Ministry for the Environment
Manatū Mō Te Taiao

Environmental performance indicators

Technical Paper
No. 63
Urban Amenity

Urban Amenity Indicators: The liveability of our urban environments

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For the Ministry for the Environment

June, 2000.

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Acknowledgements

The work for this project is being progressed as a Joint Venture Project between Karen Bell and Associates and Glasson Potts Group Ltd. The report was prepared by Karen Bell, Project Manager, (Karen Bell and Associates), Peter Glasson and Kristin McKee (Glasson Potts Group Ltd), and had input from Mark Bachels (Christchurch City Council – Central City Revitalisation) and Stuart Camp (Marshall Day Acoustics).

The authors wish to thank the following people for their input into this work:

The Ministry for the Environment staff who have contributed/will contribute to this work:

Erica Sefton (Project Leader – urban amenity), Maurice Hoban, Dave Brash, Ray Salter, Lindsay Gow, Laura Hogg, Jane Hewett, Ruth Berry and Katarina Maki.

Members of the Focus Group:

James Corbett (Manukau City Council), Greg Vossler (Palmerston North City Council), Graeme McIndoe (Urban Designer), Phillip Brown (Waitakere City Council), Phillipa Richardson (Porirua City Council), Paul Honeybone (Sustainable Cities), Rewi Thompson (Architect), Bob Nixon (Christchurch City Council), Stephen Colson (Rotorua District Council), Brendon Marshall (Hutt City Council), Bruce Halligan (Southland District Council).

Council staff involved in the Case Studies:

Tasman District – Steve Markham, Rose Biss and Jane MacGibbon.
Waimakariri District – Richard Johnson, Kathy Perreau, Deborah Hewitt.
Christchurch City – Corinne Macintyre, David Price, Elizabeth Plew, Chris Dillon, Kath Jamieson, Bob Nixon, Jack Travis, Isobel Stout, Neil Carrie, Janet Reeves, Ursula Dougherty, Josie Schroeder.
Palmerston North City – Peter Frawley, Greg Vossler, Rochelle Vials, Richard Mayer.
Auckland City – Karen A Bell, Rennae Shirley, Penny Pirit, Bruce Young, Heather Haylock, David Saunders, Tania Richmond, and Kathryn Elliff.

All council staff who spent time answering the survey and have sent us emails, or called us with ideas for this work.

Executive summary

Introduction

This paper is the first draft of a technical paper, which will form the basis of work on the development of national urban amenity indicators for New Zealand. This paper will go through a vigorous peer review process. Professor David Yenchen (University of Melbourne, Australia) and Professor Ian Lowe (Griffith University, Australia), the Ministry for the Environment's Urban Amenity Focus Group (which includes representatives from local government), and Ministry for the Environment staff will review this draft report. The draft report will form the basis for discussions at the Ministry for the Environment's Urban Amenity Focus Group meeting on 20 July 2000.

Purpose and audience for the report

The purpose of this draft report is to suggest:

- an approach to developing national urban amenity indicators and
- some possible urban amenity indicators

to the Ministry for the Environment and local authorities. The report will be developed further and the next draft, a technical background report on urban amenity indicators, will be circulated to local government and the Urban Amenity Focus Group. It will form the basis for the development of national urban amenity indicators.

The audience for this draft of the report is Ministry for the Environment, The Urban Amenity Focus Group, and council staff involved in the case studies under this project. The audience for the next draft of this background report is local authorities charged with the responsibility to define, manage, and monitor urban amenity locally; the Ministry for the Environment; the Urban Amenity Focus Group; and other people interested in urban amenity in New Zealand.

Brief for this project

The brief for this project was to investigate developing a small set of national urban amenity indicators, starting with indicators for noise, open space, urban density, and the use of satisfaction surveys to determine what people like about where they live. The top priorities from the Ministry were originally viewed as noise and open space. The project brief also included identifying other potential areas to develop into national environmental performance indicators. The consultant team preparing this report was asked to work with a focus group to assist with this process.

Methodology

The methodology for this project has included the following:

- A literature review of urban amenity
- A survey sent to all local authorities (district, city and regional councils and unitary authorities)
- An Urban Amenity Focus Group established by the Ministry for the Environment to assist with the project, and

- Case studies with five district/city councils (Auckland, Christchurch and Palmerston North City Councils, and Tasman and Waimakariri District Councils).

Structure

The structure for this report is as follows:

Introduction Sets the scene for why this work is important and outlines the purpose of this work and the intended audience. This section also provides background information on previous work the Ministry for the Environment has done on urban amenity and outlines some related work the Ministry for the Environment is/or has been involved with.

The brief for this work

An outline of the brief for this work and timeframes within which the work will be progressed.

Definitions, scope and project methodology

The challenge of defining urban amenity is discussed and a working definition for this work is provided. There is a brief discussion of the scope of this work and a more detailed discussion of project methodology adopted by the consultant team.

The policy framework to develop indicators of urban amenity

An overview of relevant policy and legislation under which urban amenity is managed in New Zealand.

How are local authorities defining, managing and monitoring urban amenity?

A summary is provided of the key ways in which urban amenity is being dealt with by councils throughout New Zealand.

What is being done internationally and in New Zealand on urban indicators?

A brief outline of related work in other countries and New Zealand on urban indicators.

Possible Urban Amenity Indicators to draw from

A table that summarises indicators used by local authorities in New Zealand and in other countries to measure urban amenity is provided.

Common threads – recommendations for a process to select national urban amenity indicators and indicators to consider

A process is recommended to develop national urban amenity indicators and some top tier urban amenity indicators are suggested (refer to summary of conclusion).

Urban amenity indicators relevant to Maori

The importance of setting up processes to involve Maori in the development of national urban amenity indicators is stressed. Some matters of significance to Maori are briefly discussed.

Conclusions Because urban amenity has the greatest meaning locally, this report does not recommend a definitive set of indicators. It recommends a process to develop urban amenity indicators locally some of which may be aggregated to a national level. The report recommends twelve core areas that are commonly referred to as being of significance to the management of urban amenity (in many different locations). These include:

- noise and vibration;
- nuisance effects;
- open space;
- urban density (including population and housing density);
- vegetation;
- landscape;
- urban design;
- cultural and heritage features;
- character of neighbourhoods;
- visual amenity and views;
- public and person safety and accessibility;
- sense of well-being.

A suite of indicators being used to manage these key attributes may then be applied at a local level in relation to the vision and values of the local community.

Glossary

Amenity	The qualities and attributes people value about a place that contribute to the experience of a high 'quality of life'.
Amenity attributes	The tangible and measurable aspects of the environment such as physical noise measurements.
Amenity values	The less tangible aspects of the environment such as people's perceptions, expectations, desires, and tolerance. Amenity values is defined in the Resource Management Act as **"***Those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".*
Biophysical	The biological, geological, hydrological, and atmospheric components of the natural environment.
Consents	Authorisation from a local authority to undertake activities which would otherwise contravene a rule in a district or regional plan (or proposed plan), or which would contravene section 9, 11, 12, 13, 14 or 15 of the Resource Management Act.
Complaints	Grievances related by members of the public to local authorities in respect of matters relating to local government or community issues.
Decibels (dB)	Decibels (dB) are a logarithmic unit used to measured sound pressure. A doubling of sound pressure results in a 3dB increase in sound level.
dBA	Sound levels are often "A-weighted" to represent the response of the human ear. A sound, which is twice as loud as another, typically has a sound level 10dBA higher.
Design guide	A document that illustrates principles of design, provides design guidance for particular development types and makes explicit the benchmarks for assessing the level of amenity and design quality of a development.
Heritage	Buildings, places and trees etc. which have special historic, architectural and community value, that help to give an urban centre a distinctive character, and serve as reminders of its past.
Indicator	An indicator is a measure (eg a distance from a goal, target, threshold, benchmark) against which some aspects of policy performance can be assessed. Indicators are information tools. Environmental indicators simplify, quantify and communicate trends in and impacts on the environment. They also tell us the extent to which our policies are working.
Inner city	The urban area comprising the central commercial area and high density residential development.
Liveability	Unique combinations of amenity values (open space, design features, urban vegetation); historic and cultural heritage;

	location; and intangibles such as character, landscape, and 'sense of place'.
Ldn	A "day-night" noise level. This is Leq measured over a 24hr period, where night-time noise levels are penalised by 10 dB to account for additional annoyance during sleeping hours.
Leq	The "equivalent continuous" sound level: which would have the same total sound energy as the fluctuating noise source being considered. Often described as an energy based average sound level. An Leq value can be measured over any time period.
Monitoring	The deliberate act of observation and surveillance over time with a defined purpose.
Open/green space	Areas of land in a natural or modified state which range from those that provide for active recreational activity, such as sports fields, to those primarily focused on conservation and passive use.
Peri-urban	The interface between urban and rural environments.
Precautionary principal	Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. *(Principle 15 of the Rio Declaration).*
Residential environment	Urban areas used predominantly for residential activities, but including open space and local support services.
Streetscape	The combination of physical features that make up a road and the combination of surrounding buildings and open space that overlook and are visually linked to a road or street when viewed from the street itself.
Sustainability	The ability to use natural and physical resources in such a way that the stock of resources is not significantly degraded or depleted for use by future generations.
Urban	An area characterised by high density development and a variety of housing styles including apartments, terrace housing and semi-detached housing. Reduced areas of private open space and vegetation.
Urban amenity	The liveability of urban environments.
Urban design	The general form for the design of groups of buildings and for the development of management policies for the urban physical environment.
Urban sustainability	The sustainable management of the biophysical/ecological, economic and social effects of urban development.

Terms

ACC	Auckland City Council
ADC	Ashburton District Council
AER	Anticipated environmental result (in RMA plans)
ARGS	Auckland Regional Growth Strategy
CCC	Christchurch City Council
CLIP	UK Local Sustainability Counts - quality of life indicators
dB	Decibels
dBA	Sound levels
ENVT AUST	Environment Australia
EPI Programme	The Environmental Performance Indicators Programme
HCC	Hutt City Council
IISUD	International Institute for Sustainable Urban Development
IND CANTY	'indicate' Canterbury
JACKSONVILLE	Quality of life in Jacksonville Indicators for Progress
KCDC	Kapiti Coast District Council
Ldn	A "day-night" noise level - refer glossary
Leq	The "equivalent continuous" sound level - refer glossary
MfE	Ministry for the Environment
MPDC	Matamata-Piako District Council
NIP	National Indicators Project
NSCC	North Shore City Council
OECD	Organisation for Economic Co-operation and Development
PASADENA	Quality of Life Index for Pasadena
PCE	The Parliamentary Commissioner for the Environment
PNCC	Palmerston North District Council
PSR Framework	The Pressure-State-Response Framework developed by the OECD
SEATTLE	Sustainable Seattle
SILICON VALLEY	Joint Venture's Index of Silicon Valley
Stage 1 and Stage 2 indicators	Stage 1 indicators are those that can be implemented now or in the next two years. Stage 2 indicators are those that need further work.
ST JOSEPHS	Healthy Community Initiative St Joseph County
TDC	Tasman District Council
TLAs	Territorial Local Authorities – this includes city and district councils and unitary authorities.
UK DETR	UK Department of Environment, Transport and the Regions
UNEP	United Nations Environment Programme
WDC	Waimakariri District Council

Contents

1 Introduction

Why monitor urban amenity?

New Zealand is one of the most highly urbanised countries in the world. *The State of New Zealand's Environment 1997* states

> *"For all New Zealand's rural landscapes and agricultural imagery, 85% of the population is concentrated in towns and cities, …including the largest population centres in each island (i.e. Auckland and Christchurch) …"*

Over a third of our population now live north of the Bombay Hills near Auckland (the country's largest city). Population increases have been particularly intense in Auckland. Some small urban and peri-urban areas in New Zealand such as in Waimakariri District and Tasman District are also experiencing high growth rates and this is having an effect on the amenity in these locations. This creates concerns about water supply, waste management, coastal water quality, and the spread of human settlements over wetlands, and high fertility farmland. It also raises a number of issues relating to amenity issues in urban and peri-urban environments.

The State of New Zealand's Environment (1997) goes on to say that:

> *'Urban, industrial and transport land covers almost 900,000 hectares* (of New Zealand) *– nearly double the current area of crops and orchards, and about 3% of the total land area…*
>
> *Although the urban population has increased by only 30% since 1969, the area of land classed as urban has almost trebled. When averaged, the rate of urban expansion over the past 25 years has been around 4% per year, increasing from nearly 270, 000 hectares in the late 1960s to 730, 000 hectares'.*
>
> *(The State of New Zealand's Environment, Ministry for the Environment, 1997)*

The Office of the Parliamentary Commissioner for the Environment published a report, entitled *The Management of Suburban Amenity Values,* in March 1997. This report assessed how Auckland, Christchurch, and Waitakere city councils administered urban amenity values in suburban residential areas that are subject to intensification.

The report notes that…

> *'contributing factors to suburban amenity values include public and private open space, historic and cultural heritage, neighbourhood character, vegetation (e.g. bush, trees and gardens), safety, views and noise levels,* and further that…
>
> *Significant effects of intensification on suburban amenity values include:*
> - *changes to the streetscape and the combination of the natural and built environment;*
> - *the loss of vegetation, special character, and public and private open space;*
> - *increased traffic, noise levels, on-street car parking and the effects of increased traffic levels on safety'.*
>
> *(Office of the Parliamentary Commissioner for the Environment, 1997)*

In 1997, the Parliamentary Commissioner for the Environment recommended to the Minister for the Environment, that his Ministry should:

> *"Develop environmental indicators for amenity values to assist local authorities and communities to monitor and report on the state of amenity values* [and]
>
> *Invest in, and encourage research into, urban design that will be appropriate to New Zealand to provide information to local authorities to assist them in promoting the sustainable management of urban environments and the management of amenity values."*

In 1997 the Parliamentary Commissioner for the Environment identified the management of the urban environment as a key area for investigation in his 'Five Year Strategic Plan'. The Commissioner maintains a watching brief on issues relating to urban amenity and urban sustainability.

The January 1999 edition of Data Services' Environmental Digest and Law Reports of New Zealand, reports 445 cases involving issues of amenity value.

Urban amenity is a significant resource management issue in New Zealand.

The purpose of this report

The purpose of this report is to:

- suggest an approach to developing urban amenity indicators to the Ministry for the Environment and other practitioners in central and local government, which might be used nationally to both
    - measure the impact of urban systems on the environment; and also
    - assess the amenity in urban and peri-urban environment's in New Zealand – or measures of how liveable urban environment's are for the people who live, work and play in them; and to
- highlight some possible indicators of urban amenity for use throughout New Zealand. It may then be possible to apply such indicators at a variety of scales, for example at regional or local levels.

The consultant team is responsible (between now and October 2000) for developing a small set of environmental performance indicators that are useful for monitoring urban amenity at a national level and at the same time to assist councils in developing approaches to define, manage, and monitor urban amenity at a local level. This draft technical paper on urban amenity indicators sets the scene and is the first report prepared towards achieving these aims.

The audience for this report

The audience for this report is local government practitioners (staff and councillors), and others with an interest in urban amenity, such as members of the Ministry for the Environment Urban Amenity Focus Group.

Background to this report on urban amenity

General progress under the Environmental Performance Indicators Programme

The Ministry for the Environment has developed a core set of environmental performance indicators under the Environmental Performance Indicators (EPI) Programme (Appendix 1) for issues such as land, air, water, biodiversity, the marine environment, waste, transport and energy. Some of the indicators previously developed (which mostly focus on biophysical aspects of the environment) are relevant to this work. For example, the Transport Indicators Focus Group recommended some noise indicators for inclusion in the transport indicators (Appendix 2). After receiving submissions on the transport indicators it was decided to defer the noise indicators until the urban amenity indicators were developed and include them here. Another example is the presence of litter, which was an indicator developed under the marine indicators strand, which may also be relevant to urban amenity indicators.

