tasman region have decreased from approximately 63,000 tonnes in 2002 to 59,000 tonnes in 2012.

Between 2006 and 2011 annual recycling tonnage has increased from 48,000 tonnes to 50,000 tonnes. Annual Green-waste tonnage has increased from approximately 250 tonnes to nearly 2000 tonnes between 2001 and 2011. Bio-solids peaked at approximately 800 tonnes in 1997 and reduced to approximately 200 tonnes in 2000 and have nearly reached their peak again in 2011. This data is depicted in the graph below.

Monitoring data relating to landfill contamination is provided in the Freshwater section of this report. The Tonkin and Taylor report (RAD 1234589) that reviewed surface and groundwater quality in the vicinity of the York Valley Landfill. The report indicated that leachate quality was constant and within New Zealand and Australian guidelines although magnesium and manganese levels are increasing and that conductivity levels exceeded consented thresholds. Monitoring of the Gibbons Holdings landfill adjacent to the York Valley landfill showed a positive trend for all of the analytes, commenting that the improvement in stormwater quality was a direct result of responsible site management.

SUMMARY – SOLID WASTE

It would appear that the overall NRMP objective for waste reduction is being achieved with the total tonnage of waste decreasing and alternative waste disposal methods increasing. The specific target requiring a 20% reduction by weight in solid waste requiring landfill disposal per head of population by the year 2000 compared to 1993 appears to have been achieved also and exceeded in the longer term. There was a 69% decrease in tonnes per person between 1997 and 2000 and a 50% decrease between 1997 and 2011 (46,200 people generating 30,000 tonnes in 2011 – or 0.65 tonnes per person).



SOIL

NATIONAL POLICY DIRECTION

Safeguarding the life supporting capacity of soil and having particular regard to the finite characteristics of natural and physical resources are Part II RMA matters. Soil conservation is a key regional Council function.

The NZCPS 2010 (policy 22) seeks to control the effects of sedimentation on the coastal environment by ensuring that subdivision use and development will not result in a significant increase in sedimentation, controlling the impacts of vegetation removal (including harvesting plantation forestry), and reducing sediment loadings in runoff and stormwater through landuse controls.(maybe move to water)

RMP'S POLICY DIRECTION

Objective SO1.2 outlines the NRPS direction relating to the sustainability of the soil resource. It includes the desire to maintain the life supporting capacity of Nelson's soils and to manage off-site adverse effects of land use activities on soils and the contamination of soil, as well as avoiding impacts from the application of agricultural chemicals on adjoining properties.

The Draft 2008 NRPS mimics Objective SO1.2 outlined above.

NRMP Objective DO13.1 promotes an environment where the adverse effects of accelerated soil erosion are avoided remedied or mitigated. Objective RU1 seeks to protect resources and capacities including the life supporting capacity of soil to meet the reasonably foreseeable needs of future generations.

Performance indicators within SO1.8 and DO13e support reduced soil erosion and sedimentation by assessing water quality and the appearance of the landscape based on Council records and aerial photos. RUe.1 seeks to maintain the present levels of diversity and health of soils and ecosystems which is to be monitored by evaluating change in land cover.

NRMP RULES

The most relevant rules relating to the management of soil are vegetation clearance, soil disturbance and earthworks controls.

Soil disturbance is defined as the disturbance of soil other than by modification to the shape of the land surface and includes cultivation, deep ripping, root raking, blading, and compaction.

Earthworks means any modification to the shape of the land surface, including removal of soil, excavation, infilling, re-contouring and construction of any road, track, landing or drainage channel

Soil disturbance rules only apply in the Residential, Open Space, Rural, and Conservation zones. Soil disturbance rules establish general slope limitations (25 degrees), setbacks from Riparian Margin and Coastal overlays and the Coastal Marine Area. Soil erosion, drainage, and water quality measures also need to be met.

Soil disturbance and earthworks controls in the Conservation zone are more restrictive than other zones. Here Soil disturbance and earthworks are limited to maintenance and upgrading of tracks and are generally otherwise discretionary.

Earthworks rules apply consistently across all zones and establish height, location, stabilisation, water quality, and drainage standards for permitted activities that are similar to soil disturbance controls without the slope limitations.

The Land Management Overlay reflects slope stability risk areas as well as low lying areas subject to potential coastal erosion. The rules in the plan apply to the Residential, Open Space, and Rural zones and refer to the earthworks controls in the relevant zone. These rules have as a matter of assessment the loss of topsoil or movement of soil down slope, damage to structures on adjoining sites and a number of other sedimentation, hazard, and water quality matters.

Vegetation clearance controls typically require that bare soil areas are revegetated or otherwise protected from soil erosion as soon as practical

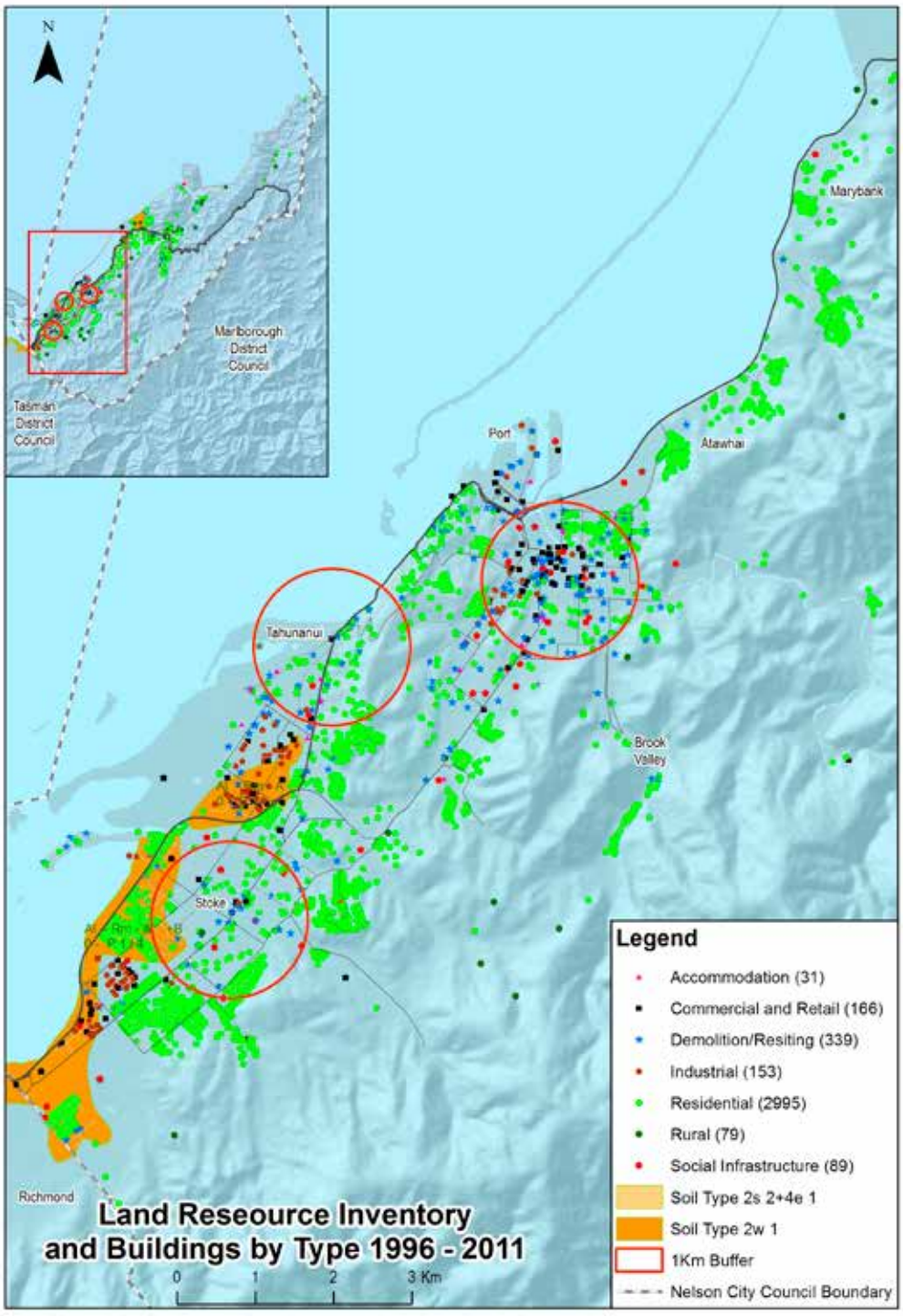
and no later than 12 months after the date of vegetation clearance. Vegetation clearance controls also stipulate minimum setbacks from riparian and coastal overlay areas and the Coastal Marine Area.