The Ministry for the Environment's previous work on urban amenity

The Ministry for the Environment has already progressed some work relevant to urban amenity, namely:

- *Working Paper 7 – Amenity Values under the Resource Management Act 1991, defining amenity values with suitable specificity* (October 1996).

- *Technical Paper No. 21 – Urban Amenity Indicators Workshop Report.* Summary of a workshop facilitated by MfE and the Royal Society of New Zealand on scoping the potential to develop and apply urban amenity indicators (August 1998).

- *Technical Paper No.* 22 – *Case Study: city and district council state of the environment monitoring and indicators.* An overview of monitoring carried out by selected territorial local authorities (August 1998).

- *Technical Paper No. 54 – Proposed Approach to Indicators for Urban Amenity.* A discussion document outlining an approach to developing urban amenity indicators (June 1999).

- *Summary of Submissions on the Proposed Approach to Indicators for Urban Amenity* (September 1999).

- *Curbing the Sprawl: Urban growth management in the United States – lessons for New Zealand,* report prepared by Lindsay Gow, Deputy Chief Executive, Ministry for the Environment as a result of study tour in 1999 (April 2000).

This draft technical report on urban amenity indicators builds on the work listed above. Relevant aspects of the work that has been carried out to date is discussed in further detail below.

Working paper on amenity values 1996

In October 1996 Ministry for the Environment produced a working paper on the amenity values under the Resource Management Act 1991. The paper emphasises the importance of local authorities defining what urban amenity means with suitable specificity in district plans.

A working example of plan provisions for local authorities is included in the paper that isolates and describes the elements common to an area or neighbourhood that constitute its amenity value. This paper was followed by an address to the 1997 New Zealand Planning Institute Conference by the Minister for the Environment, the Honourable Simon Upton.

Ministry for the Environment and Royal Society workshop on urban amenity indicators
In May 1998 the Royal Society of New Zealand and MfE sponsored a workshop to test the use of the Pressure-State-Response (PSR) methodology in the area of urban amenity. That workshop generated some preliminary amenity values that were considered worthy of further development and confirmed the feasibility of using the PSR framework.

The key generic urban amenity matters [in no particular order of priority] identified by the Workshop were:

- **Safety** - this value has a number of elements, which includes personal safety from natural hazards [e.g. landslips and flooding] and generated effects of activities [e.g. proximity to hazardous materials and their use, and traffic accident risk]; occupational safety from workplaces and practices; and social safety [e.g. crime, personal abuse, and injury].
- **Heritage** - this value covers the range of cultural heritage in urban settings [including remnant structures and special places and associations]; the historical built heritage of post-contact European urban society [including streetscape]; and natural heritage [which includes all the biophysical - including geopreservation - sites and structures].
- **Open Space** - this value has the usual association of personal and community living space [including *density* issues]; the natural landscape [including urban streams and waterways]; vegetation [including urban trees]; reserves and playgrounds; but also the less commonly considered components such as roading corridors and view shafts which contribute to our visual *sense of open space*.
- **Neighbour Issues** - this value or collection of values includes all those matters that constitute a valued neighbourhood and over which neighbourhood disputes tend to emerge. Accordingly it relates to issues such as density, noise, sunlight, privacy, views, traffic, housing variety, and design.
- **Mobility and Accessibility** - increasingly important as urban areas become more congested is the amenity value attached to being able to get around and from place-to-place for work, general purposes and leisure by a variety of modes of transport [including walking and cycling] and within reasonable time spans.
- **Healthy Urban Environment** - this value includes the issues relating to the general quality of air, land, and water and is particularly focused on the effects of discharges and emissions.
- **Healthy Communities** - many attributes go into the pot of values that represents a healthy community. These include the quality of living space, entertainment options, the nature of social interactions, the sense of identity and belonging, and the viability or vibrancy of the community. *Choice* is fundamental.
- **Economy** - fundamental to urban amenity is economic wellbeing. A measure of the economic strength of communities is therefore important as an early indicator of potential change;
- **Aesthetics** - the *feel* of urban areas in terms of its form and features is a recurring theme in discussions about urban amenity. This value includes elements of natural and built features, streetscape, design, visual patterns, and vibrancy and novelty.
- **Infrastructure** - this value is one of the hidden elements that constitute urban amenity and, as such, is more often counted when it *fails* or is perceived to be *under stress*. It

includes the components of network utilities [gas, electricity, telecommunications, water supply], roading and transportation [including ports and airports], and solid and liquid waste management.

In reviewing the nature of these more generic concepts the workshop examined some in greater detail to see where this might lead. What was discovered was that for any of the generic concepts above there are many elements that contribute and that these can be *tangible physical attributes* or more *value laden and intangible.* For example in relation to access there is both: the ability to go somewhere and touch something - bush, recreation, vista and also its *value or potential* - access to the night sky, sunlight, views of water - and in the *abstract* - choice, safety, privacy.

One of the key issues that emerged from the general discussion was the difficulty that participants had in making any significant linkage between urban amenity indicators at a local scale, as opposed to some more generic national standard. At the Ministry for the Environment/Royal Society workshop participants concluded that:

> *"…we are unlikely to achieve an agreed set of national urban amenity values. However, this does not preclude the development of a national set of urban amenity indicators for application at the appropriate level of interest [regional, district, neighbourhood]".*

The Ministry for the Environment has indicated that it largely agrees with this conclusion. Most of the values identified through the workshop held in 1998 are local and not meaningfully aggregated up to a national level.

Workshop participants were of the opinion that:

- community surveys, such as the *satisfaction surveys* conducted by many local authorities, were likely to be an integral part of the monitoring methodology necessary to maintain an adequate understanding of *amenity values* over time

- it is important to establish clear policy goals for urban amenity, in order to develop national urban amenity indicators, and

- a standard listing of generic urban amenity issues be suggested, which could be ranked by individual communities of interest to assist in local management of urban amenity. Adoption of a nationally consistent methodology for assessing urban amenity matters was seen to have merit.

Study of what city and district councils monitor

In 1998 the Ministry for the Environment carried out a case study of city and district council state of the environment monitoring and indicators. Glasson Potts Group was commissioned to undertake the case study meetings with Ministry staff and write up the findings (MfE, 1998, Technical paper 22). Of the priority issues for indicator development identified by councils, amenity was the second most important (after land use). Other issues that contribute to amenity were also given a high ranking of importance, such as indicators for land use, heritage, leisure and recreation, natural features, noise, and so on. Many district and city council staff identified that it is important to develop (where possible) some consistent indicators in New Zealand for these functions of territorial local authorities.

Developing an approach to urban amenity indicators

In June 1999 the Ministry for the Environment published Technical Paper 54 – a proposed approach to indicators for urban amenity (MfE, 1999, Technical paper 54). The purpose of this report was to produce a proposal for discussion by stakeholders on an approach to developing urban amenity indicators.

The discussion document suggests a policy goal that includes the definition of amenity values in the RMA. The proposed policy goal is:

> *"To manage our urban environments in such a way as to maintain or enhance those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes".*

There was some support and some opposition to this proposed policy goal for urban amenity. This issue will be addressed further later in this report in relation to a discussion on the scope of the work and the policy framework for developing urban amenity indicators.

Technical paper 54 recommends the following process to develop urban amenity indicators:

- Establish a practitioner reference group to oversee the further development of urban amenity indicators;
- Reference group to confirm a conceptual framework, utility and definition of key values identified so far, and arguments/submissions for additional key values. This task will also require the group to develop and confirm the central policy goal, urban amenity value boundary and address the factors raised in section 5;
- MfE to collate information on existing and proposed amenity indicators experience in New Zealand into an inventory;
- MfE to develop a set of draft urban amenity indicators maintaining consistency of definition and approach as much as possible with the work being undertaken by Environment Australia;
- MfE to agree a methodology for pilot trials in three metropolitan centres, to be undertaken in conjunction with the relevant territorial authority at a neighbourhood level;
- Undertake the three trials;
- Evaluate and report the findings of those trials;
- Recommend a set of core urban amenity indicators, definitions and assessment values.
- Outline a monitoring and evaluation strategy for the indicators.

Most people who responded to this proposed process supported it. However many thought the nine to twelve month timeframe too optimistic and recommended that the trials be carried out over a range of smaller urban centres, not just metropolitan centres.

The Ministry decided to approach this project by proposing an approach that only looks to develop a narrow range of national urban amenity indicators with most effort focused on assisting councils to develop tools for defining amenity and monitoring the effectiveness of plan provisions that relate to urban amenity.

"At the local level urban amenity values are an integral part of resource management under the RMA. Resource managers must be able to identify the factors contributing to urban amenity for their local community. This will assist in the management of urban amenity values and monitoring of how the values change, particularly where development and urban intensification are occurring. It is also important that local authorities around the country are implementing the best urban amenity management methods. However, urban amenity values are difficult to identify and measure. Currently there is little agreement on how to monitor changes in urban amenity values".

(Ministry for the Environment, 2000, project brief)

While there have been efforts to develop urban amenity indicators in the past, this previous work has not been advanced to a stage where it can be consolidated. It is necessary to provide more certainty about the approach and scope to developing national urban amenity indicators. It is also important to publish some possible indicators and set up a process with local government to assess the usefulness of these indicators

Other related work that Ministry for the Environment is funding or involved in

Sustainable Management Fund projects

The Ministry for the Environment has funded two projects, under the Sustainable Management Fund, that are broadly relevant to this report:

- a case study of five Wellington councils on plan effectiveness monitoring. The territorial authorities involved, worked through the Ministry for the Environment process of assessing indicators they developed against key criteria and establishing priorities. Some of the indicators developed were for urban amenity. This work has been developed into a guide for councils on plan effectiveness monitoring.

- an integrated monitoring project lead by Environment Waikato with input from their district and city councils. Amenity issues were dealt with, to some extent, in the case studies that contributed to this project (Environment Waikato, 1999).

Rural amenity conflicts study

The Ministry commissioned some work on rural amenity conflicts (that is being processed in parallel to this work on urban amenity indicators). The study aims to:

- support improved practice for dealing with changes to amenity values and conflicts in the rural environment where there are perceived/potential adverse effects

- clearly identify and evaluate potential approaches for dealing with resource management conflicts including both statutory and non-statutory initiatives.

While this study is of relevance to the development of urban amenity indicators it specifically excludes dealing with urban amenity issues.

Planning Under a Co-operative Mandate project

Another study of relevance to this work on urban amenity indicators is a nine-year Public Good Science Fund project, entitled Planning Under a Co-operative Mandate. The over arching goal of this research is to better understand the links between environmental policy and outcomes by studying plans produced under the Resource Management Act 1991. The current phase of the project (phase 2) is describing the relationship between plan provisions and the extent to which resource consents comply with that plan. This includes evaluating urban amenity.

Impacts of Rural Subdivision on Landscape Values (unpublished work)

The 1999 the Ministry for the Environment commissioned some work on the impacts of rural subdivision on landscape values. A draft report has been prepared and is currently being updated. The draft report provides advice and examples on understanding and assessing landscapes. It briefly outlines general principles for councils to consider when developing district plans or considering resource consent applications. These include the expression of:

- the natural pattern of landform;
- protection of the natural drainage patterns;
- retention of remnant indigenous vegetation and other areas of ecological significance;
- reinforcement of the natural pattern of the landscape through appropriate planting;
- avoidance of dominant or discordant types of human modification; and
- the use of a rural vernacular.

As this list indicates, landscape values interact with other values (for example, significant natural areas) that councils will want to be considering when developing their plans.

The draft report provides a toolbox of techniques used in district plans throughout the country and discusses their advantages and disadvantages. These include:

- the activity status of subdivision;
- minimum allotment areas for subdivision and associated minimum site areas for dwellings;
- minimum average allotment areas for subdivision;
- allotment dimensions, shape requirements, minimum frontages, and minimum distances between entrances;
- controls over buildings rather than allotments;
- ridgeline and viewshaft protection;
- rationing methods;
- identification of special areas; structure plans;
- clustering techniques;
- residential farm or forest park development requirements;
- natural feature protection requirements; transferable development rights; and
- a range of non-statutory techniques.

The effects on landscape from development associated with rural subdivision can be positive or negative. The draft report concludes that there is no one *right* way of valuing landscapes, or dealing with landscape issues in district plans. However, it is hoped that an understanding of some of the things that can undermine or support landscape values, and the planning techniques that are available in developing district plans, will assist with achieving positive landscape outcomes into the future.

2 The brief for this work

The brief for this project was to investigate developing a small set of national urban amenity indicators, starting with environmental performance indicators for noise, open space, urban density, and the use of satisfaction surveys to determine what people like about where they live. The top priorities from the Ministry were originally viewed as noise and open space. The project brief also included identifying other potential areas to develop into national environmental performance indicators.

The consultant team was required to prepare a draft technical report for the Ministry for the Environment by 30 June 2000 identifying-:

- an approach to developing national urban amenity indicators
- urban amenity indicators for noise and open space, and any other potential national environmental performance indicators.

The Urban Amenity Focus Group will discuss this draft technical report, when they meet for the second time on 20 July 2000. In particular the Focus Group will:

- consider the appropriateness of the Ministry for the Environment selection criteria for indicator development (which was developed in 1996-97 for indicators with a more biophysical focus), and
- assess the usefulness of the possible indicators against the selection criteria chosen at that meeting. (The possible indicators and selection criteria are identified in section 7 of this report).

The timeframe

The following timeframe will be followed for this project:

- Completion of a draft background technical report on urban amenity indicators (this report) by 30 June 2000.
- Workshop with Focus Group on 20 July 2000.
- Report to MfE including outcomes from focus group workshop by 31 July 2000.
- Technical report on urban amenity indicators to be completed by 15 August 2000. This report will make recommendations on the approach to national urban amenity indicators and list some possible urban amenity indicators.
- Draft urban amenity indicators discussion document to be completed by 15 September 2000.
- Urban amenity indicators discussion document to be completed by 13 October 2000.

This involves the following steps:

- Describing an ideal set of national environmental performance indicators for noise and open space *(this draft and the final technical paper).*

- Recommending a priority list of indicators that are available as Stage 1 indicators (see glossary of terms for Stage 1 and 2 indicators). Providing an assessment of these indicators against the set of standard criteria *(to occur following the second Focus Group meeting on 20 July 2000 and be written into the technical paper to be completed by 15 August 2000).*

- Recommending a process for monitoring these indicators (including who, where, how often etc) *and reporting the results to the Ministry (the draft discussion document 15th September and discussion document 13th October 2000).*

- Identifying if there are any further noise or open space indicators that should be included but will require further development as Stage 2 indicators. Describing these indicators where appropriate *(to occur following the second Focus Group meeting on 20 July 2000 and be written into the technical paper to be completed by 15 August 2000 and to be included in the discussion documents).*

- Identifying any overlaps with indicators already selected under other strands of the EPI Programme *(the urban amenity indicator discussion documents, September and October 2000).*

3 Definitions, scope and project methodology

This section of the report outlines the definition of urban amenity that will be used in this study, the scope of the work, an outline of the project methodology, and a proposed process to develop national urban amenity indicators.

Some people would argue that urban amenity means different things to different people, that 'beauty is the in the eye of the beholder' or amenity is a matter of taste. Therefore, it is meaningless to assess urban amenity at a collective scale. To some extent that is true, but our society does have things like certain buildings, conservation areas, and outstanding landscapes that it values collectively in relation to their amenity values.

The challenge of defining urban amenity

One of the challenges in recommending urban amenity indicators is the huge variation in how people define urban amenity. What is urban amenity? There is no one commonly agreed definition of urban amenity.

What is urban?

An issue that has been raised during the progression of this work is *"what is urban"?*

> *Urban areas, as classified by Statistics New Zealand, include any town, suburb or city with more than 1,000 people. They are currently estimated to cover 730, 000 hectares while the nation's network of non-urban railways and roads is estimated at 160,000 hectares.*
>
> *(The State of New Zealand's Environment, Ministry for the Environment, 1997)*

This report focuses on the development of national *urban amenity* indicators. It is likely that an examination of *rural amenity* would draw similar conclusions and approach things in a similar way. For the purposes of this study, *"urban"* will be defined as environments with more than 1000 people, and peri-urban areas (on the periphery of urban environments) will not be discounted.

It is recommended that once this project has identified urban amenity indicators, that the Ministry for the Environment consider expanding these indicators so that they deal with rural amenity as well and do not make the arbitrary distinction that is currently being made between rural and urban environments.

What is amenity?

Amenity comprises:

- amenity *attributes* – the *tangible and measurable* matters such as physical noise measurements and
- amenity *values* – the *less tangible* matters such as people's perceptions of noise, culture, *perceptions, expectations*, desires, tolerance.

Urban amenity indicators have little meaning at a national level. They have meaning locally and nationally urban amenity is a significant resource management issue. That is not to say that it is not useful to develop national urban amenity indicators that can be used within a local context. We all *know* what amenity means to us, but it means different things to different people depending on where we live work and play and a number of other factors. A broad range of factors combines to produce a picture of urban amenity. There are common

attributes that most of us think of when considering amenity, but the values we associate with those attributes can vary substantially. For instance, some people enjoy inner city living because of the amenity it offers and others prefer the amenity offered in the suburbs (away from the central city).

An additional challenge is the variation between what members of the public think of as urban amenity - i.e. things such as pleasantness, attractive landscapes, privacy and peace and quiet – and what local authorities can manage under the Resource Management Act.

It is recommended that, in order to develop meaningful and useful urban amenity indicators, the *attributes* of urban amenity are distinguished separately in the first instance from the *values* we place on those attributes.

This is simply to ensure that we can establish the *key attributes* people want in relation to urban amenity *throughout New Zealand*, and so that any national indicators that are developed (based on these attributes) can be used in a local context in relation to the *vision and values* of the *local community*.

The conclusion of the Urban Amenity Focus Group was that in defining urban amenity, the following question should be asked *"what is it about a place that makes us feel good or bad about it?"* This involves *"quality of life"* or the *"liveability"* of our urban environments. For the purposes of this study urban amenity is being referred to as the *"quality or attributes that we value about a place"* or *"liveability of our urban environments"*.

The Focus Group commented that the RMA definition of urban amenity relies heavily on the tangible and measurable, but that there are intangible elements which combine to *"make a place feel good"* or *"contributes to quality of life"* or high amenity. These less tangible elements are vitally important.

The Office of the Parliamentary Commissioner for the Environment's report *"The cities and their people: New Zealand's urban environment"* (1998) investigates the management of the urban environment and makes reference to the liveability of our cities as follows:

> *"The liveability of urban areas stems from unique combinations of amenity values (open space, design features, urban vegetation); historic and cultural heritage; location; and intangibles such as character, landscape, and "sense of place". The value of liveability and the importance of good urban design are not adequately recognised in management approaches, policy or legislation. The provisions of the RMA that address amenity values and the interactions between development and the environment (including people and communities) are essential and they must be retained."*
>
> *(Office of the Parliamentary Commissioner for the Environment, 1998)*

This report uses the definition of urban amenity similar to that determined by the Focus Group and will consider the *liveability* of urban environments.

Scope

Considering the liveability of urban environments necessitates considering how broad or narrow this project and the indicators developed under it should be. Technical paper 54 (MfE, 1999) posed several questions relating to the scope and boundary of urban amenity, in particular how far should urban amenity indicators go in including social policy issues? Submissions of Technical paper 54 (MfE, 1999) were fairly evenly split on this issue. It is recognised that there are dynamics that exist between environmental and social issues, and therefore, urban amenity indicators that only consider environmental effects will be missing some vital information and trends. It is important to acknowledge the dynamics between environmental and social/economic issues. Social and economic factors are driving forces, and it is essential that they be linked to environmental policy and decision-making.

Any urban amenity indicators that are to be developed need to be policy relevant and for territorial local authorities this means relating them to those aspects of the environment over which the council has responsibility - specifically functions under the RMA and the Local Government Act. Urban amenity indicators are likely to link with district plan provisions but there is also likely to be overlap between monitoring a council's strategic plan and general state of the city monitoring and reporting. The Local Government Act supports urban amenity indicator work being viewed as a wider issue/scope than covered by the RMA.

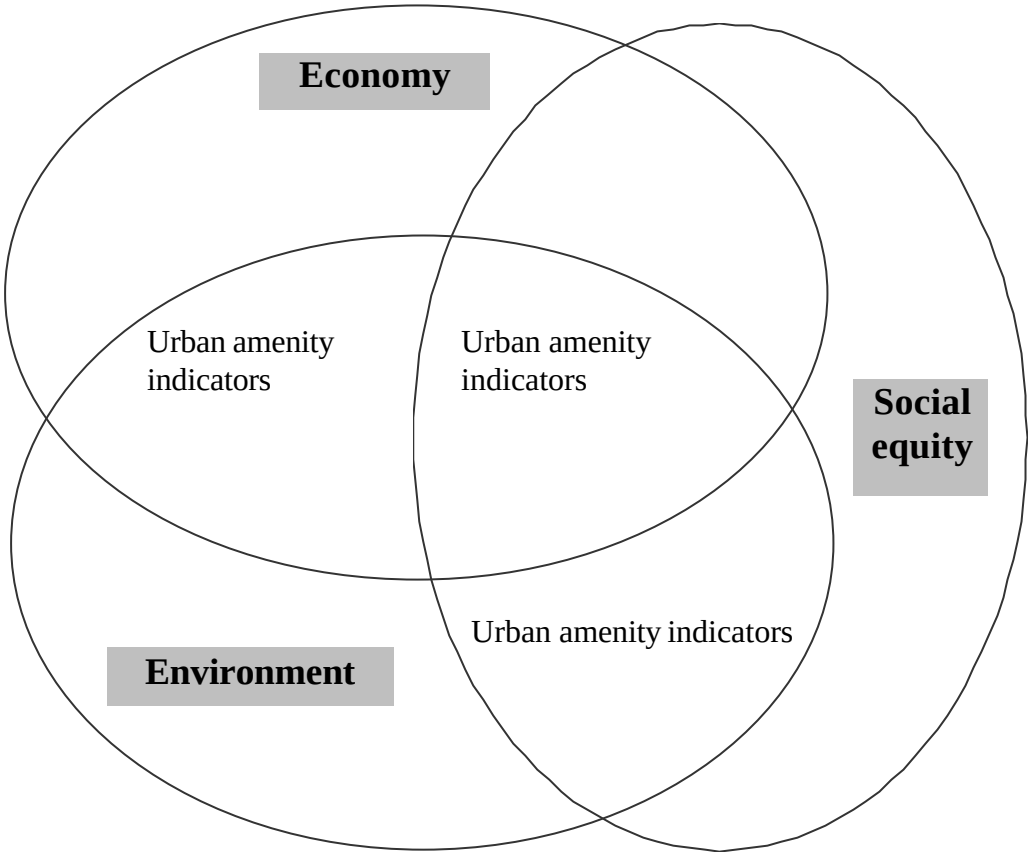
It recommended that this work on urban amenity indicators should focus on resource management issues as a starting point, but, where the boundary is blurred, it may be more practical to collect general social/economic data and interpret them for resource management purposes. It is important to move beyond the RMA in order to develop and implement effective urban amenity indicators.

There has been a body of work emerging world-wide in the 1980s and 1990s on social and urban indicators. This work aims to address issues like poverty, health, education, population imbalances etc. Technical paper 54 highlighted that when we look at what others are doing in this area of work, most of them are concentrating on social policy (health, wealth, and welfare) or human settlement/sustainable development indicators (land coverage, transportation, urban design, energy consumption). Some more recent work has attempted to narrow the approach to social and urban indicators to reduce its complexity and so that agreements can be made on this complex area of indicator development.

For the purposes of this report *liveability* of urban environments will be considered in relation to the 'environment'. That is, the social and economic matters that affect people's sense of liveability in their urban environment, but not going as wide as the more generic social policy indicators that are being developed elsewhere. This involves considering the link between the social, economic and environmental components that effect people's amenity values. This is illustrated in Figure 1 below.

Urban amenity is being considered beyond the biophysical environment, but the priority is on environmental implications and effects.

Figure 1 The scope of this work on urban amenity indicators



It is recommended that the scope of these urban amenity indicators be broader than just focusing on the biophysical and tangible elements of urban amenity. To be of value this work on urban amenity is being considered beyond the biophysical environment, but the priority is on environmental implications and effects

It is further recommended that the Ministry for the Environment consider expanding the scope of this work in the future and develop urban sustainability indicators.

Cultural issues (for Maori and Pakeha) are important in considering urban amenity indicators. Maori perspectives are often not prominent in discussions of urban amenity. Maori view the environment as part of wider holistic entities (such as spiritual values, social and economic matters) and do not separate it into management elements like air, land, water, and the coast. Urban amenity is not a concept that it is easy to separate out into separate components (such as the above). The physical and tangible elements and less tangible elements and amenity values of relevance to Maori and pakeha often merge. Maori often talk of the less tangible elements of the environment, which are of significance to them.

It is recommended that in preparing urban amenity indicators, that matters of significance to Maori be considered and that Maori are consulted on the preparation of urban amenity indicators.

Project methodology

Urban amenity Focus Group

The Ministry established a practitioner focus group (The Urban Amenity Focus Group that has previously been mentioned) in March 2000. This Urban Amenity Focus Group covers a wide range of backgrounds and experience to assist with aspects of the project. The first meeting of the Focus Group was held on the 7th April 2000.

Case studies

In addition to this Focus Group, the Ministry for the Environment and the consultant team is working with five councils to undertake case studies relating to urban amenity and plan effectiveness monitoring. One of the objectives of the project is:

> *"To develop a series of case studies with a wide range of councils. The case studies would illustrate different tools and techniques for defining urban amenity, developing RMA plan provisions based on this definition, and developing monitoring requirements for the plan provisions."*

Put simply the case studies will explore the development of tools and templates to:

- define urban amenity
- manage urban amenity (through plan provisions and other mechanisms)
- monitor urban amenity (including indicators and reporting) and
- monitor the effectiveness of plans.

The local authorities involved in the case studies are:

- Auckland City Council
- Palmerston North City Council
- Tasman District Council
- Christchurch City Council
- Waimakariri District Council.

Survey of councils

The consultant team who prepared this report conducted a survey of all councils in New Zealand in relation to their management (including monitoring) of urban amenity and plan effectiveness monitoring. There was a good response rate (of 63%, or replies from 54 out of 86 councils). This survey provides useful information about how urban amenity issues are being dealt with throughout New Zealand, and indicates what people in local authorities think about the development of national urban amenity indicators.

Literature review

An additional source of information has been an international and national literature review.

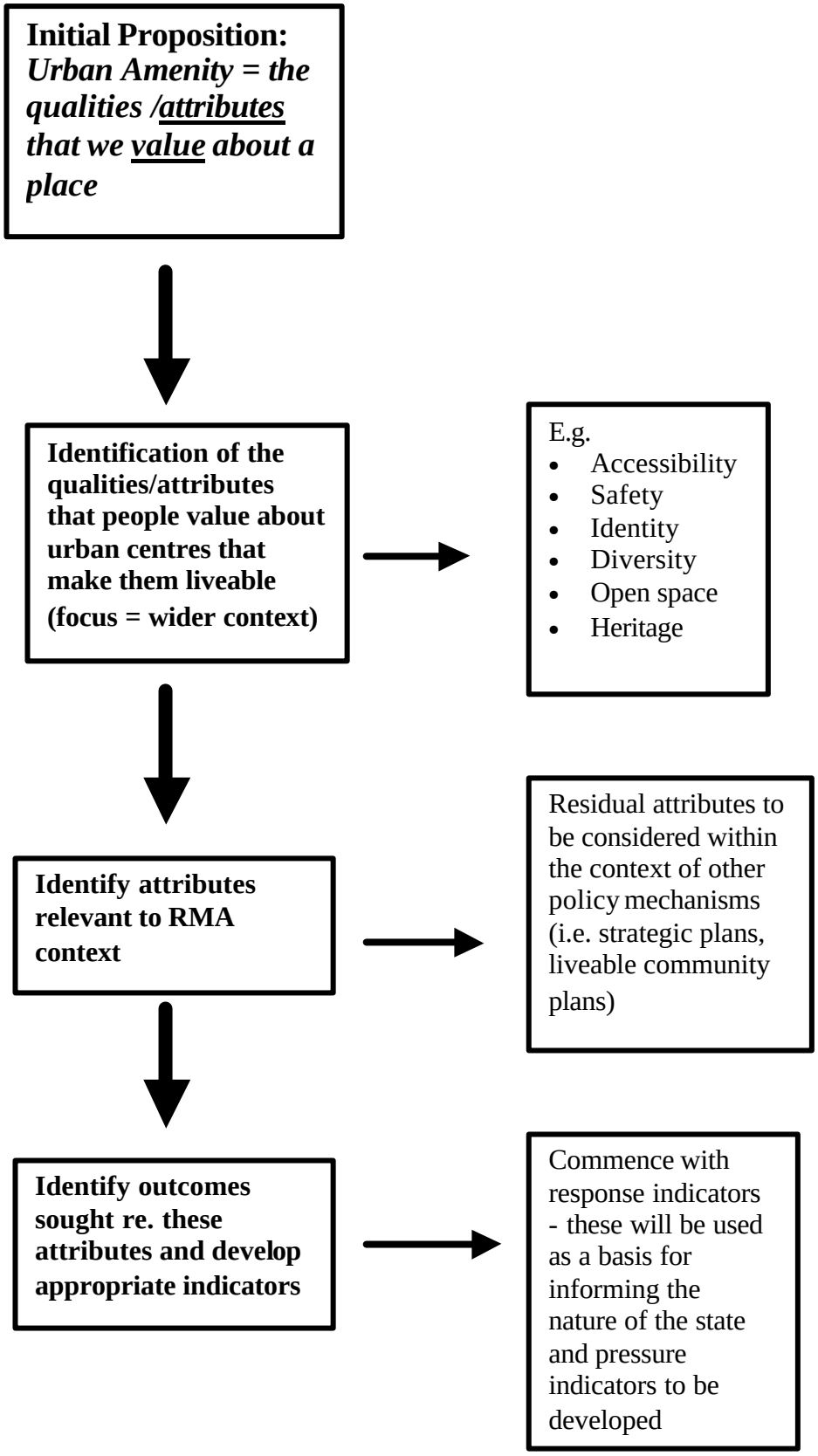
The authors of this report consider that it is very important to set up a robust but flexible process to develop national urban amenity indicators. This proposed process is listed below.