Subdivision rules may also apply in that all subdivision requires a resource consent and the potential for natural hazards, which may include soil erosion, is generally an assessment matter. There are no rules that specifically manage the potential loss of high quality soils or potential soil contamination in Nelson.

MONITORING INFORMATION

Quality soils

The map below indicates where buildings have been constructed between 1996-2011 in relation to Nelson's highest quality soils. A significant amount of building has taken place and more is planned as part of Plan Change 18 on land in southern Nelson.



Taken in a wider regional context however Nelson's soil quality is minor in scale when compared to our top of the South neighbours. For example there are approximatley 9,680ha of Class 1 and 2 soils in Tasman District and 700ha in Nelson City. The map below shows the location of Class 1 and 2 soils in Nelson City and the Marlborough and Tasman Districts.

Land-Cover Change

The extent of different forms of land-cover across Nelson is discussed in detail in the Significant Vegetation and Fauna section of this report.

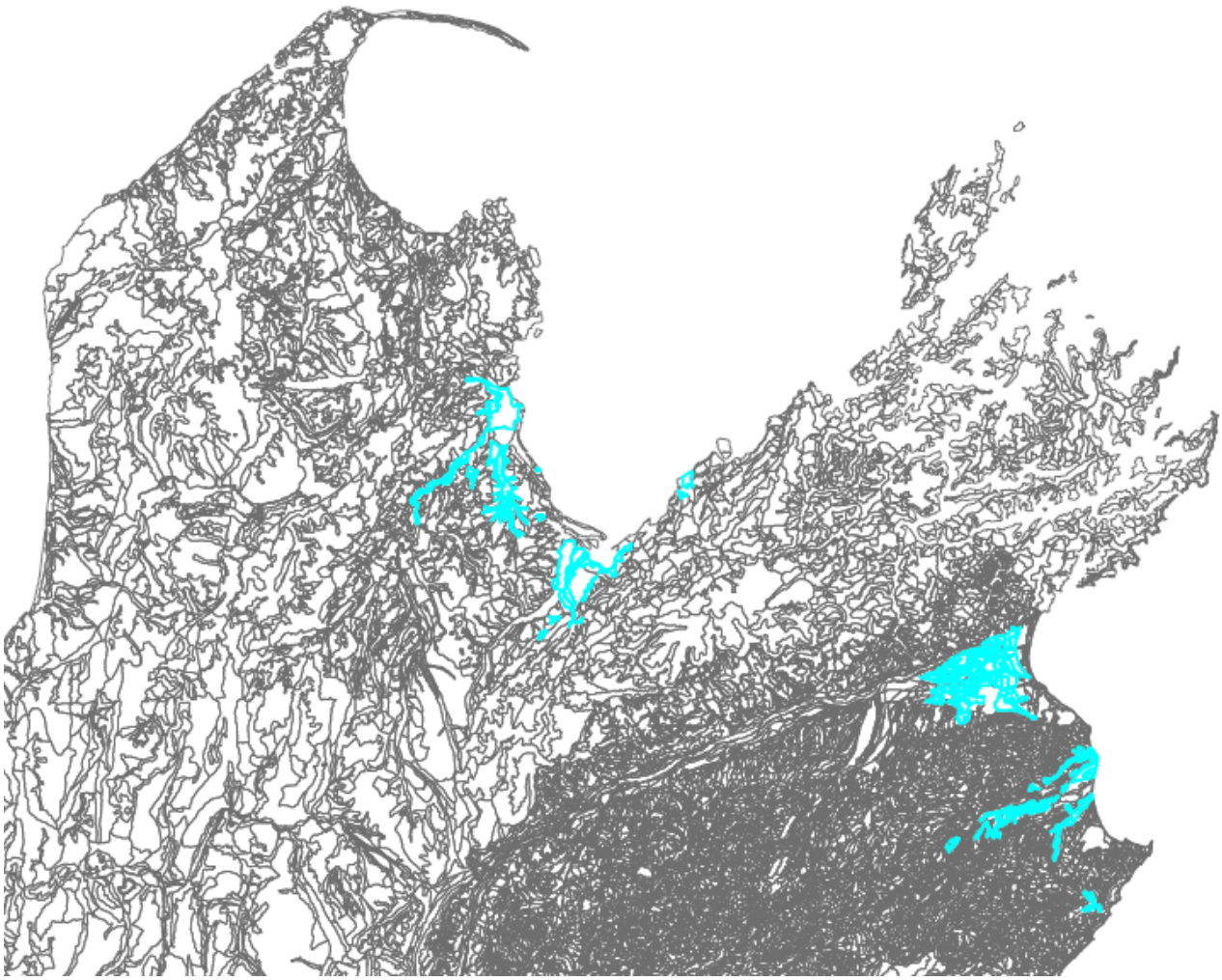
The Nelson Biodiversity Strategy Technical Report 2006 (RAD 467041) highlights that

"land clearance, land disturbance, land contamination and native forest harvest have slowed in recent decades as most valued areas have been developed and legal controls have tightened.

Satellite data collected in the NZ Land Cover Database indicates that:

- only 1ha of native forest has been lost in the last six years.
- Only 6% of the land area of Nelson City is an urban environment of houses, factories, shops and parks.
- Native forest covers 34% of the land area of the city, with regenerating kanuka on hill slopes covering 8% of the total city area.
- areas of gorse and other exotic woody vegetation (6%) could regenerate into native forest depending on the interplay of fire, land disturbance and weeds and pests.
- Most of the remainder has been developed as crop and farm land (13%) and as exotic production forest (22%).

Further satellite data will be collected during 2012 which will provide a comparative analysis over time of land-cover in Nelson.



Water quality

A detailed assessment of water quality issues is presented in the Freshwater section of this report. One of the causes for degraded stream health was identified in state of the environment monitoring as being due to fine sediment deposition as a result of forestry clearance and earthworks associated with urban development via surface runoff.

Soil Contamination

Soil contamination is discussed in further detail in the Contamination section of this report. It is acknowledged that there is a gap in the plan at the moment in terms of the control of soil contamination. This has been filled to a degree by the NES for Assessing and Managing Contaminants in Soil to Protect Human Health which establishes consent thresholds that would override the District Plan. In order for the NES to be effectively and efficiently implemented there is a need to improve Council's identification of contaminated sites. It is recommended that work is progressed to establish a comprehensive Hazardous Activities and Industries List for Nelson City.

Plan Changes

One of the recommendations that the hearings panel on Plan Change 13 made related to the usefulness of the Land Management Overlay. The panel suggested that the Council should, when the opportunity arises, reconsider the usefulness of the Land Management Overlay as a planning tool throughout Nelson as it appears that its purpose has changed over time. The criticism was on the basis that:

- Placement is subjective,
- There are no fixed criteria to inform location or application,
- Existing subdivision consent processes will ensure land management issues will be addressed, and
- It is being used like a hazard overlay.

Natural Hazards

Of the 100 buildings identified as dangerous (pursuant to s124 of the Building Act 2004) subsequent to the December 2011 Rain Event, 50 were identified as being subject to a natural hazard layer in the NRMP. Twenty seven buildings were located in the Land Management Overlay.

Building consent data indicates that of the 3852 buildings constructed during the 1996-2011 period 407(11%) buildings were located on sites within the Land Management Overlay.