The proposed process

- Collate common indicators included in council work and elsewhere for urban amenity.
- Consultant team to highlight areas of commonality in the indicators. These become what will be called the possible draft *"Top tier indicators of urban amenity"(based on common attributes throughout the country).*
- Focus Group to discuss the usefulness of aggregating these council indicators and some others developed internationally to the national level (on 20th July 2000) and to identify any gaps.
- Assess the most relevant indicators against the Ministry for the Environment selection criteria and discuss the usefulness of the criteria for urban amenity indicators. Agree on the criteria that will be commonly applied to indicators developed by councils and others, for urban amenity.
- Prioritise the indicators (using the Ministry for the Environment selection process if relevant). The high priority indicators will become the *draft proposed top tier national indicators of urban amenity (based on common attributes throughout the country)* that will be given to local authorities for their comment and discussion and to assess if there is support for these indicators from local authorities.
- Identify the key outcomes nationally, that people are trying to achieve locally.
- Apply the *proposed top tier national indicators of urban amenity (based on common attributes throughout the country)* at the local level and assess them against local community *vision and values* to ensure relevance. These indicators become what we call the *draft proposed second tier local urban amenity indicators (based on local urban amenity values)*, to be applied only in locations where they are relevant. (Councils will do this last step.)

This proposed process is illustrated diagrammatically over/below:

Potential Process For Developing National Urban Amenity Indicators



As is seen in the figure on the previous page, it would be worthwhile to commence with the identification of the relevant outcomes sought by a community in relation to a particular quality and to articulate this as a preferred response indicator. Throughout the process of progressing this work, the authors have had clear feedback from all involved that it is important to have local level community involvement in monitoring urban amenity. Indicator development starts with a clear vision in terms of what people want to achieve in relation to urban amenity at the local level. Goal setting locally (through the development of community input into plans, and other processes outside formal RMA policy development) can then inform the development of national indicators.

Contrary to the conventional approach currently applied to indicator development under the Environmental Performance Indicators Programme, this approach to indicator development starts at the local community level, and is aggregated to the national level.

It is recommended that the Ministry for the Environment and local government should collectively assess what indicators have been developed by local government across the country, in consultation with their local community, and compare these to some examples of similar indicators developed overseas, to manage and monitor urban amenity.

Once this has been determined, indicators that reflect pressures on the environment and its liveability and indicators that describe the conditions of the urban environment and that influence this response could be developed. One means of doing this would be to aggregate any satisfaction surveys carried out locally as well as the responses to the survey of councils.

It is recommended that the Ministry for the Environment aggregate any satisfaction surveys and the results of the survey of councils. By finding out the key attributes the majority of New Zealanders value as urban amenity, the actual values could then be applied to these attributes at a more local level.

This type of approach has been generally supported during the process of the work the Ministry for the Environment has done on urban amenity (with a few exceptions). For example, the feedback from the workshop on urban amenity indicators hosted by Ministry for the Environment and the Royal Society in 1998 was that developing a nationally consistent set of indicators and methodologies capable of being applied locally or regionally was supported. Many practitioners support the adoption of nationally consistent methodology to assess urban amenity matters. There would be particular benefits for smaller, less well-resourced local authorities.

By following the proposed process outlined here the Ministry for the Environment can still work with local government to develop a core set of national urban amenity indicators (the first tier ones based on common attributes). Local government can apply these broad indicators and develop more specific measures (the second tier indicators) to meet the values of their local community. This overcomes the problem of knowing for example that noise (or too much of it) and open "green" space in areas as diverse as Auckland and Gore are important in terms of the liveability of these urban environments but that the actual standards applied to noise and open "green" space may be quite different in these locations.

Another important point to note is that in applying urban amenity indicators (with their element of subjectivity and value judgements) that we must also consider differences in values

ascribed to urban amenity values within one city or town. So, for example, different standards and measures may be applied in different zones such as in the residential, and business zones of a city/town.

To further explain this process, one obvious area that readily lends itself to the development of urban amenity indicators is that of historic heritage. Historic heritage is largely a cultural construct - what we regard as heritage is largely a by-product of the cultures of the community in which we reside. For example, heritage places provide us with a sense of place or identity that, in turn, strongly influences the value that we ascribe to our urban environments. It also represents a facet of urban amenity that extends into the socio-cultural domain and has the potential to extend our understanding or perception of what constitutes amenity (i.e. not just biophysical considerations such as noise and open space).

Many local authorities already collect or have access to information relating to heritage places. An opportunity exists for the Urban Amenity Project to take advantage of this potentially data rich area and to develop some core indicators relating to heritage places. This applies to other areas of indicator development in relation to urban amenity.

This report begins to paint a picture of commonality between different local authority approaches to defining, managing, and monitoring urban amenity. It helps answer some of the following questions:

- what are the key urban amenity issues in New Zealand?
- how are councils managing urban amenity?
- how are councils monitoring urban amenity?
- which measures are most useful, meaningful and easy to measure?
- what are the common threads?
- are there any key areas for which national urban amenity indicators could be developed?
- is there a consistent approach/methodology that could be used by councils to assess urban amenity?

The policy framework for urban amenity within New Zealand will now be considered.

4 Policy framework to develop indicators of urban amenity

The purpose of this section of the report is to identify the legislative and policy framework that establishes urban amenity as a resource management issue of concern in New Zealand. We have examined relevant legislation and policy documents (such as the Resource Management Act, the Historic Places Act, the Local Government Act, the New Zealand Coastal Policy Statement and council plan provisions). The *Environment 2010 Strategy* (Ministry for the Environment, 1995) was also examined but it does not directly address urban amenity issues.

4.1 National urban amenity policy

There is no specific formal national policy for managing urban amenity in New Zealand (except what is specified in the New Zealand Coastal Policy Statement).

The *Environment 2010 Strategy* (Ministry for the Environment, 1995) does not directly address urban amenity issues as one of the 11 key agendas for action. It does, however, have as a key vision:

> *"A clean, healthy, and unique environment, sustaining nature and people's needs and aspirations".*

It would be very difficult to achieve this without considering urban amenity.

The *Briefing to the Incoming Government* (Ministry for the Environment, 1999) does highlight urban sustainability as a key environmental issue. 85% of New Zealanders live in urban areas covering 3% of our total land area.

> *"City residents, here and around the world, are increasingly concerned about loss of amenity – noise, traffic congestion, air pollution, loss of privacy, access, and overloaded water supply and sewerage systems…*
>
> *The international evidence suggests that integrated planning is the most satisfactory way of dealing with the problems of growing urban areas."*
> *(Briefing to the Incoming Government, Ministry for the Environment, 1999)*

The development of national policy relating to urban sustainability would greatly assist the development of national urban amenity indicators, as it is important to ensure that any indicators developed are 'policy relevant' and help track progress towards our goals. One national policy statement that does specifically refer to urban amenity is the New Zealand Coastal Policy Statement.

New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement (NZCPS) directly addresses amenity values in policies 3.1.1 to 3.1.3. To the extent that urban areas lie adjacent to the coast, these policies can be considered to deal directly with urban amenity. These policies are as follows:

- Use of the coast by the public should not be allowed to have significant adverse effects on the coastal environment, amenity values, nor on the safety of the public nor on the enjoyment of the coast by the public.

- Policy statements and plans should identify (in the coastal environment) those scenic, recreational and historic areas, areas of spiritual or cultural significance, and those scientific and landscape features, which are important to the region or district and which should therefore be given special protection; and that policy statements and plans should give them appropriate protection.

- Policy statements and plans should recognise the contribution that open space makes to the amenity values found in the coastal environment, and should seek to maintain and enhance those values by giving appropriate protection to areas of open space.

The NZCPS also contains policies directing what should be included in regional plans. This includes preserving the natural character of the coastal environment, and the maintenance and enhancement of water quality. Both of these are matters that have an indirect benefit for urban amenity values.

National Transport Statement, December 1998

The National Transport Statement (1998), which replaced the National Land Transport Strategy requires people to

- identify and monitor the effects of the land transport system on the environment and
- develop and implement appropriate actions to avoid, remedy and mitigate adverse effects of the transport system on the environment (including Maori cultural values).

Where there is uncertainty regarding the effects, the precautionary principle should be applied.

4.2 Relevant legislation

Resource Management Act

Part II of the Act

Amenity values are defined in the Resource Management Act (RMA) as *those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes*. (The Resource Management Amendment Bill 1999 proposes to delete *'aesthetic coherence'* from this definition.)

Section 7 of the Act directly refers to amenity values:

> *In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to:*
>
> *(c) The maintenance and enhancement of amenity values …*
>
> *(e) Recognition and protection of the heritage values of sites, buildings, places or areas…*
> *(f) Maintenance and enhancement of the quality of the environment.*

It is worth noting that the RMA recognises that what constitutes amenity is a value judgement, so it refers not to amenity, but to amenity *values*.

Many district plans contain objectives that restate section 7, for example an objective might be '*To maintain and enhance the amenity values of the residential area.'* To be useful in decision making more specificity in defining what actually constitutes amenity values in a particular area is required. Many plans restate the definition in the RMA without more closely defining the term with respect to the specific district/city.

In addition, the RMA lists the protection of *"outstanding natural features and landscapes"* as a matter of national importance.

The responsibility for managing urban amenity attributes is shared between territorial authorities (city and district councils) and regional councils. In general terms, territorial authorities are responsible for land use activities and noise and regional councils are responsible for discharges to the environment.

District/City Councils – Section 31
Section 31 of the RMA sets out the functions of territorial authorities. Council functions related to urban amenity issues under this section are:

- the control of any actual or potential effects of the use, development, or protection of land;
- the control of subdivision; and,
- the control of the emission of noise and the mitigation of the effects of noise.

District/city councils' plans contain many types of provisions for urban amenity such as: height, bulk and location of buildings; density of development; protection of notable trees; protection of heritage buildings, objects and sites; design guidelines for buildings; noise; open space; permeable surfaces; and landscaping standards.

Regional Councils – Section 30
Section 30 of the RMA sets out the functions of regional councils. Generally, regional council functions are concerned with maintaining and enhancing the quality of the natural environment (air, water, soil).

The most direct amenity issue that regional councils have responsibility for is air quality. Urban dwellers have certain expectations for air quality, for example, that odour, nuisance, smoke or dust will not significantly affect residential areas. In addition, smog contributes to loss of amenity due to its visual appearance and odour (such has been experienced by people living in and visiting Christchurch and Auckland).

Regional councils also have responsibility for the following matters, but as discussed below, the amenity component of these is a secondary effect, and not the main concern for regional councils:

- water quality and flow;
- the coastal marine area;
- resources and landscapes of regional significance; and
- soil conservation.

In the case of water quality and quantity, many urban areas are located alongside lakes, wetlands or have rivers running through them. Water quality and quantity contribute to the amenity these water bodies provide in terms of water clarity, flow or volume, and the wildlife that they support.

Similarly, most urban centres are located on the coastlines, and therefore preservation of the natural character of the coastal environment is an urban amenity issue.

Regional significance is a test for when regional councils may prepare objectives and policies about the effects of the use, development, or protection of land (s.30(b) of the RMA). The same term is also used as a test of whether regional policy statements may include matters that would normally be dealt with only in a district plan (s.62 (1) of the Act). Examples of regionally significant resources in the context of urban amenity could include:

- existing indigenous ecosystems and associated ecological processes that are or were unique to a region;
- essential habitat linkages, or connectivity between species, communities, habitats or ecosystems;
- landscapes and natural features that are distinctive, unique to, characteristic of, or outstanding within a region; and,
- heritage sites, places or areas that contribute to or reflect important or representative aspects of the region.

Section 16 (Duty to avoid unreasonable noise)
Section 16 of the RMA requires every occupier of land to *"adopt the best practicable option (BPO) to ensure that the emission of noise from that land...does not exceed a reasonable level"*. This obligation on land occupiers does not restrict the right of territorial authorities to include noise standards in district plans or resource consents. Compliance with plan standards or general standards does not necessarily avoid the duty under section 16[1]. This provision is enforced by way of an enforcement order or abatement notice (sections 314 and 322 of the RMA).

Section 17 (Duty to avoid, remedy, or mitigate adverse effects)
Section 17 – the *"duty to avoid, remedy or mitigate adverse effects"*, gives protection to amenity values by controlling adverse effects such as odour, vibration, and visual effects. It is a duty to avoid, remedy, or mitigate adverse effects on the environment arising from an activity carried out by, or on behalf of, that person, regardless of whether or not the activity is in accordance with a rule in a plan, a resource consent, or existing use rights. This covers anything that is or is *"likely to be noxious, dangerous, offensive, or objectionable to such an extent that it has or is likely to have an adverse effect on the environment"*. This provision is also enforced by way of an enforcement order or abatement notice (sections 314 and 322 of the RMA).

Local Government Act 1974

The Local Government Act does not address amenity directly as an issue, but it does contain many provisions, which impact considerably upon urban amenity. The Local Government Act (as amended) is significant because a wide range of initiatives have been undertaken outside of the RMA, and specifically in relation to the local government legislation.

[1] *Ngataringa Bay 2000 Inc v Attorney-General* pp 17, 18, per Judge Sheppard

Amongst the many powers and responsibilities that the Act gives territorial authorities and regional councils, there are several that can be identified as being primarily or partially related to amenity values. These can be divided into two categories.

Firstly, there are matters relating directly to visual amenity and character. These include those set out in Part XXXVII (Urban Renewal), and sections 620 and 621 under Part XXXV (Public Health and Well-being). Section 620 states that councils may expend money for planting and tending trees for shelter or ornamental purposes, for shrubs and other plants on any land, or for encouraging such planting. Section 621 states that councils may lay out and maintain gardens, shrubberies, and lawns on any private land or public place in the district. Part XXXVII (Urban Renewal) states that councils may undertake and carry out urban renewal in the district.

Secondly, there are matters relating to the provision of amenities. These include those set out in Parts XXXV and XXXVI. Part XXXV covers Public Health and Well-Being, and allows councils to provide amenities such as rest rooms, crèches, nurseries etc. and the improvement and furnishing of land and buildings for these amenities. Part XXXVI covers Recreation and Community Development, and has provisions which allow councils to undertake, promote, and encourage the development of services and facilities they consider necessary for maintaining and promoting the general well-being of the public, or for providing recreation, amusement, and instruction of the public, and the provision, improvement, development or maintenance of amenities for the public.

The provision of amenities may not be considered to be directly relevant to the urban amenity issue, but it is at least indirectly relevant because the provision of amenities contributes to community well-being, community cohesion, and an environment which meets individual needs. These were identified by the Focus Group as some of the intangible aspects of urban amenity.

Historic Places Act 1993

Other intangible qualities of urban amenity identified by the Focus Group were the expression of cultural identity and the preservation of our cultural heritage. The Historic Places Act is relevant because it deals with cultural heritage and cultural values. Section 4 of the Act sets out the purpose and principles of the Act, which states:

> *"The purpose of this Act is to promote the identification, protection, preservation, and conservation of the historical and cultural heritage of New Zealand."*

Subsection 2(b) states that councils, in identifying, protecting etc. historical and cultural heritage should *"take account of all relevant cultural values, knowledge, and disciplines"*.

These provisions of the Historic Places Act enable councils to give effect to heritage protection and to the 'expression of cultural identity' aspect of amenity.

Reserves Act 1977

Section 3 of the Reserves Act states that this Act is to be administered for the purpose of :

(a) Providing for the preservation and management for the benefit and enjoyment of the public, areas of New Zealand possessing –

(i) Recreational use of potential, whether active or passive; or

(ii) Wildlife; or
(iii) Indigenous flora or fauna; or
(iv) Environmental and landscape amenity or interest; or
(v) Natural, scenic, historical, cultural, archaeological, biological, geological, scientific, educational community, or other special features or value:

The provision of urban parks and reserves provides open space, trees and vegetation, and local recreational facilities, all of which make a considerable contribution to urban amenity values.

Although reserves are created through the Reserves Act, the creation, enhancement and maintenance of reserves is a direct resource management issue affecting district plans. In contrast, the provisions relating to urban amenity under the Local Government Act are for the most part matters outside of district plans, e.g. maintenance of roading and sewerage infrastructure.

Both the Reserves Act and the RMA control the creation and management of urban reserves. The Reserves Act confers reserve status on the land, and manages reserves through management plans. The RMA enables the taking of reserve contributions to create reserves, and district plans have provisions controlling what activities can be undertaken in reserves, e.g. plans often use a specific zoning for reserves.

Civil Aviation Act 1990

Both the RMA and the Civil Aviation Act contain provisions relevant to the control of airport noise. Section 97 of the Civil Aviation Act regulates specified types of noise and vibration to prevent nuisance caused by aircraft or aircraft engines on an aerodrome. The Civil Aviation Rules set out the specified types of noise and vibration.

Health Act 1956

Section 28

Section 28 of the Health Act requires local authorities to appoint one or more Environmental Health Officers. These officers may make bylaws to secure abatement of nuisances that are likely to adversely affect health and that are offensive (this links to section 17 of the RMA).

Sections 29-35

Sections 29-35 deal with nuisances. The term 'nuisance' is defined in section 29 to include:

- offensive odour in any factory, workroom, shop, or other place of business;
- activities producing smoke in such a manner as to be offensive;
- land kept in such a state as to be offensive;
- any premises in such a state as to be offensive.

Building Act 1991

Sections 64 and 65 of the Building Act deal with dangerous and insanitary buildings. Section 64(3) deems a building to be insanitary if it is in such a state of disrepair as to be offensive.

Transport Act 1962

Section 77 (Regulations) of the Transport Act states that regulations may be made for minimising noise and the issue of smoke and fumes from the working of any vehicle.

In relation to transport legislation, it is interesting and significant to note that neither the Transit New Zealand Act nor the Land Transport Act have any mention of urban amenity. And yet transport can have a major impact on amenity in our urban environments.

Urban Trees Bill 1996

A Private Members Bill was introduced to Parliament in 1996, regarding 'urban trees'. The bill was prepared because of concern that the RMA did not have adequate provisions to enable to protection of trees in urban areas, given the increasing levels of development and intensification. This bill was not fully supported by local government because many people in local government thought that the RMA and LGA give them the ability to protect urban trees, and the bill did not proceed any further.

Safety

Survey respondents have raised safety as an urban amenity issue; but this relates to being safe in parks and public places, and safety to walk home etc. There fore the provisions of the Health and Safety in Employment Act 1992, are not strictly relevant.

Common Law

Common law has been used to deal with nuisance provisions (such as odour), but this is covered under the Resource Management Act 1991.

4.3 New Zealand Standards

There are several New Zealand Standards relating to noise. These include standards for the measurement of sound, for the assessment of environmental sound, and for specific sources of noise such as sea ports, airports, construction, and wind turbine generators.

The standards for the measurement of sound address the mechanics of measurement (e.g. instrumentation, records, and data processing), the objective measurement of sound (e.g. level and duration), and the procedures for measurement (e.g. where to measure, how to measure, when and how long to measure). The standards for the assessment of sound, and the standards for the specific noise sources (above) give guidelines for noise limits, in terms of level, time of day, and location of measurement.

The standards have no formal status under the RMA but have been prepared with a view to local authorities applying the provisions through rules and other methods in local authority plans, and for use in resource consent conditions.

The standards recognise noise as an amenity issue, and guidelines are specified *"for the protection of health and amenity"*. Standard 6802:1999, for example, bases its guideline noise limits for daytime on World Health Organisation standards intended to *"…protect the majority of people in outdoor living areas from being moderately annoyed"* . Similarly, the night-time noise limits are designed *"…so that people may sleep with windows open…"*.

The noise standards provide an extremely useful tool for the development of noise indicators for urban amenity because the quantification and measurement of noise is standardised, meaning that the noise assessment can be undertaken in a consistent manner throughout the country. The standards recognise that allowances need to be made for residential uses of inner city, commercial or industrial areas, suggesting that typically noise limits may be 10dB

higher than for residential areas. The noise standards have been researched and developed in accordance with international standards, and noise limits have been developed that indicate *"generally acceptable noise limits"*.

Although the New Zealand Noise Standards set out guidelines for generally acceptable noise limits, there is also a recognition that communities may wish to make these more or less stringent depending on a community's particular circumstances. Local authorities are advised to *"…ensure that noise limits are based on consideration of actual sound surveys of areas as well as consideration of actual and desirable amenity values for all land uses in an area…"*. Some district plans have adopted noise limits more stringent than the New Zealand Standards. Factors such as the number of noise complaints received, the presence of mixed-use zones, and reverse sensitivity issues can influence councils' decisions to depart from the New Zealand Standards.

While the noise standards can be considered an objective and generally indicative measurement of acceptable noise levels, they do not fully address the definition of 'noise'. The report on the control of airport noise by the Parliamentary Commissioner for the Environment (1996) makes the point that the level (or intensity) of sound is not a good indicator, on its own, of acceptability. As an example, the level of sound from crashing waves or birdsong may be higher than that generated by an industrial activity, but most people find such natural sounds more acceptable. NZS 6802 attempts to address this issue by applying an adjustment to measured noise levels for the presence of *"special audible characteristics"*. The 1999 version of this standard is the first to propose an objective method for determining whether or not to apply this adjustment. This will assist the process of standardising noise assessment throughout the country.

5 How are local authorities defining, managing and monitoring urban amenity?

The urban amenity and plan effectiveness survey of district/city and regional councils gives an indication of how councils are dealing with the issue of urban amenity. Interestingly, the majority of surveyed regional councils did not fill out the urban amenity section of the survey, and many of these councils responded that it was not a regional council function.

Definitions of urban amenity

The responses from district/city councils showed that they generally defined urban amenity in ways that reflected the contents of district plans. It is interesting to note, however, that the examples they gave of key urban amenity issues included matters not directly dealt with in district/city/regional plans, e.g. disputes between neighbours over trees, unsightly sections, cultural identity and diversity.

The RMA provides the framework for the creation of urban amenity management in New Zealand, so it is important to consider RMA Plan provisions for urban amenity. But it is also important to consider the extent to which urban amenity can be effectively dealt with under the RMA, and further, how co-ordination can be managed in dealing with urban amenity issues under the RMA and through processes outside of the RMA.

Key urban amenity issues identified by councils

The survey responses show that two of the most commonly identified urban amenity issues are:

- the retention of trees and vegetation, and
- the proportion of open space to the built environment.

Both of these amenity issues relate to the relationship between the built environment and nature (i.e. the natural environment such as indigenous bush and the modified environment such as gardens and parks).

The preservation of regionally significant resources can contribute to these types of amenity, for example areas of bush can contribute to urban amenity in two ways:

- because of the retention of trees and vegetation, and
- if located on a hill, as part of the distant landscape.

Another key urban amenity issue identified from the survey results is achieving appropriate density of development. In this matter, regional councils have an indirect function. Density of development is an issue that relates to both the responsibilities of district/city *and* regional councils.

- District/city councils use restrictions on the density of development as a tool for managing urban amenity since high-density development has a different character to low density development.
- Regional councils have responsibility for the control of the use of land for soil conservation. As a consequence, there is pressure to control the expansion of urban development. Similarly, urban consolidation and definition of the urban-rural boundary assists in preservation of landscapes and rural character. However, urban consolidation results in higher density development.

How urban amenity is being managed by councils

As mentioned district/city councils' plans contain many types of provisions for urban amenity such as: height, bulk and location of buildings; density of development; protection of notable trees; protection of heritage buildings, objects and sites; design guidelines for buildings; noise; open space; permeable surfaces; and landscaping standards.

Regional council plans include provisions for air quality, nuisance and health effects such as odour, dust and smog, landscapes and natural features of regional significance, and heritage sites, places or areas that contribute to or reflect important or representative aspects of the region.

Councils identified a number of ways that they were dealing with urban amenity outside of the district/city plan. These included:

- tree planting guidelines and tree enhancement programmes;
- design guides, e.g.: low impact urban design guide, urban area intensification guide);
- council services e.g.: parks, landscaping, street trees, maintenance of roads and footpaths;
- 'mainstreet' programmes;
- beautification projects;
- the development of sustainable community and livable community plans;
- CBD streetscape investment;
- Council/ community streetscape projects;
- signage bylaws, co-ordination of signage;
- other council strategies (e.g.: tourism, transport, coastal marine area)
- techniques such as the participatory approach, charettes etc;
- consent process and building consents;
- other council plans, e.g.: asset management plans, reserve plans, landscape plans, town centre development plans, traffic studies;
- annual plan and budget for projects for upgrading streets etc;
- council code of practice for land development;
- specific programmes e.g. Landmarks programme; and,
- provision of information, e.g. brochures on tree planting.

Monitoring urban amenity

Many councils are not (yet) monitoring urban amenity as an integrated package of monitoring and quite a few councils do not monitor urban amenity at all. Councils that are monitoring urban amenity primarily do so through the monitoring of complaints and consents. Other ways of monitoring urban amenity identified in the survey responses included:

- through submissions on the plan and plan changes;
- through staff observation;
- noise level surveys;
- implementing rules and by monitoring consent conditions;
- monitoring physical attributes (e.g. yard widths) and then the more subjective elements (e.g. visual assessments) with perception surveys;
- three yearly trend monitoring i.e. nuisance effects;
- satisfaction surveys;
- monitoring changes in background noise levels;

- use of GIS to calculate public open space;
- regional growth forum studies or one off investigations and studies;
- analysing of trends in resource consent applications;
- developing indicators and monitoring programmes;
- community participation processes; and
- with sustainability indicators associated with goals in the strategic plan.

A summary of any indicators used by councils to monitor urban amenity is included in section 7 of this report (in the tables of possible indicators to draw from).

Consideration will now turn to what is being done on urban indicators throughout the world and in New Zealand.

6 What is being done internationally and in New Zealand on urban indicators?

Internationally urban sustainability issues are demanding increasing attention. There are also initiatives in New Zealand relating to the development of indicators relevant to this work on urban amenity. The purpose of this section of the report is to identify and outline key work that is occurring internationally and in New Zealand[2] that establishes urban amenity as a significant issue, and one worthy of work at the national level in New Zealand. This section focuses particularly on urban sustainability indicators. Urban sustainability indicators are broader than urban amenity indicators but significant to this work.

Organisation for Economic Co-operation and Development (OECD)

In 1978 the OECD published a report entitled *"Urban Environmental Indicators"*. The report focused on housing, community services, employment and ambient environmental conditions and nuisances; other indicators about health and the social dimensions of cities were briefly mentioned but not developed.

In 1997 the OECD published *"Better Understanding Our Cities: The Role of Urban Indicators"*. This publication reports on current practice in designing and using urban indicators. It draws attention to the need to develop cross-sectoral indicators. It also acknowledges the difficulty of finding indicators that are useful, measurable and easy to use.

Environment Australia

A key set of 104 environmental indicators for human settlements was recommended for Australian state of the environment reporting at the national scale in 1998 (Environment Australia, 1998). Of these, 48 related to the condition of human settlements in relation to the:

- physical environment (e.g. air quality);
- built environment (e.g. housing affordability); and
- human environment (e.g. environmentally related human health).

Forty-four related to pressures on the physical environment by activities associated with human settlements.

UK - Department of Environment Transport and Regions

All levels of the United Kingdom (UK) are developing sustainable development indicators. In May 1999 the UK National Sustainable Development Strategy was released. It included a series of 150 indicators to measure progress (Department of Environment, Transport and Regions, 1999). This strategy forms the basis for more recent work (such as the first annual indicators report which was released in December 1999). A full range of sustainability indicators have been included:

- sending the right signals (to green the Government)
- a sustainable economy
- building sustainable communities
- managing the environment and resources and
- international cooperation and development.

[2] See Hughes and Honeybone, 2000, for an overview and discussion of progress with urban sustainability indicators.

In addition to this work seven 'headline' indicators have been recommended as high profile indicators, in order to raise awareness of sustainable development issues.

At the local level in the UK, many Agenda 21 Strategies are being developed by local communities (and often funded and led by local authorities). In 1997 the Prime Minister, Tony Blair, set a goal for all local communities to have such a strategy in place by 2000. Short summaries of local sustainability indicators have been found to be most effective for communicating key sustainability indicators to these communities.

America - US Environmental Protection Agency, Sustainable Seattle, Redefining Progress etc

A wide range of indicators has and is being developed in the US. More recently these have been related to quality of life and healthy cities concepts. One of the key programmes in this regard was the "Quality of Life in Jacksonville Indicators for Progress" project, which was coordinated by the Jacksonville Community Council in Florida in the 1980s (Redefining Progress, Tyler Norris Associates, and Sustainable Seattle, 1997). The focus was at a community level and related to quality of life issues concerning that community.

Two other key organisations working on indicators at a community-level in the US are:

- Redefining Progress – a public policy organisation based in San Francisco that has a community indicators network and programme and aims to develop new measures of progress and well-being, and

- Sustainable Seattle – in Seattle, a voluntary network and civic forum working to improve the region's cultural, economic, environmental, and social long-term health and vitality.

The collaborative work by Redefining Progress, Tyler Norris Associates, and Sustainable Seattle, (1997) provides a good summary of some community level indicators that include some key urban amenity indicators.

Canadian approach

Environment Canada has been well advanced in indicator development since the mid 1980s. In the mid 1990s urban sustainability indicators were considered by Environment Canada, the Canada Mortgage and Housing Corporation and Bossell. The result has been the Sustainable Community Indicators Programme (SCIP). They have developed some software to help measure and monitor:

- environmental health
- resource consumption
- settlement patterns
- human wellbeing
- employment and commerce.

Netherlands and European Commission (Environment and Climate Programme)

The European Commission undertook a study course on *Indicators for Sustainable Urban Development* in 1998 in The Netherlands. The course examined environmental, economic and social indicators, including many indicators of urban amenity.

Some of the indicators developed under these programmes are of relevance to urban amenity in New Zealand. They are listed in the tables in section 7 of this report.

Although there are similarities in the way urban issues are dealt with, there are also considerable differences. When searching for literature it was found that the term *"urban amenity"*, for example, is quite unique to New Zealand, although similar issues are deal with as part of broader sustainable development projects and work programmes, such as those developing urban sustainability indicators.

United Nations Commission on Sustainable Development

The United Nations Commission on Sustainable Development is researching indicators of sustainable development in response to Agenda 21. These indicators seek to address the integration of social, economic, environmental and institutional aspects of sustainable development.

Work on urban indicators in New Zealand

Urban sustainability indicators, were recently described the New Zealand Planning Institute Conference 2000, as being in a formative stage in New Zealand (see Hughes and Honeybone, 2000). This paper stresses the importance of any urban sustainability indicators being strongly linked to the preparation of a vision for sustainable development.

'indicate' Canterbury

'indicate' is a community indicators programme in Canterbury. It started independently of local government but involves people from the councils in the region. The project is an independent *'quality of life'* indicators programme that aims to measure progress towards a sustainable future for all people in Canterbury. This project is cross-sectoral and is broader than the development of environmental indicators – it also includes social, economic and community matters and aims for a more sustainable future in Canterbury.

A strategic decision was made early on to develop a headline series of key community indicators as a flagship for community indicator development. Eight key indicators were selected (based on community ranking of issues) for publication.