The Natural Hazards section of this report recommends that a review the Land Management Overlay and Slope Stability Overlay, utilising data from the December 2011 Rain Event, is undertaken in the short term.

SUMMARY – SOIL

Based on monitoring information it would appear that:

- Nelson's high quality soils are now fragmented and developed to a degree that they are beyond recovery,
- The loss of native vegetation cover has declined,
- Water quality may be being impacted by sedimentation and runoff associated with forestry farming and earthworks,
- Soil contamination needs better management, and
- The Land Management Overlay is necessary but due for review.

On this basis it is debateable as to whether NRMP Objective DO13.1, that promotes an environment where the adverse effects of accelerated soil erosion are avoided remedied or mitigated, is being met.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

That the recommendations in the Freshwater, Significant Vegetation and Fauna, Natural Hazards and Contamination are implemented as they relate to improving water quality and better management of soil contamination and natural hazards, protection for significant vegetation, and an understanding of the impacts of forestry and farming operations.

NRMP EFFICIENCY

The report so far has considered the Effectiveness of various rules at achieving the Objectives of the NRMP (ie) whether the outcomes sought in the NRMP are being achieved. The efficiency of the plan is determined by assessing whether the outcomes can be achieved in an efficient manner (ie) are the rules efficient at achieving the outcomes anticipated in the NRMP.

The efficiency of the rules and policies at achieving the Objectives is difficult to quantify. The approach taken has therefore been to assess a mix of qualitative and quantitative data within the scope of available resources.

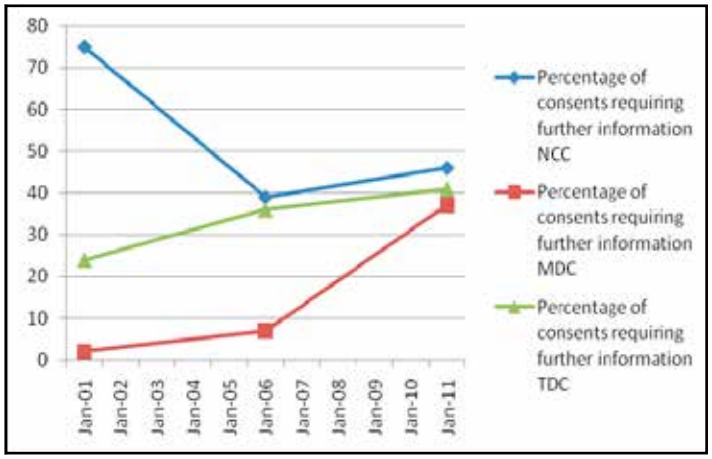
Some commentators suggest that efficiency of the District Plan can be determined by assessing the costs of achieving anticipated outcomes versus the benefits that those outcomes deliver, similar to a S32 analysis. In theory this can be done by reviewing the notified plan s32 assessment to determine whether what was intended in terms of cost versus benefit has been achieved. Unfortunately, in the case of the NRMP, no formal s32 was provided.

Instead this efficiency review looks at where the majority effort is placed in terms of consent and plan change work and determines whether this is aligned with the general outcomes sought in the NRMP. This approach is considered the most appropriate given that this is a mid-term review of the plan (five years after being declared operative) and is part of the assessment of a rolling review of the NRMP, rather than a full plan review.

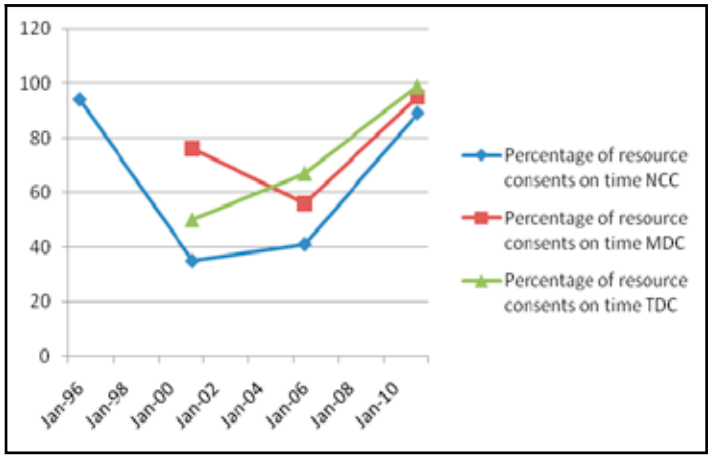
The key question here then is whether the effort is being placed in the right place given national, regional, and city outcomes. This review also relies on existing data rather than relying on further studies given limited resources and the fact that that further technical analysis will be completed as part of the rolling review of the NRMP itself.

National Resource Consent Data

A number of surveys have been carried out by the Ministry of the Environment since 1996 regarding the national performance of Councils at meeting RMA timeframes. This data is normally grouped by Council type. Nelson City Council is grouped in the unitary Council area along with TDC and MDC due to the similarity in functions. The statistics below show how NCC has been performing in relation to the other top of the south unitary Councils in a number of areas that help paint a picture of whether the NRMP rules are efficient.



A high proportion of NCC consents require further information. The trend of increased requests for further information appears to match the trend for increases in consent timeframe performance outlined below.



NCC is now becoming more successful at processing resource consents on time which is comparable with the current levels of success in other top of the south councils.

Percentage of resource consents on time by Type						
	Subdivision	**Landuse**	**Coastal**	**Water**	**Discharge**	
Jun-99	79	87	62	67	73	NZ
Jun-01	79	85	86	63	75	NZ
Jun-03	74	78	82	60	79	NZ
Jun-05	66	75	81	74	80	NZ
Jun -11	93	95	96	95	97	NZ
Jun-11	81	90	91	66	70	NCC

The table above indicates that on average consent processing times in NCC are currently better than historic national averges in the Subdivision, Land use and Coastal areas but slightly below national averages in the water and discharge areas.

Table 3.1: Percentage of resource consent applications processed on time, by consent type, 1997/98–2010/11

Survey period	Subdivision	Land use	Coastal	Water	Discharge	Total
2010/11	93%	95%	96%	95%	97%	95%
2007/08	70%	70%	76%	66%	59%	69%
2005/06	66%	75%	81%	74%	80%	73%
2003/04	74%	78%	82%	60%	79%	77%
2001/02	79%	85%	86%	63%	75%	82%
1999/00	79%	87%	62%	67%	73%	82%
1998/99	81%	86%	69%	58%	61%	82%
1997/98	77%	81%	84%	61%	66%	78%

Table 2.4: Percentage of notified resource consent applications, by consent type, as a proportion of applications processed, 1997/98–2010/11

Survey period	Subdivision		Land use		Coastal		Water		Discharge		Total	
	Publicly notified	Limited notified	Publicly notified	Limited notified	Publicly notified	Limited notified	Publicly notified	Limited notified	Publicly notified	Limited notified	Publicly notified	Limited notified
2010/11	2%	2%	2%	2%	16%	7%	15%	3%	5%	3%	4%	2%
2007/08	3%	1%	2%	2%	21%	5%	24%	3%	9%	3%	5%	2%
2005/06	3%	1%	2%	1%	15%	3%	20%	2%	7%	2%	4%	1%
2003/04	3%	1%	3%	1%	14%	< 0.5%	26%	1%	11%	1%	5%	1%
2001/02	5%	–	3%	–	21%	–	15%	–	18%	–	6%	–
1999/00	4%	–	3%	–	17%	–	15%	–	17%	–	5%	–
1998/99	3%	–	3%	–	14%	–	15%	–	22%	–	5%	–
1997/98	3%	–	4%	–	15%	–	24%	–	21%	–	5%	–

Source: 2010/11 RMA survey data and published survey reports for the periods indicated.

The above table shows the national average number of notified resource consents by type as a proportion of consents processed. The following table shows NCC statistics for 2011.