The National Indicators Project

The National Indicators Project was started in 1999 by chief executives of New Zealand's six largest cities in response to the growing pressures on urban communities, concern about the impacts of urbanisation and the effects of this on the wellbeing of the citizens in those centres. Councils involved include: Auckland, Christchurch, Manukau, North Shore, Waitakere, Wellington city councils and Auckland Regional Council. The National Indicators Project Team produced a consultation report earlier this year *entitled "City Communities: Indicators*

to Measure Social Wellbeing in New Zealand's Six Largest Cities" (National Indicators Project Team, 2000).

The report includes indicators for measuring the quality of the urban environment and community cohesion. (The latter of these, community cohesion, was identified by the Focus Group as a contributing factor to urban amenity.) The focus of the national indicators project is on social issues. The report states:

> *"Monitoring the communities of New Zealand's larger cities will enable assessment of these and other like matters and highlight a number of common themes specifically relevant to an urban environment. These might include issues such as housing affordability, accessibility to services, safety and social cohesion".*
>
> *(National Indicators Project Team, 2000).*

Work by individual councils

Councils in New Zealand are working urban sustainability indicators. These urban sustainability indicators are often contained in a state of the environment report or strategic planning report. Some examples are provided below:

- The Changing Face of Manukau – Manukau City Council
- Our City Our Future – Wellington City Council
- State of the Environment Report for Palmerston North City – Palmerston North City Council
- Our Changing Environment – Auckland City Council
- State of Our Environment, Christchurch – Christchurch City Council
- Hamilton City Council's indicators that relate to their strategic plan.

The sustainability indicators developed by these councils address quality of life aspects and environmental, social and economic factors.

7 Possible Urban Amenity Indicators to Draw From

The table that follows is a summary of indicators that have been developed by:

- local authorities in New Zealand and
- agencies and organisation internationally dealing with urban amenity and the liveability of urban environments

(that we are aware of at the time of writing this report). This list is not a comprehensive list of all urban amenity indicators ever developed (by all councils and agencies), but it does provide a useful overview of how councils and agencies are monitoring key urban amenity attributes such as noise, open space, urban density, community well-being etc.

Some of the indicators that have been developed overseas that focus on the physical environment have not been repeated here because they have already been developed as core indicators under the Environmental Performance Indicators (EPI) Programme. Examples include: the quality of bathing beaches, which is covered in the marine indicators; levels of particulate matter, which is included in the air indicators; drinking water quality, which is included in the water indicators; and waste composition and disposal, which is covered in the waste indicators.

Some of the indicators that have already been developed under the EPI Programme may appear in the table because some of the measures have not yet been confirmed or because they deal with slightly different things to the existing EPI Programme indicators (such as the days air quality exceeds air quality standards – which is an index of the air quality indicators developed under the EPI Programme; and some of the possible transport indicators).

The table that follows provides a useful 'collective wisdom' on possible measures or indicators of urban amenity that may be able to be applied by local authorities in New Zealand, and some of which it may be possible to gain agreement on to develop into a core set of nationally applicable urban amenity indicators.

A key of what each of the terms in the table refers to is provided at the beginning of this report just after the glossary. Some general notes are also provided below:

General notes:

- In collating these indicators, it is difficult sometimes to make distinction between amenity and other issues e.g. transportation/traffic.
- Some urban amenity indicators are actually not used to manage urban amenity, but other things, e.g. landscape/change in planting and vegetation on Port Hills/CCC.
- Some are draft indicators e.g. all of HCC.
- Some councils divided indicators into pressure, state and response indicators. But since others did not, the table below does not use this distinction.

Key for terms used in tables

ACC	Auckland City Council
ADC	Ashburton District Council
ARGS	Auckland Regional Growth Strategy, produced by ARC
CCC	Christchurch City Council
CLIP	UK Local Sustainability Counts - local quality of life indicators
ENV AUST	Environment Australia
IISUD	International Institute for Sustainable Urban Development
IND CANTY	Indicate Canterbury
HCC	Hutt City Council
JACKSONVILLE	Quality of life in Jacksonville Indicators for Progress
KCDC	Kapiti Coast District Council
MPDC	Matamata-Piako District Council
NIP	National Indicators Programme
NSCC	North Shore City Council
PASADENA	Quality of Life Index for Pasadena
PNCC	Palmerston North District Council
SEATTLE	Sustainable Seattle
SILICON VALLEY	Joint Venture's Index of Silicon Valley
ST JOSEPHS	Healthy Community Initiative St Joseph County
TDC	Tasman District Council
UK DETR	UK Department of Environment, Transport and the Regions
WDC	Waimakariri District Council
WCC	Wellington City Council *'Managing Urban Development within the City'* – model chapter for district plan monitoring to be completed as part of case study
98 W/S	The Royal Society And Ministry For The Environment Urban Amenity Indicators Workshop Held In May 1998

Issue	Indicators	Councils or others using this indicator	Desired outcome (if specified) – for councils: anticipated environmental result
Noise	# of consents relating to noise	PNCC, INDICATE CANTY, 98 W/S	
	Frequency and location of noise complaints	NSCC, HCC, ARGS, 98 W/S, KCDC	HCC - Protection of amenity values from adverse effects of higher dwelling densities.
	Public concern over noise - % respondents finding different categories of noise a serious problem	CLIP	
	Complaints concerning airport noise from residents living in the vicinity of the airport	CCC	As above
	Daytime background noise levels in specified locations	ARGS	
	Change in background noise levels	PNCC, CCC	
	Response to noise complaints	PNCC	
	Noise reductions initiatives for airport	PNCC	
	Change in ambient noise levels (CC: at selected sites in residential zones)	NSCC, CCC, 98 W/S	CC: Maintenance of the general suburban char and amenity of majority of residential environment.
	Changes in desired noise levels	98 W/S	
	Traffic noise levels	NSCC	
	# of building consents and resource consents issued for residential dwellings within the 65 Ldn contour	CCC	Limitation of the number of potential residents exposed to aircraft noise.
	# of building consents and resource consents for residential dwellings between the 65 Ldn and 55 Ldn contours which meet the requirements for acoustically designed materials	CCC	As above
	Ambient noise[3] levels - % exposure above guidelines	KCDC, INDICATE CANTY, NIP	
	Average noise levels	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	Population exposed to noise levels outside the home	UK DETR	
	Reducing the frequency that noise exceeds certain levels	NCC	
	Exposure to noise (per person and time period) above 65 dB and above 75 dB	IISUD	
	Exposure to traffic noise	ENVT AUST	
	Exposure to aircraft noise and air traffic density	ENVT AUST	
	Exposure to industrial noise	ENVT AUST	

[3] *Ambient* noise is defined as the entire existing noise environment, by area, whereas *background* means the average minimum of the noise environment, denoted as L_{90} or L_{95}.

	Industrial noise injuries	ENVT AUST	
Noise continued	Cost of noise control	ENVT AUST	
	Road traffic density	ENVT AUST	
Vibration	Vibration complaints	NSCC	Building vibration restricted to low levels
Dust	Compliance with air discharge consents	NSCC	Industry meeting air emission controls
Odour	Odour complaints	NSCC	Minimal odour nuisance
Glare/ lighting	Glare/lightspill (lux)	HCC	Protection of amenity values from adverse effects of higher dwelling densities
	Outdoor lighting complaints	NSCC	Avoidance of adverse effects on residential areas
Vegetation	# of notable trees/ change in notable trees	PNCC, HCC	LH: Protection of amenity values from adverse effects of higher dwelling densities
	Number of trees	PASADENA	
	# of consents relating to protected trees	PNCC	
	Changes in the quality and extent of coastal vegetation especially Pohutukawa	NSCC	Preservation of coastal vegetation
	Changes in quality and extent of native bush	NSCC	Retention of native bush, regenerating native bush and urban vegetation generally
	Loss of protected trees	NSCC	As above
	Areas of bush where protection is secured	NSCC	As above
	Areas of revegetation	NSCC	As above
	Degree of protection achieved for trees through subdivision process	ADC	
	# of notable trees or areas of indigenous vegetation removed as a result of residential development	MPDC	[Indicator for residential growth]
	Incidence of tree planting	WDC	Distinctive residential environments are a feature of the District's towns.
	Loss of resources from the notable plant Appendix and archival register	WDC	Notable plants which enable present communites to enjoy their history and which adds to local identity and character
	Changes in the criteria met by listed plants	WDC	A resource sufficent to give future communities a link to their past and a record of social, economic and cultural values of their forebears.
	Community appreciation and understanding of plants	WDC	The enhancement or maintenance of the amenity values of the District's environment.
	Extent to which plants are retained	WDC	Significant plants are retained on sites subject to subdivision and /or development

Vegetation continued	Plants retained as part of resource consents and plan changes	WDC	The layout and design of buildings, structures and open spaces and presence of plants provides a high quality environment
	Frequency and location of complaints about loss of trees due to development	ARGS	
	Area of vegetated land	LHCC	Protection of amenity values from adverse effects of higher dwelling densities
Landscape	Unobstructed views of significant features	NCC	
	Buildings are obstructive	NCC	
Open space	Location, area and type of reserves	PNCC, ADC, 98 W/S	
	# of people using walkways and sportsfields	PNCC	
	New esplanade reserves/strips	PNCC	
	Access to/appropriateness of open space for user needs	ARGS	
	Access to open green space	UK DETR	
	Amount of park and facility space available per person	PASADENA	
	Average monthly use of public recreation facilities	PASADENA	
	Changes in the extent of indigenous vegetation or natural features being formally or voluntarily protected by incorporation in a reserve or covenant	TDC	[Objective: conservation of areas with significant natural values]
	Changes in extent and location of open space	NSCC	Provision of open space to meet the city's needs
	Resident satisfaction levels with open space	NSCC	Acquisition of open space prior to development
			Adequate opportunities for organised sports and leisure
	Changes in % of the city's coastline in public ownership	NSCC	Enhancement of public access to and along the coast
	Changes in use and development of open space # and type of resource consents for buildings on reserves	NSCC	Maintenance of open space character and function
			As above
	Resident satisfaction levels - Albany Centre public spaces	NSCC	Comprehensively planned amenity area – Albany Centre
	Sporting groups/ public satisfaction - Albany Stadium	NSCC	Multi-functional recreational facility – Albany Stadium
	Sporting groups satisfaction with open space and facilities	NSCC	As above
	Change in type and location of open space	NSCC	Range of open space accessible to the population
	Residents' and visitors' satisfaction with quality of open spaces and reserves	TDC	
	Complaints concerning the lack of accessibility, safety or maintenance in parks	CCC	An increase in the amount of public open space and improved distribution of open spaces throughout the city.
	Change in the distribution of local and district parks per 1000 residents	CCC	As above
	Other feedback from residents concerning parks and open space	CCC	As above

Open space continued	Surveyed satisfaction of the community, including visitors, with the quality of reserves and open space	TDC	
	Surveyed changes in the proportion of land in reserves or open space per capita	TDC	
	Change in the distribution of public and private open space throughout the city	CCC	An increase in the amount of public open space and improved distribution of open spaces throughout the city.
	Levels of use of selected facilities and open spaces	CCC	
	Residents' views of accessibility to selected open spaces and facilities	CCC	
	Development and redevelopment of public open spaces that the promote the 'Garden City' image	CCC	Continued enhancement of the amenity values of the City and reinforcement of the 'Garden City' image.
	# of heritage sites and buildings	PNCC	
	# of resource consents to modify/destroy heritage buildings	PNCC	
	Loss of resources from the Heritage Appendix	WDC	Heritage resources which enable present communities to enjoy their history and which add to local identity and character..
	Changes in the significance criteria met by listed resources	WDC	Heritage resources sufficient to give future communities a link to their past and provide a record of social, economic and cultural values of their forebears.
	# of archaeological sites or heritage buildings, trees or significant natural features damaged or destroyed	TDC	
	Changes in use and development of open space	NSCC	Maintenance of character of OS
	Area of land in public space, parks, reserves and access ways	HCC, KCDC	Protection of amenity values from adverse effects of higher dwelling densities.
	Area of recreation space per dwelling	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	Variety of recreational options	PASENDA	
	Changes in ratio of open space per head of population	ARGS, TDC	
	Ratio of open space to developed land	ST JOSEPH	
	Proportion of each development provided as open space by location	ARGS	
	Accessibility of green space - % people within 15 minutes walk of urban green spaces	IISUD	
	Total green space per capita	SEATTLE	

Open space continued	% Green space per neighbourhood	SEATTLE	
	% Remnant vegetation in public spaces	ENVT AUST (LOCAL)	
	% Of population in settlements which do not live within 400m of a neighbourhood park	ADC	
	Residents' views regarding availability of recreational opportunities and open space	ADC	
	Transfer of land on the Port Hills to Council for reserve or open space purposes	CCC	The Port Hills reflecting an open space character and the rural qualities that maintain a clear, visual contrast with the urban parts of the city.
	Urban villages meeting open space requirements	SEATTLE	
	Green space – proportion of green space in the city, % green space	INDICATE CANTY, IISUD	
	Measure of open space and use in urban environments	98 W/S	
	Decrease in greenbelt	98 W/S	
	Loss of trees and gardens	98 W/S	
	Development of new open space areas	98 W/S	
	Use of the roading network for open space	98 W/S	
	Ratio of open space compared with surface area by motor vehicles	IISUD	
	%Open space and % public open space	NIP	
	Public financial support for parks and recreation	PASADENA	
Private open space	Resident satisfaction levels with private open space	NSCC	Maintenance of on-site privacy
Community recreational facilities	Access to and appropriateness of facilities/services	ARGS, UK DETR	
	Facilities available per head of the population by location	ARGS	
Urban design	Perceptions of residents as to layout and design of buildings, structures and open space	WDC	Layout and design of buildings, structures and open spaces and presence of plants provides a high quality environment
	Compliance with conditions of development plan	NSCC	A high standard of design in Albany Sub-Regional zone
	Stock of Heritage and Cultural Assets	ENVT AUST	
	Land Converted from Non-Urban to Urban Uses	ENVT AUST	
	Public Urban Green Space per Capita	ENVT AUST	
	Residential Density	ENVT AUST	
	Percentage of Medium and High Density Residential	ENVT AUST	
	Construction	ENVT AUST	
	Index of Industrial Concentration	ENVT AUST	
	Mixed Land Use Ratio	ENVT AUST	
	Home-based Workers	ENVT AUST	

Urban design continued	Physical Assaults in Public Places	ENVT AUST	
	House Burglaries	ENVT AUST	
	Indices of Urban Socio-Economic Inequality	ENVT AUST	
	Indices of Socio-Spatial Segregation	ENVT AUST	
Air quality	Concentrations of contaminants in ambient air for selected sites in city	CCC	Limitations on the effects of emissions to air as a result of the control of land use. Reductions in the level of the city's air pollutants, including emissions of carbon dioxide into the atmosphere.
	Complaints to CCC/CRC in residential / commercial areas	CCC	As above
	Complaints about the adverse effects of dust, noise, glare, odour etc from persons in residential zones adjacent to industrial zones	CCC	The avoidance of adverse effects of dust, noise, airborne contamination or odours on adjoining sites, or on residential properties.
	The adoption of measures that mitigate the specified adverse effects (new industries), and monitoring the implementation of those measures	CCC	As above
	Non-compliance with conditions on resource consents which mitigated the adverse effects of dust, noise, airborne contamination or odour	CCC	As above
	Consents issued by CRC for air discharges in the city, incl type of emission, location, conditions imposed	CCC	As above
	Building consents issued by council for solid fuel heaters	CCC	As above
	Consents issued by council for non complying land uses which also require consent for discharge to air	CCC	As above
	Types of activities in specific zones producing air emissions	CCC	As above
	PM_{10} levels (Ug/m^3)	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	Particulate matter, carbon monoxide levels etc	NSCC	Maintenance and improvement in air quality
	Seattle air quality index	SEATTLE	
	Days when air quality index is in a good range	JACKSONVILLE	
	Days when air pollution is moderate or high/or exceeds standards or guidelines	UK DETR, CLIP, SILICON VALLEY, PASADENA	
Cultural heritage	Change in 'heritage value' index	CCC	Identification and protection of heritage items, as a contribution to maintaining the heritage of the city.
	# of heritage buildings demolished or removed from heritage list per year	CCC, NSCC	CC: As above
	Changes to # and condition of remaining heritage buildings	ADC	
	Number of waahi tapu, building sites, natural features	98 W/S	
	Unregistered sites and buildings of perceived value	98 W/S	

Cultural heritage continued	Status and condition of cultural heritage sites and features	98 W/S	
	Number of listed heritage buildings that have been demolished or partly demolished	INDICATE CANTY	
	Number of listed buildings that are under threat of demolition	INDICATE CANTY	
	Number of resource consents for alterations, additions and relocations to heritage buildings	INDICATE CANTY	
	Grants approved through the Heritage Incentives Retention Fund	INDICATE CANTY	
	Number of heritage sites on heritage registers (includes significant landscapes)	ENVT AUST (LOCAL)	
Landscape	Change in character of Port Hills	CCC	The Port Hills reflecting an open space character and rural qualities that maintain a clear, visual contrast wth the urban parts of the city.
	Retention of landscape features contributiung to urban character/amenity, in growth settlement areas	TDC	
	Change in the amount of planting and vegetation removal on the Port Hills	CCC	Reduced risk to personal safety and property damage from natural hazards
	Change in landscape over a specified time	CCC	As above
	Complaints over new developments, planting etc that have potential to cause adverse visual effect	CCC	As above
	People's perception regarding visual character of the Port Hills	CCC	As above
	Change in # of dwellings above the 160m contour on the Port Hills	CCC	As above
General urban	Change in residents levels of awareness of the 'Garden City' image	CCC	Continued enhancement of the amenity values of the City and reinforcement of the 'Garden City' image.
	Nature of land use on urban boundaries	WDC	Maintenance of the rural setting, character and amenity of urban environments
	Changes in measures of compactness; distances from periphery to town centre	WDC	Maintenance of the form and function of urban environments
	Public/private enhancements	WDC	Attractive, safe, convenient pedestrian based town centres
	Range, nature of activities; Retail turnover, employment levels; Parking levels, new business start-ups, occupancy levels, vacant floorspace	WDC	Viable town centres
	Extent to which attributes of zone characteristics are retained	WDC	Business areas with distinctive characteristics

Population densities	Population density and change	SEATTLE, IISUD, 98 W/S	
	Population densities for residential zones in outer suburban area	CCC	A gradual increase in population and housing densities within the inner urban area and around selected community focal points
	Population densities for residential areas near specific community focal points	CCC	As above
	Population densities for inner city zone	CCC	As above
	# of people usually residing in particular parts of city.	HCC	Protection of amenity values from adverse effects of higher dwelling density.
	Change in population density	INDICATE CANTY	
	5 yearly change in resident population of Christchurch City by location	INDICATE CANTY	
Housing	Floor area per person	ENVT AUST	
	House price to income ratio	ENVT AUST	
	New dwelling completed	ENVT AUST	
	Dwellings constructed on Greenfield sites	ENVT AUST	
	Ranges of lot sizes	ENVT AUST	
	Homelessness	ENVT AUST	
	Building materials used in housing/embodied energy	ENVT AUST	
	Operating energy efficiency	ENVT AUST	
	% households who can afford the median priced house	SILICON VALLEY	
	Increase in av apartment rentals compared to increase in median household incomes	SILICON VALLEY	
	Silicon Valley housing starts	SILICON VALLEY	
Housing density	# and size of new lots	NSCC	Lot sizes in urban expansion areas that do not do compromise future urban development
	Location of higher density housing	NSCC	Higher density housing around commercial areas
	Allotment sizes created by subdivision	WDC	Distinctive residential environments are a feature of the District's towns.
	% of sites in excess of Plan density standards	WDC	Housing is still low scale, and low density.
	# of buildings 3 storeys or more.	WDC	Housing is still low scale, and low density.
	Housing densities for inner city zone	CCC	A gradual increase in population and housing densities within the inner urban area and around selected community focal points
	Housing densities for residential zones in outer suburban area	CCC	As above

Housing density continued	Housing densities for residential areas near specific community focal points	CCC	As above
	Average site density within residential zones	CCC, ADC	CCC: Maintenance of general suburban character and amenity of the majority of the city's residential environment.
	Net and gross housing densities within residential zones	CCC	As above
	Site sizes within residential zones	CCC	As above
	% of sites in excess of plan density standards	WDC	Housing is still low scale and low density
	Housing density	WCC, WDC	WCC: The continued development of housing which generally reflects the siting, scale and intensity of its area. WDC: Distinctive residential environments are feature of the district's towns
	# of building consents for new dwellings.	HCC, MPDC	LH: Protection of amenity values from adverse effects of higher dwelling density. MP: [indicator for residential growth]
	People's opinions about the amenity values of their neighbourhoods	HCC	As above
	Average and std deviation of net site area per private dwelling for non-compliances with permitted activity conditions for notified and non-notified consents	HCC	As above
	Average and std deviation of depth of front yards for non-compliances with permitted activity conditions for notified and non-notified consents	HCC	As above
	People's attitudes/demands for higher dwelling densities	HCC	As above
	Average net site area for private dwellings	HCC	As above
	Average site coverage for dwellings	HCC	As above
	Average building height for dwellings	HCC	As above
	Average depth of front yards	HCC	As above
	Amount of land in hard surfaces	HCC	As above
	Amount of land in green areas	HCC	As above
	Amount of land occupied by buildings	HCC	As above
	Average site density	WCC	The continued development of housing which generally reflects the siting, scale and intensity of its area.
Transportation/ traffic	Changes in traffic volumes on selected streets	NSCC, TDC, UK DETR	NSCC: A reduction in through traffic in residential areas
	Degree of connectivity in roading network (intersections)	NSCC	High level of street connectivity and access to facilities
	Evidence of environmental changes for pedestrian and cycle transport compared to previous years	ARGS	[safety indicator]

Transportation/ traffic continued	Residents' views regarding amenity of streets, accessibility of commercial and community facilities	AADC	
	Change in length of the cycleway and pedestrian network/number of bicycle route miles	CCC, PNCC, NSCC, PASADENA	NS: increase in provision of walkways/ cycleways. CC: Greater use of public transport/cycleways/pedestrian
	Traffic volumes	WDC, ADC	WDC: Distinctive residential environments are a feature of the District's towns.
	Traffic volume at selected sites within residential zones	CCC	Maintenance of general suburban char and amenity of majority of residential environment
	Traffic volumes on selected routes by transport mode	PNCC	
	Views of those people with mobility problems about ease of access and movement around the city	CCC	Ease of access and movement for people with mobility problems
	Change in % of households within 400m of a bus stop	CCC	Improved accessibility city-wide for public transport users
	Change in users views about the accessibility of the City by bus and reasons why	CCC	
	Change in air and noise emissions at selected sites.	CCC	A contribution to minimising the increase of air and noise pollution within the city.
	Change in residents views about how the city looks from the street	CCC	Improvement in the amenity of the roading network, particularly of local residential streets.
	Residents views about amenity of local streets following implementation of Local Area Traffic management schemes	CCC	
	Change in visual amenity along major access routes	CCC	
	Traffic volumes on primary distributors, and minor and major district distributors	HCC	Protection of amenity values from adverse effects of higher dwelling density.
	Average daily vehicle hours of delay on freeway system/waiting time at signalled intersections	SILICON VALLEY, PASADENA	
	Transportation options	PASADENA	
	% of total urban area in transport network	IISUD	
Transport and accessibility	Access to public transport stops	ENVT AUST	
	Access to key facilities and services	ARGS, UK DETR, CLIP, NIP	
	Car ownership/ change in total number of new car and commercial vehicle registrations	ENVT AUST/ INDICATE CANTY	
	Perceived residential density	ENVT AUST	
	Driving license holders by age and sex	ENVT AUST	

Transport and accessibility continued	CBD parking supply and charges	ENVT AUST	
	Fuel pricing and taxing	ENVT AUST	
	Average speed by mode and distance	ENVT AUST	
	Journeys made by mode	CLIP	
	Mode choice by trip purpose by area	ENVT AUST, UK DETR	
	Mode of transport to work	UK DETR, NIP	
	Average distance travelled to work by mode	CLIP	
	Total time and distance travelled	ENVT AUST	
	Distance covered relative to income	UK DETR	
	Percentage of school children travelling to school by different modes	CLIP	
	Overall traffic volumes by mode	CLIP	
	Perceived daytime density	ENVT AUST	
	Residents' perception of bicycle travel in the city	CCC	
	Access to cycleway network in the city	CCC	
	Access to public transport stops within 400m of residence	CCC	
	People's perception of their ability to move easily around the central city on foot/pedestrian friendly streets	CCC, SEATTLE	
	Economic costs of road accidents	ENVT AUST	
	Fuel consumption per transport output	ENVT AUST	
	Costs of congestion, traffic congestion	ENVT AUST, UK DETR, NIP	
	% people living within 1 hour drive of an emergency medical centre (rural amenity)	INDICATE CANTY	
	% people living within half hour drive of food shop	INDICATE CANTY	
	% with access to a car / % population without a car	INDICATE CANTY, ST JOSEPH	
	Accessibility	UK DETR	
	Passenger trips per capita	INDICATE CANTY	
	Monthly public transport patronage data – rolling average/passengers using public transport	INDICATE CANTY, ST JOSEPH	
	Change in total number of vehicles registered	INDICATE CANTY	
	Average number of passengers per vehicle	PASADENA	
	Availability of centralised parking space	PASADENA	
	Number of miles transported for a specific, locally produced commodity	CLIP	
	Accessibility to and reliability of transport services for seniors and the disabled/special transport options for the elderly	PASADENA, ST JOSEPH	

Urban density	Homes built on previously developed land (including conversions)	CLIP, UK DETR	
	Change in area or urban zoned land	INDICATE CANTY	
	Number of hectares and percentage of total land area in each land use zone	INDICATE CANTY	
	Land rezoned from rural to urban land use	INDICATE CANTY	
	Loss of versatile / productive soils and erosion	INDICATE CANTY	
	Number of square metres of living space per inhabitant	IISUD	
	Impervious surface area in Seattle	SEATTLE	
Special amenity areas	# and type of building consents issued for each SA area.	CCC	Conservation and enhancement of areas identified as having 'special amenity' value within the residential environment of the city.
	# and type of resource consent issued for each SA area	CCC	As above
	Visual appearance of special amenity areas including: • # and type of housing • age of housing • condition of housing • type of construction • site density • setback from street • landscape features (i.e. trees along street, planting in front yards, fences etc)	CCC	As above
Residential character	Professional assessment as the number and location of buildings 'out of scale' with the surrounding environment (needs careful definition at outset)	WCC	The continued development of housing which generally reflects the siting, scale and intensity of its area.
	Consents issued and refused for demolitions, additions, alterations and new buildings as a discretionary activity in the character areas. Conditions imposed on consents	WCC	As above
	Professional audit of implementation of multi unit design guidelines	WCC	New multi-unit residential developments with better design standards
	Professional comparison of multi-unit developments in character areas with other parts of the city	WCC	As above
	Anecdotal evidence as to the number of people discouraged from undertaking multi-unit development in character areas	WCC	As above
	Assessed degree of retention of design themes feature that contribute to urban character and amenity, in settlement areas subject to growth	TDC	

Residential character continued	Consents issued and refused for multi-unit developments in the character areas. Conditions imposed on consents	WCC	New multi-unit residential developments with better design standards.
	Residents' views about the quality of the built environment in the character areas	WCC	The ongoing development of identified areas in a manner that will maintain their character
	Age structure of residential buildings in character areas	WCC	As above
	# of scheduled heritage buildings in the character areas	WCC	As above
	Professional assessment of additions, alterations and new buildings against the character provisions of the relevant guidelines	WCC	As above
	Number of pre 1930s residential buildings in character areas	WCC	As above
	Professional assessment as to the # of pre 1930s residential buildings in generally poor condition in character areas.	WCC	As above
	Consents issued and refused for demolition of listed and pre 1930s residential buildings in the character areas. Conditions imposed on consents	WCC	As above
	Conditions imposed on consents for additions, alterations and new buildings in the character areas.	WCC	As above
Residential amenity	Perceptions of residents within specific communities about ease of access to services	ARGS	
	Attractiveness of street environment as perceived by residents and users	ARGS	
	Perceptions of the impact of intensification on quality of life	ARGS	
	Use of street as recreational facility	ARGS	
	Community safety standards	WDC	Community perceives the Residential Zones as desirable places to live.
	Dominance of residential activities	WDC	Distinctive residential environments are a feature of the District's towns
	Residents' views regarding the character of new subdivisions	ADC	
	# of consents applied for/granted/declined for dispensation of development controls	MPDC	[Indicator for residential growth]
	# of consents for bulk/location in residential zones	PNCC	
	Sunlight hours at windows of dwellings	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	# of consents (notified and non-notified) for non-residential activities in residential zones	PNCC, CCC, ADC	

Residential amenity continued	# and type of building consents granted for residential zones	CCC, HCC	CCC: Maintenance of general suburban character and amenity of the majority of the city's residential environment. LHCC: Protection of amenity values from adverse effects of higher dwelling densities.
	# of consents granted for notified and non-notified residential uses in residential areas.	CCC	Maintenance of general suburban character and amenity of the majority of the city's residential environment.
	Age of housing for all living zones	CCC	As above
	Residents' views regarding the effects of non-residential activities and their perception of residential areas	ADC	
	Complaints regarding non-residential activities	ADC	
	Streetscape within residential zones (including landscape features, front yards, planting in front yards, planting in front yards and around houses)	CCC	As above
	Residents' views about changes to the built environment in residential zones	CCC	As above
	# of complaints about adverse effects (e.g. traffic, noise, outlook) within residential zones	CCC	As above
	People's opinions about the amenity values and character of their neighbourhood	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	Resident's opinions about amenity and safety of residential zones	WDC	Community perceives the residential zones as desirable place in which to live
	Residential uses as dominant activity in residential environments	WDC	Distinctive residential environments are feature of the district's towns
	# of complaints for neighbourhood nuisances and non-compliance with RMA matters such as odour, dust, waste storage, untidy properties, light spill, glare etc.	HCC	Protection of amenity values from adverse effects of higher dwelling densities.
	# and type of building consents issued for residential zones.	CCC	Maintenance of the general suburban char and amenity of the majority of the city's residential environment.
	Complaints concerning adverse effects on residential zones from the development and operation of suburban shopping centres	CCC	The minimisation of adverse effects on the environment resulting from the operation and development of suburban centres.
	Christchurch Community – uptake of kerbside recycling or composting	INDICATE CANTY	
CBD vitality	Retail turnover, employment levels.	WDC	Viable town centres
	Parking levels, new business start-ups, occupancy levels, vacant floor-space	WDC	Viable town centres