Subdivision		Land Use		Coastal		Water		Discharge	
Notified	Limited	Notified	Limited	Notified	Limited	Notified	Limited	Notified	Limited
6%	2%	3%	0.6%	6%	0%	0%	0%	13%	0%

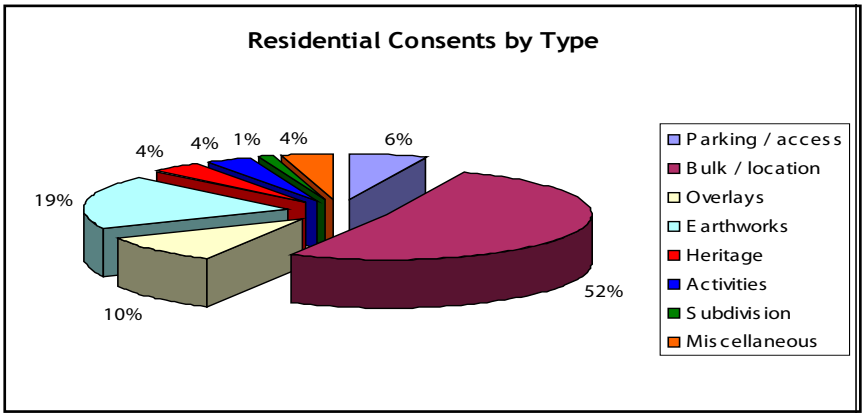
By comparison with national averages NCC has notified a higher proportion of subdivision and discharge consents and a lower proportion of Coastal and Water consents. Landuse consent notification is comparable with national averages when taken across both limited and full notification. To a degree this trend reflects the NRMP policy direction, consent thresholds, and the presence or absence of notification statements in the plan.

State of the Environment Report 2004

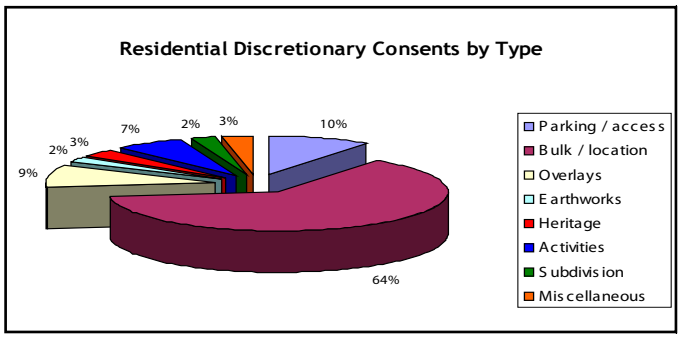
The State of the Environment Report 2004 looked at plan performance. During the period from January 2003 to June 2004 eighteen applications for resource consent were fully notified. Another two received limited notification. No applications were declined consent.

By far the greatest number of requests for consents were made in relation to the Residential Zone and these were for discretionary activities. The Rural Zone is the only other zone to feature in any significant way 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.

In the Residential Zone 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 most significant number of controlled activities in the Residential zone related to rule REr.61 dealing with earthworks (91 consents). The other significant grouping related to front yard controls. Earthworks controls were also the most significant number of consents required as a restricted discretionary activity.



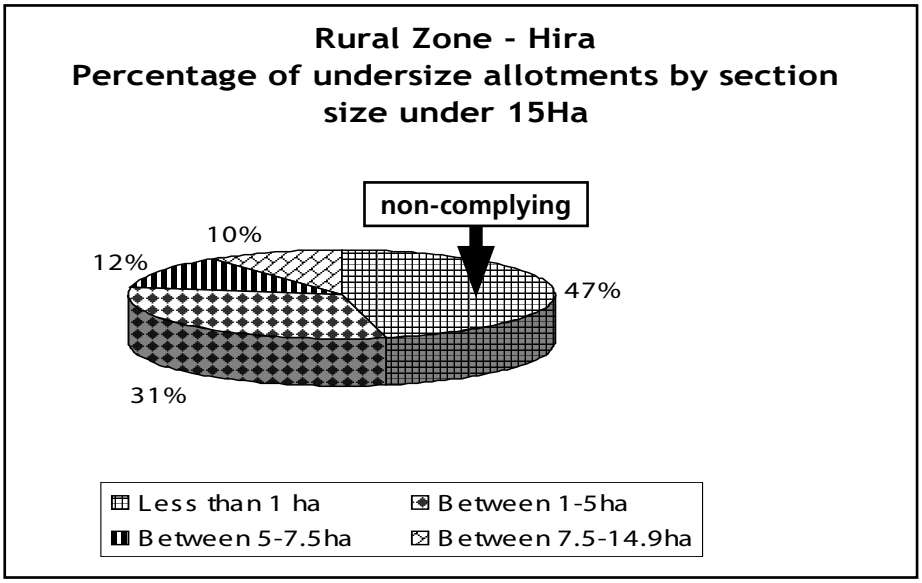
Just over one quarter of the applications for discretionary consent related to daylight admission, rule REr.35. The rules next most affected deal with the provision of yards. These were other yards followed by front yards. The controls over building decks, terraces, verandas and balconies and also site coverage also stand out as rules which are consistently assessed. All of the rules above deal with bulk and location requirements. A relatively large number of discretionary applications were also being made for non-residential activities, though this is less than the combined number transgressing the rules governing parking and access.

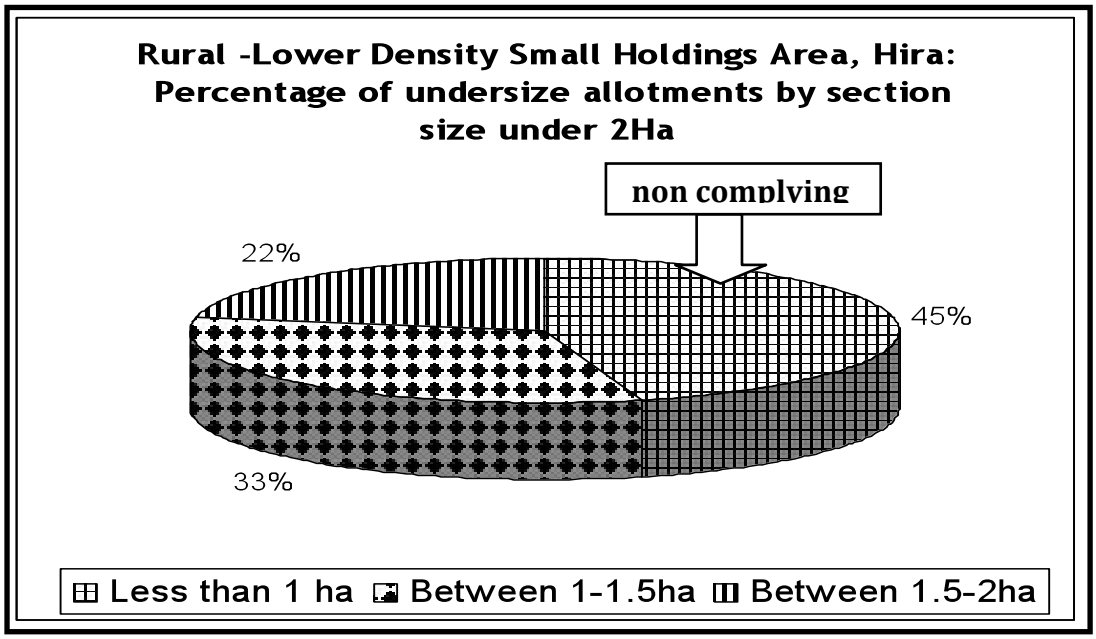
The only rule from which non-complying activity consent is consistently sought is rule REr.24 addressing site coverage, followed to a much lesser extent by applications seeking reductions in the minimum lot size.

The earthworks rule was often the basis for an application in the Rural Zone. Most of these were controlled activity applications and, to a lesser extent, restricted discretionary activity applications. This suggests that no major deviations from the earthworks rule were being sought.

The location of buildings not permitted in the Rural Zone is also the subject to a reasonable number of applications.

The two charts below show subdivision trends in Nelson North during the period 1996-2002.





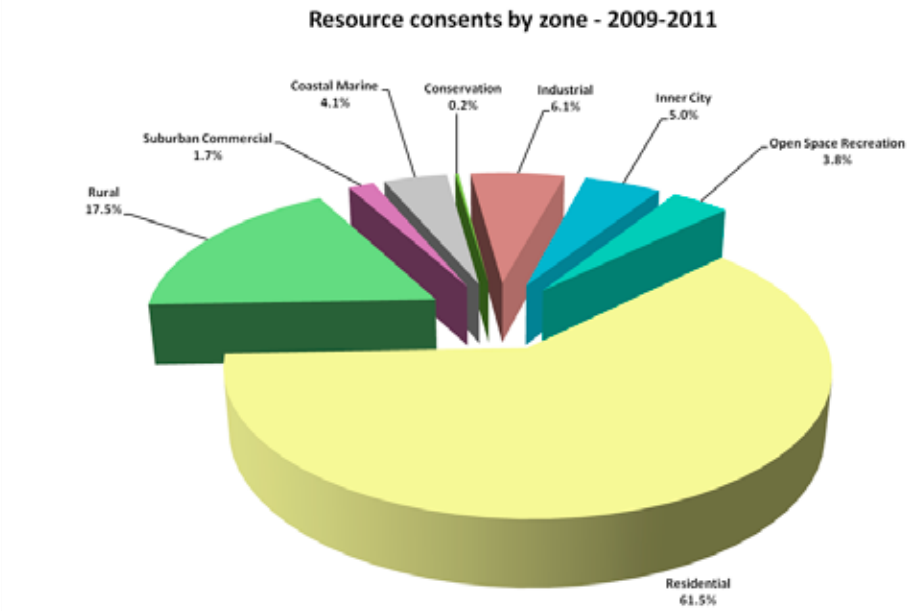
Council undertook a study of Hira in 2002 which revealed over 70% of sections created in the Rural Zone and 45% of sections created in the Rural Low Density Small Holdings Area were less than the minimum permitted size. Ninety percent of the undersize Rural Zone allotments were less than half the permitted size.

The trend to seek undersized rural lots and re-subdivision led 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. This lead to the notification of Plan Change 05/01 in 2005 to make subdivision below density standards a non-complying activity. At the time this was seen as an efficient way to address the proliferation of below density subdivision occurring and as a stop-gap measure so that the area could be comprehensively planned.

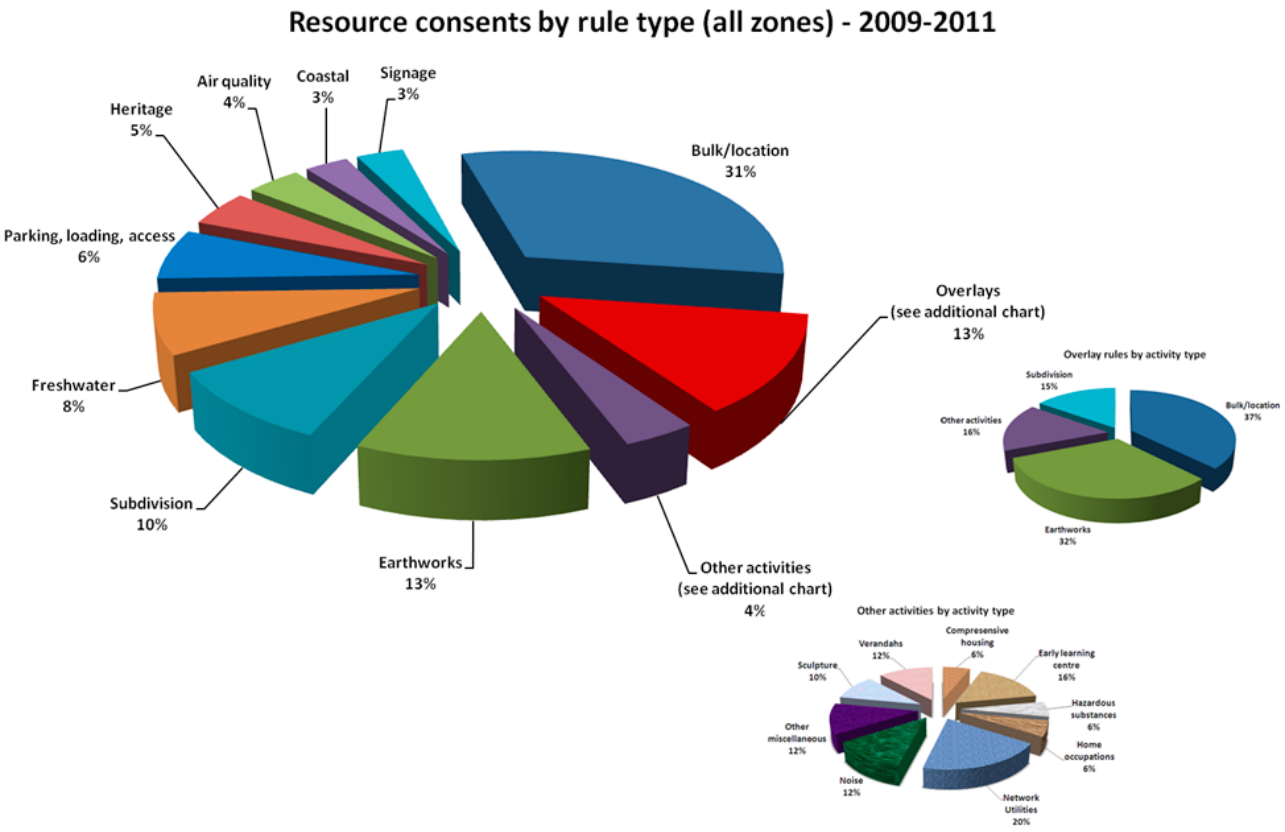
Nelson Resource Consent Database 2009-2011

A summary of resource consents analysis for 2009-2011 is provided below.

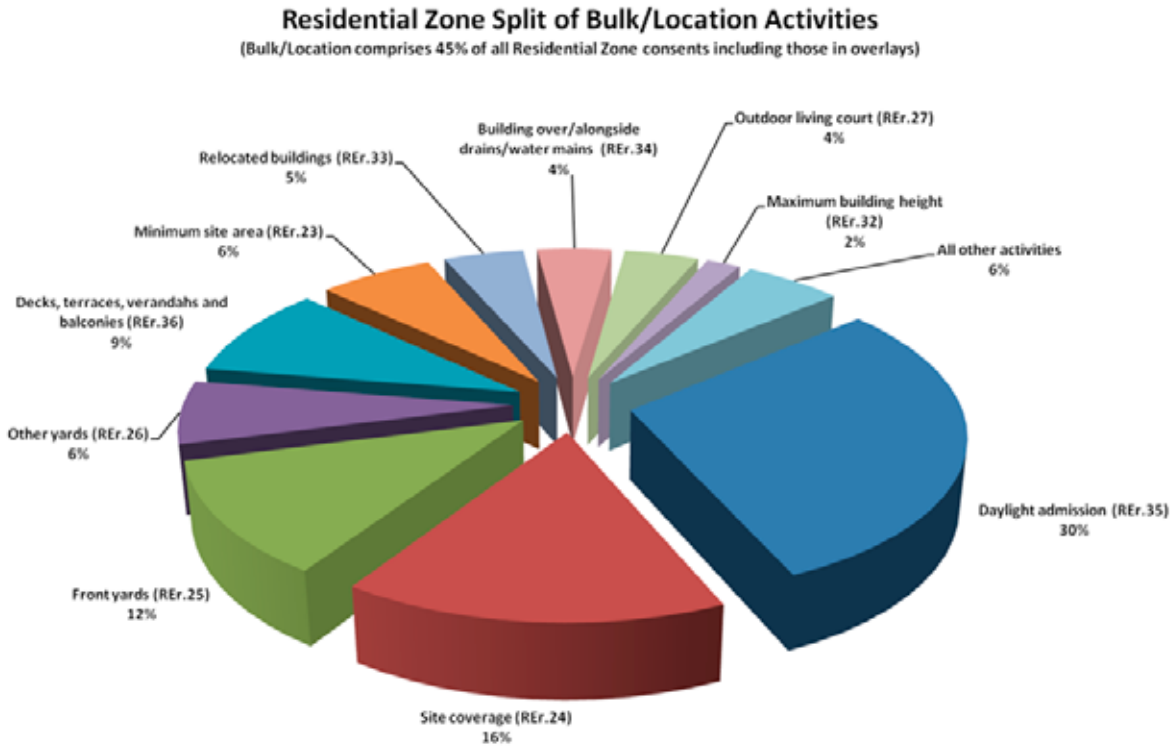
Approximately 60% of consents were in the residential zone followed by 17% in the rural zone. The lowest proportion was in the conservation zone. These proportions are consistent with the general policy direction of the NRMP and the level of settlement/activity.



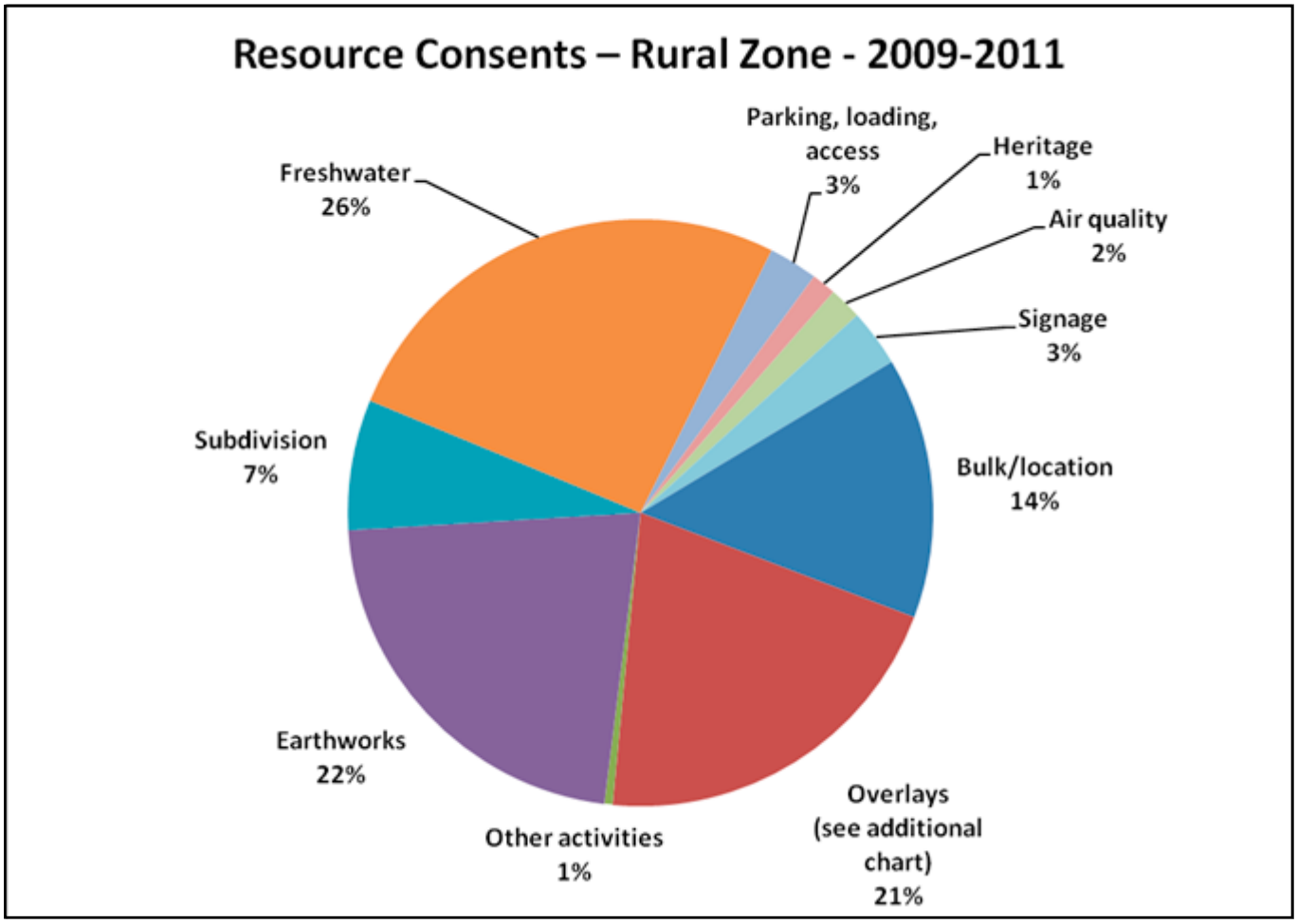
By rule type the highest proportion of consents was bulk and location (31%) with the lowest proportions being Coastal and Signage at 3% then Air Quality at 4%, and heritage at 5%. This too is consistent with the NRMP policy direction that seeks minimal signage, enhanced air quality, limited coastal development, and protection of heritage.

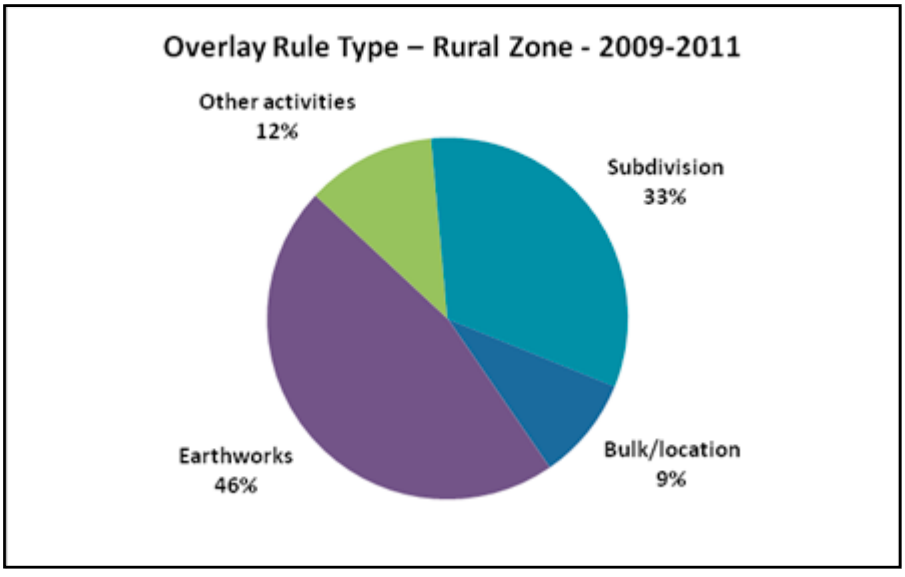


Bulk and location was also the highest proportion of consents in the Residential zone with the majority of consents required for daylight, site coverage and yards. Given that the minimum site area consent number is relatively lower than bulk and location numbers this may be due to the increases in house sizes identified in the Growth Section of this report and may also be resulting in changes to amenity over and above those anticipated when the rules were developed.

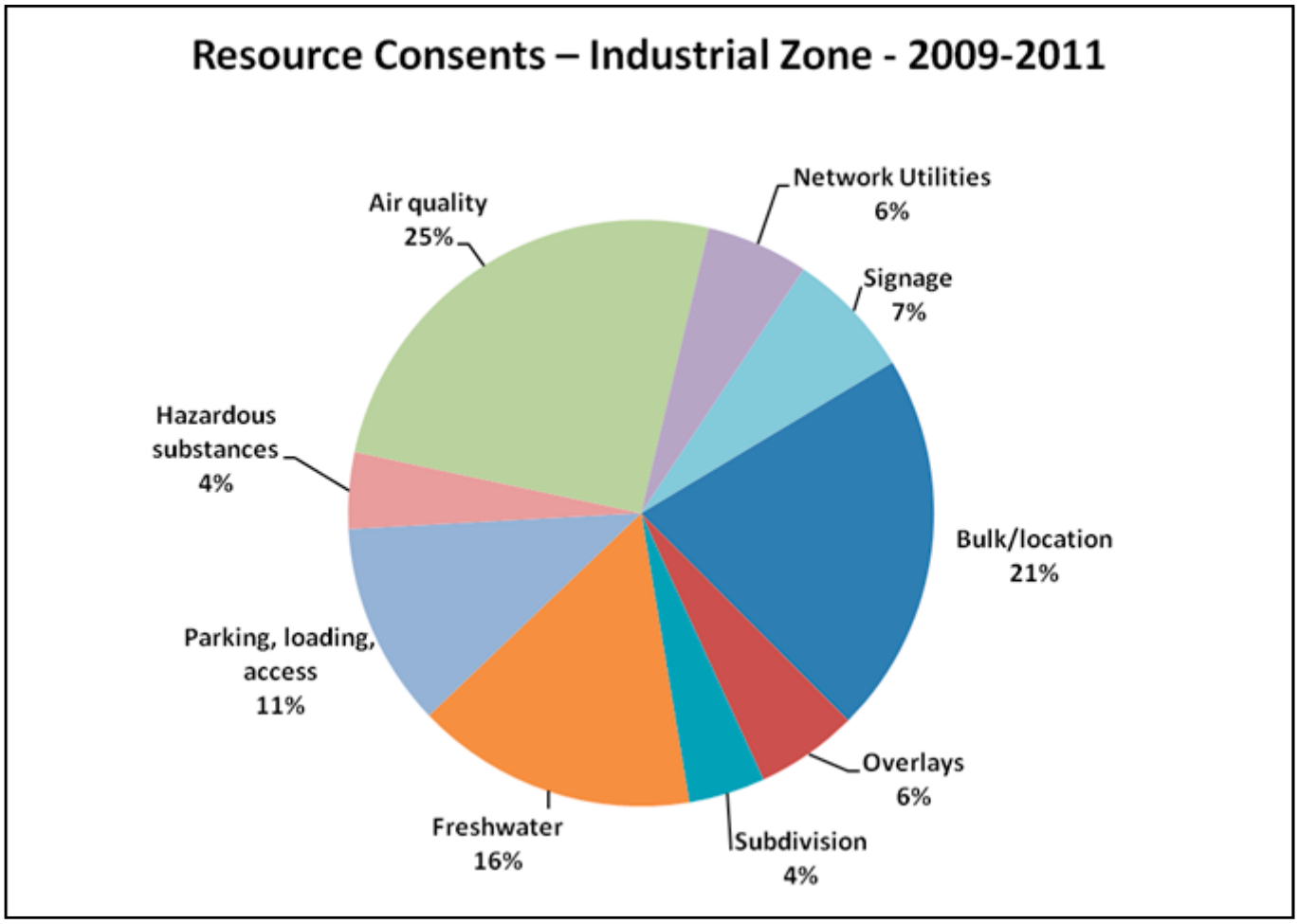


The majority of consents in the rural zone are for freshwater, earthworks, and Overlays (earthworks being the greatest within overlays). Heritage, air quality and signage consents make up the lowest number of applications in the Rural zone. These trends also appear to be relatively consistent with the NRMP policy direction as impacts on heritage and air quality, and the provision of signage is generally sought to be minimised.

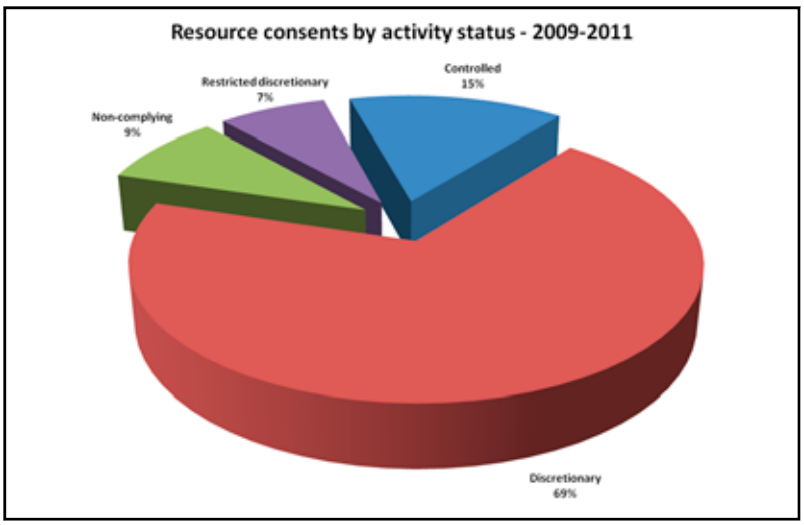




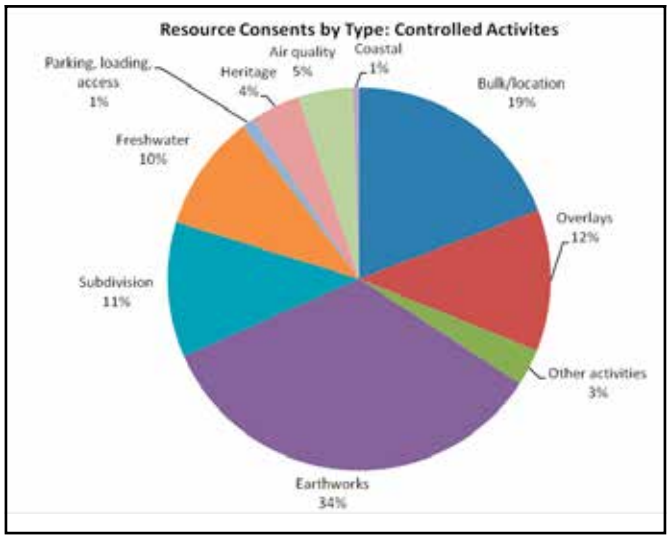
In the Industrial zone, air quality and bulk and location consent applications make up the highest proportion of consents with the lowest being for hazardous substances and subdivision.

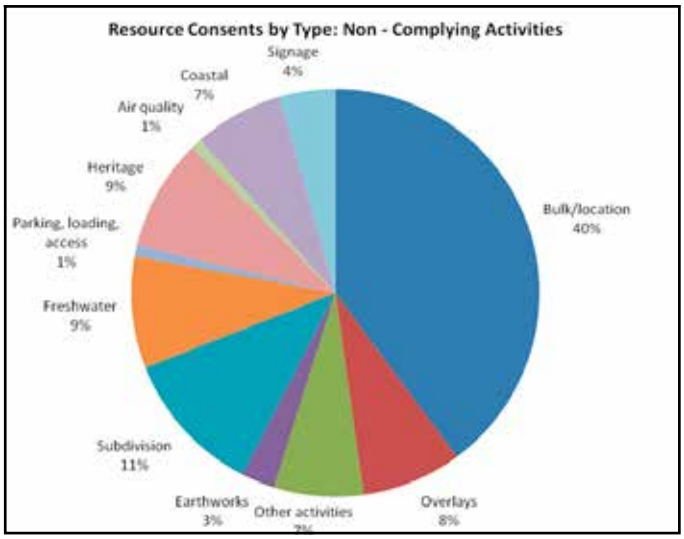


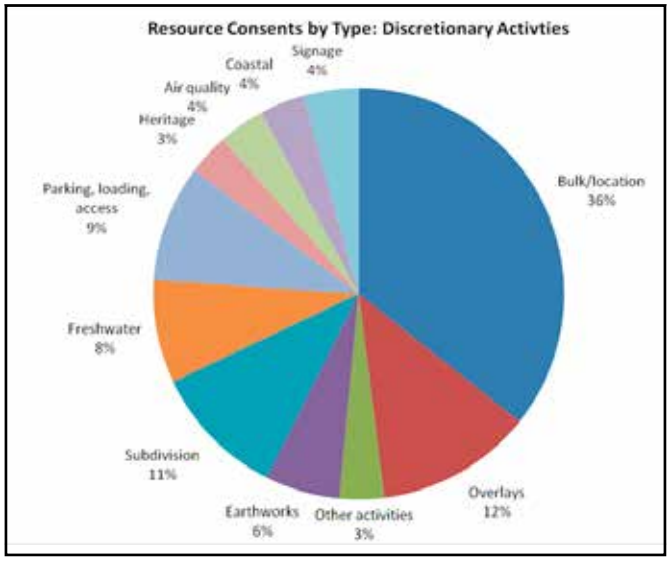
Overall the highest percentage of consents were for Discretionary activities (69%), Controlled activities (15%), Non-complying activities (9%), and Restricted discretionary activities (7%). Given that the vast majority of consents are approved, this suggests that it may be worthwhile reviewing discretionary activities to determine whether the current bulk and location controls are the most efficient way of achieving the anticipated outcomes in the NRMP.

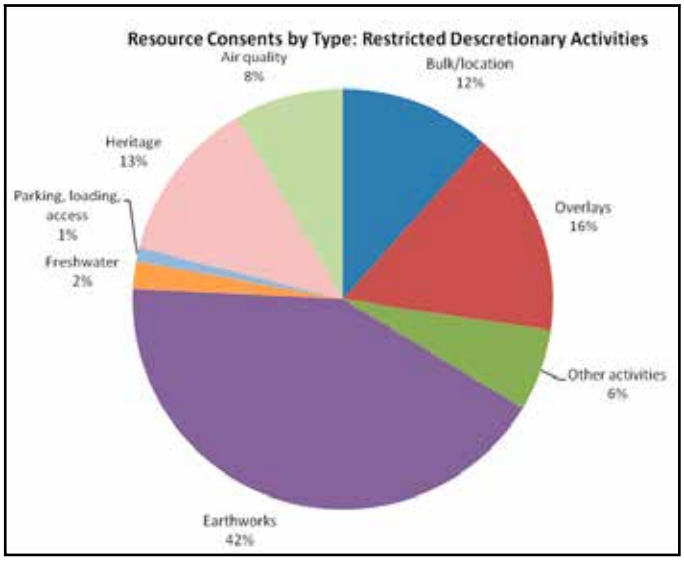


Further analysis bellow indicates that the lower threshold consents (controlled and restricted-discretionary) are for earthworks and higher threshold consents (discretionary and non-complying) appear to relate to bulk and location.









While the bulk and location controls may have been structured to allow third party involvement in the resource consent process (affected parties consent for discretionary and non-complying activities), the fact that they are always granted brings their efficiency into question. Similarly the efficiency of the earthworks rules is also debateable, particularly given water quality decline highlighted in the Freshwater section of this report. A more in-depth analysis of resource consents would be useful to determine whether permitted thresholds could be adjusted to reflect the current situation or to be clearer about the effects that are attempting to be avoided, remedied, or mitigated.

Plan Users Survey 2009

In May 2009 a survey of plan users was carried out with a focus on Plan usability. Surveys were sent to 120 plan users of which Council received 46 responses Survey questions focussed on usability of the plan as a whole, the planning Maps, the arrangement of chapters/Appendices, the structure of the Rules, the inclusion of explanatory text, and the presentation and format of the plan.

The following general trends can be gathered from a review of responses:

- 98% used the plan monthly or more often
- 66% found the Plan as a whole either very user friendly or user friendly
- 71% found the planning maps either very user friendly or user friendly

- 62% found chapters/appendices either very user friendly or user friendly
- 73% found the structure of rules and associated text either very user friendly or user friendly
- 63% found RMA issues helpful
- 75% found reasons/explanations for objectives and policies helpful
- 78% found explanation in the rules helpful
- 85% found assessment criteria helpful
- 53% found having anticipated environmental results helpful
- 34% found explanatory information helpful
- 69%-84% considered there should be no changes to the text
- 63%-97% considered there should be no changes to the maps.

A number of specific comments were also provided. A number of key themes were:

- the need for a clear strategic vision for how the City is anticipated to be in the future
- trackability of changes for existing use rights issues
- repetitive nature of fresh water and other regional controls,
- clearer link between objectives, policies, and rules (perhaps list rules in Policies).

Plan Changes (RAD 553299)

Nelson City Council maintains an inventory of issues that have been raised with the NRMP dating back to 2001. Topics include Residential, Heritage, Noise, Open Space, Parking, Meaning of words, Earthworks, Rural, Coastal, Industrial, Inner City, General, subdivision, Access, Designations, Hazardous substances, Overlays, Freshwater, Signs, Daylight, and verandahs.

As outlined in the introduction to this report a number of plan changes have been undertaken as part of a rolling review of the NRMP and to keep the NRMP current. As these plan changes have been undertaken the inventory of Plan Changes has been referred to in determining the content of these plan changes.

Since 2001 338 matters have been addressed. 146 issues remain ranging from minor error corretions to major plan changes. There are three major plan changes requiring action. These relate to Open Space and aquaculture. These, along with a range of other plan changes identified in this report, have been programmed into the NRMP work programme as part of the 2012-2022 Long Term Plan. The priority has been given to completing exisiting plan changes and responding to national policy changes in the short term and implementing the Nelson Development Strategy, reviewing the Nelson Regional Policy Statement and Air Quality Plan, and those parts of the NRMP not yet reviewed in the medium to long term. This approach of incorporating the inventory of plan change requests within the planned work programme appears to be the most efficient use of resources.

SUMMARY NRMP EFFICIENCY

Compared to national averages NCC has notified a higher proportion of subdivision and discharge consents and a lower proportion of Coastal and Water consents. Landuse consent notification is comparable with national averages when taken across both limited and full notification. To a degree this trend reflects the NRMP policy direction, consent thresholds, and the presence or absence of notification statements in the plan.

The Rules in the NRMP appear to be efficient at achieving the NRMP policy direction as:

- The highest number of resource consents are typically in the Residential zone and the least in the conservation zone reflecting the anticipated location of growth
- The lowest proportion of consents were typically related to coastal, signage, air quality, and heritage which is consistent with policies that seek minimal signage, enhanced air quality, limited coastal development and the protection of heritage.

The majority of resource consents are being issued for earthworks and bulk and location.

The lower threshold consents (controlled and discretionary) are for earthworks and higher threshold consents (discretionary and Non-complying) appear to relate to bulk and location (daylight, site coverage and yards).

This brings the efficiency of the earthworks and bulk and location rules into question, particularly the earthworks rules where the effectiveness of these controls is debateable given water quality decline highlighted in the Freshwater section of this report. A more in-depth analysis of resource consents would be useful to determine whether permitted thresholds could be adjusted to reflect the current situation or to be clearer about the effects that are attempting to be avoided, remedied, or mitigated. This work should be incorporated into the NPS Freshwater Plan Change and consider further monitoring of Plan Change 14 which introduces changes to the Residential zone bulk and location controls.

A survey of Plan users in 2009 suggests that the NRMP is efficient to use although there was a desire to have a clearer strategic vision for how the city should be in the future which raises a question about whether objectives need to be more outcome focussed and measureable.

A range of issues have been highlighted for plan amendments since 2001. The vast majority of these have been addressed and those that have not will be addressed when the relevant section of the plan is reviewed in accordance with the general direction in the LTP. The majority of issues identified in the effectiveness component of this report are already provided for in the 2012-2022 work programme which suggests that this is an efficient system for identifying plan changes.

RECOMMENDATIONS FOR FURTHER WORK

In the short term:

- Seek feedback from Plan users about this efficiency and effectiveness review to compliment the Plan user surveys of 2009
- Undertake a review of the earthworks controls as part of the NPS Freshwater project to investigate if their efficiency can be improved.

In the medium term:

- Undertake a review of the residential bulk and location controls following further monitoring of Plan Change 14 outcomes.

Nelson City Council

te kaunihera o whakatū

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