CBD vitality continued	Range and nature of activities	WDC	Viable town centres
	Range and nature of services and activities by location, area of vacant land	WDC	Business areas providing a range of services and businesses that meet local needs.
	Change in the proportion of people living in the central city	CCC	A multi-functional central city with vitality and diversity and with a resident and transient population to enliven and support it.
	Change in the type and number of selected activities in the central city	CCC	
	Change in the # of people living in the central city	CCC	
Business zones amenity	Extent to which attributes of zone characteristics are retained	WDC	Business areas with distinctive characteristics.
	Out of zone developments	WDC	Business areas with distinctive characteristics.
	Change in the scale and density of buildings in the inner urban area compared with the central business district	CCC	An inner urban areas reflecting a diversity of built form and development at a scale greater than suburban areas, but lower than that of the central business area.
	Change in the shape and form of the central city	CCC	A central business area with a continuing focus on diversity of activity, but concentration of the built form at the highest scale and density
	People's perceptions of the central city zone environment	CCC	A multi-functional central city with vitality and diversity and with a resident and transient population to support and enliven it.
Height/ scale	# of consents granted for height in relation to boundary encroachments	NSCC	Enjoyment of views, sun and access to daylight
	# of consents granted for front yard encroachments	NSCC	An attractive streetscape
	# of consents granted for over-height buildings in suburban and local centres	NSCC	Developments within suburban and local centres at a scale appropriate to the location
	# of consents granted for over-height buildings	NSCC	Avoidance of tall buildings in residential areas
	Use of street as recreational facility	ARGS	
	# of buildings 3 stories or more	WDC	Housing is still low scale and low density
Public views	Extent of view loss	NSCC	Preservation of important public views
	# of consents granted affecting significant views	NSCC	As above
Views	Frequency and location of complaints about loss of views due to development	ARGS	

Signs	Changes in visual amenity	NSCC	Signs not detracting from visual amenity, environmental quality and traffic safety
	Complaints received about signs.	CCC	Outdoor advertisements that are informative but maintain the visual and other amenity qualities appropriate to the area in which the display is located.
	Change in amenity values in selected areas where outdoor advertisements are used.	CCC	As above
	Sing permits issued	JACKSONVILLE	
	Complaints received regarding adverse effects of outdoor advertising	ADC	
	Changes in amenity levels in areas containing signs	ADC	
Vibration	Vibration complaints	NSCC	Building vibration restricted to low levels
Cultural	# of complaints annually to TA/RC regarding services inappropriate to ethnic groups	ARGS	[cultural expression indicator]
	Council support for the provision of facilities and services for Maori	CCC	Increased cultural awareness of Maori needs and enhancement of Maori well-being.
	Development of new cultural facilities	CCC	Community cultural development and expression.
	New art works in public places	CCC	Community cultural development and expression.
Urban growth	# of residential building consents issued for urban areas of the city	CCC	The retention of a compact urban form for the city.
	change in the urban-rural boundary	CCC	As above
	# of building consents issued by type of site		As above
	#, type and location of building consents issued for residential buildings in rural zones	CCC	As above
	# and location of new rural lots under 2ha	CCC	As above
	Location and quantity (ha) of land rezoned from rural to urban	CCC	
Public safety	Violent crimes per 100, 000 or 10,000 inhabitants	SILICON VALLEY, ST JOSEPH, SEATTLE	
	Juvenile felony arrests per 100,000 to 17 year olds	SILICON VALLEY	
	People feeling safe walking alone at night	JACKSONVILLE	
	% who feel unsafe walking alone after dark	SEATTLE	
	% parks usage decreased due to fear	SEATTLE	
	Index of crimes per 100,000 population/crime statistics and distribution of crime	JACKSONVILLE, ST JOSEPH	

Public safety continued	People reporting being victims of crime	JACKSONVILLE	
	Average rescue call response time	JACKSONVILLE, ST JOSEPH	
	Accidental deaths per 100,000 population	JACKSONVILLE	
	Motor vehicle deaths per 1000 population	JACKSONVILLE	
	Traffic safety – number of people killed and injured	IISUD	
	Level of people utilising public spaces	WDC	People's health and safety is not adversely affected by inappropriate development, design or siting of roads, structures or signs.
	Residents' perception of safety	PNCC	
	Perceptions of public transport as an affordable, safe, convenient means of travel	NIP	
Community well being; liveability	Percentage of respondents satisfied with their area as a place to live (general survey)	CLIP	
	Satisfaction with quality of life	UK DETR	*(to be developed)*
	Amenity – residents perceptions of new local and city wide development	INDICATE CANTY	
	Satisfaction with the way the city looks and feels	NIP	
	Residents perceptions of central city amenity	INDICATE CANTY	
	Perception of quality of life in Christchurch/Seattle	INDICATE CANTY, SEATTLE	
	Sense of well being in Seattle	SEATTLE	
	Neighbourliness	SEATTLE	
	Well being	IISUD	
	Number of environmental education efforts	PASADENA	

8 Common threads: recommendations on a process to select urban amenity indicators and possible indicators

The purpose of this section of the report is to provide recommendations on how to apply the general process outlined in section 3 of this report, and to outline the suggested top tier indicators areas to apply this process to. These are based on the:

- key provisions provided in RMA Plans (refer to tables in previous section);
- ideas gained from reviewing urban indicators used in other countries;
- the responses to the survey of council management of urban amenity;
- discussions at the first Urban Amenity Focus Group; and;
- additional findings from key literature.

8.1 Recommended process

Having analysed the provisions included in council RMA plans to monitor urban amenity, and considered alternative means of managing urban amenity outside of RMA plans, the next step will be to confirm the process of recommending national urban amenity indicators. This will involve:

- describing possible indicators (at this stage only the top tier and some examples of second tier indicators will be listed);
- indicating what type of indicators they are (PSR);
- indicating whether information is available to monitor these indicators now (ie whether they are stage one or stage two indicators);
- assessing the indicators against common selection criteria; and
- identifying any overlaps with other indicators previously developed under the Ministry for the Environment's Environmental Performance Indicators (EPI) Programme.

Tables similar to the one below can be developed to assist in summarising this information:

Description of the indicator	Type of indicator (PSR)	Stage 1 or 2	Initial assessment against criteria
e.g. residential population exposed to road traffic noise	S	2	Relevance Analytic validity Cost effective Understandable Overall rating

Indicator criteria and ranking

There is potentially a wide range of urban amenity indicators. For example, the table in the previous section of the report on council provisions shows a range of ways of measuring urban amenity. Some form of screening or assessment against a standard set of criteria is necessary early on in the process of developing national urban amenity indicators in order to make some progress. For this reason the Ministry for the Environment recommended starting with noise and open space indicators and then looking at urban density and the use of satisfaction surveys

to assess what people like/do not like about where they live, work and play. There has been a mixed response to the Ministry's idea of starting with noise and open space indicators.

The original intention was to assess a set of noise and, open space indicators against the Ministry for the Environment's indicator selection criteria process. The Urban Amenity Focus Group were reluctant to see this process taken too far without first assessing local needs for urban amenity. Having compiled a list of some of the key urban amenity parameters that are being monitored by local authorities, and around the world, the next step will be to consider what indicators are available now, or could be developed for monitoring urban amenity throughout New Zealand. The Ministry for the Environment's indicator selection criteria, which have been used for the development of other indicators under the EPI Programme, can usefully be applied to the key things being monitored by local authorities.

The Focus Group will be asked how appropriate they consider these selection criteria to be for the development of urban amenity indicators. The criteria are as follows:

Policy relevant:

- will monitor the key outcomes of policy/legislation and measure progress towards goals;
- provides information to a level appropriate for policy decision making.

Measurable and analytically valid:

- is measurable;
- is representative of the system being assessed;
- is reproducible and based on critical attributes of the system;
- was developed within a consistent analytical framework;
- credible and robust;
- helpful in relating causes, effects and responses;
- responsive to environmental change;
- data collection uses standard methodologies with known accuracy and precision (statistical integrity);
- able to detect human induced change from natural variations;
- responsive to environmental change and allows trend analysis or provides a baseline for future trends;
- has predictive capabilities.

Cost effective:

- requires limited numbers of parameters to be established;
- uses existing data and information wherever possible;
- is simple to monitor.

Simple and easily understood:

- simple to interpret, accessible and publicly appealing
- clearly displays the extent of issues.

In the Ministry for the Environment funded Opus project, the councils involved developed indicators and applied the MfE selection criteria. They also added the following criteria:

- Is it the most appropriate indicator?
- Is it the best way to monitor anticipated environmental results in the Plan?
- Can it stand alone or does it require additional information?

In developing their human settlements indicators, the Australian's (Environment Australia, 1998) used very similar selection criteria: important, feasible, credible, understandable, and useful. The National Indicators Project Team (for their socially focused indicators) used the same selection criteria as used in the Environmental Performance Indicators Project by MfE: relevant, measurable, cost effective, valid, and understandable.

Once again, tables can be used to simplify this process of assessing possible indicators against the agreed to standard selection criteria, such as illustrated below.

Evaluation criteria	**Possible Urban Amenity Indicators**				
	EPI 1	EPI 2	EPI 3	EPI 4	EPI 5
Relevant	*****	**etc**			
Measurable	***				
Analytically valid	***				
Cost effective	*				
Understandable	****				
Overall assessment based on usefulness	***				
Stage indicator	**2**				

A template for the process of indicator selection, against a set of standard criteria, which was developed by the Ministry for the Environment in 1997, is included in Appendix 3. This process assists in selecting and prioritising indicators, relative to targets or goals. The Urban Amenity Focus Group will use it when they meet to discuss urban amenity indicators on 20 July 2000.

It will be important to gain agreement from the Urban Amenity Focus Group as soon as possible on the selection criteria to be used to assess the possible indicators so that as much time as possible can be spent at the next workshop (on 20th July) on discussing the actual indicators and indicator process.

Participants at the 1998 Royal Society and Ministry for the Environment workshop concluded that the Ministry for the Environment EPI Programme selection criteria could be applied to the development of urban amenity indicators. The Ministry approach to selecting indicators (Appendix 3) using a modified version of the P-S-R framework was applied to some urban amenity issues at a broad level to assess whether the process would work to develop indicators that are not primarily biophysical. Participants agreed that the method was useable although it was recognised that considerable further work would be necessary in the detailed analysis of each urban amenity topic area in order to define reliable indicators

It is recommended that the Focus Group use the EPI Programme indicator selection criteria (as listed in the box on the previous page).

It is further recommended that the Focus Group use the process developed by the Ministry for the Environment, to select indicators, to develop a broad list of indicators that may be useful at a local level to monitor urban amenity.

8.2 Indicators to consider – key urban amenity attributes

The list of indicators that has been developed by councils in New Zealand and by agencies in other countries (refer to tables in section 7 of this report) provides an excellent starting point for the development of urban amenity indicators that can be applied (if relevant) by local authorities. As discussed in section 3 of this report, it is possible to identify some common attributes of urban amenity that appear to be relevant in many locations. These general urban amenity attributes may provide the basis for the development of urban amenity indicators for use nationally in New Zealand.

The common themes from the work discussed in this report includes: noise and vibration; nuisance effects (such as dust, odour, glare etc); open space (including recreational space); population/housing and urban density; vegetation; landscape; urban design (architecture, the fit of buildings etc); cultural heritage and features; character of neighbourhoods; visual amenity and views; public person safety and accessibility and sense of place and well-being.

It is recommended that the common themes that have emerged in the past work on urban amenity be combined to give a suggested list of areas from which to develop the process outlined earlier for indicator development. The significant areas of commonality include:

Noise and vibration
Nuisance effects (dust, odour, glare etc)
Open space (public and private) / recreational space
Population, housing, and urban density
Vegetation
Landscape
Urban design (architecture, "fit of buildings" etc)
Cultural heritage and features
Character of neighbourhoods/special character areas
Visual amenity and views
Public personal safety and accessibility
Sense of place and well-being.

Once this top tier of indicators of urban amenity attributes is agreed to then it will be possible to develop more detailed and useful indicators of urban amenity values for use at the local level. Examples are provided below for noise, open space, urban density, cultural heritage, and urban design. A discussion is also provided on the use of satisfaction surveys to assist with monitoring urban amenity locally and possibly nationally.

Example 1 – noise

Noise – top tier national urban amenity indicator

Residential population exposed to external noise levels greater than 55, 60, 65, and 70 dBA (24hr L_{eq}) or equivalent, at a position 1m from the façade of the dwelling.

Note: It would be useful to collect data, which can be directly compared, to overseas studies. In addition, the top tier indicator must be simple to determine. As such, although a 24hr descriptor may be appropriate, measurement over 24hrs would involve enormous resources to achieve useful results. It is therefore recommended that an initial noise survey is undertaken to determine groups of residential properties such as "quiet rural", "inner city", and "

suburban" which represent the typical noise climates in New Zealand. For each of these groups, appropriate short duration noise measurements would be determined to describe the noise environment, and enable an estimate of 24hr noise levels to be made. For example, one 15 minute measurement mid-afternoon, and another around midnight, may be adequate in an inner city residential area.

Second tier indicators for use where relevant in selected locations

- Numbers and percentage of total population in each noise category with the following as the primary noise source;
    - traffic noise
    - aircraft noise
    - rail noise
    - industry noise
    - recreational noise (including motor-sports, amplified music, etc)
- number, frequency and location of noise complaints

Example 2 – open space

Open space (public and private) – top tier national urban amenity indicator

Second tier indicators for use where relevant in selected locations

- total public urban 'green space'/parks per capita
- % green space per neighbourhood/zone/city etc
- ratio of open space compared with surface area by motor vehicle
- % population that do not live within 400 m of public open space
- accessibility - % of people within 15 minutes walk of urban green spaces
- access to [appropriate] open space [for user needs]
- location, area and type of reserves
- changes in extent [type] and location of open space
- changes in use and development of open space
- changes in extent of indigenous vegetation/natural features protected by reserve or covenant
- changes in the % city's coastline in public ownership
- new esplanade strips / reserves
- area of recreational space per dwelling
- change in the distribution of local and district parks per 1000 residents
- residential satisfaction with open green place in their urban environment
- resident satisfaction with levels of open space
- number of people using walkways/sports fields etc
- average monthly use of public recreation facilities
- quality of open space e.g. presence of trees and vegetation, proportion of permeable surface compared to total area of an urban environment
- complaints concerning accessibility, safety and maintenance of parks
- public financial support for urban open space provision…etc

Example 3 – urban density

Urban density – top tier national urban amenity indicator

Second tier indicators for use where relevant in selected locations

- location of high density housing
- number and size of new lots
- change in population density
- homes built on previously developed land
- change in land zoned urban
- number of hectares and % land area in each land use zone
- land rezoned from rural to urban land use
- Loss of versatile soil / productive soil
- Soil erosion
- Number of square metres of living space per inhabitant
- Impervious surface area per city…etc

Example 4 – cultural heritage

Cultural heritage – top tier national urban amenity indicator

Second tier indicators for use where relevant in selected locations

- change in 'heritage value' index
- number of heritage sites and buildings
- number of heritage features protected
- number of resource consents to modify or destroy heritage features
- number of heritage buildings partly demolish, demolished or removed from heritage list
- changes to and condition of remaining heritage buildings
- scheduled objects and sites of cultural heritage value to tangata whenua
- stock of heritage and cultural assets
- design guidelines and heritage incentive strategies
- grants approved through the Heritage Incentives Retention Fund…etc

Example 5 – urban design

Overseas (for example in the UK and Australia) there has been a lot more emphasis placed on good design to ensure quality built environments. In New Zealand, there does not appear to have been the same recognition that urban design principles can improve the quality of life, until recently.

Design guidelines have been identified by many councils as critical to liveable urban environments. They can provide guidance on siting/configuration and aesthetic qualities of buildings in relation to each other and their context, and in relation to open space around them. Urban design guides are usually outside of RMA plans and are likely to become more significant as mixed-use zone and development occurs (i.e. shared residential, commercial and industrial developments within the same zone). Urban design indicators will often overlap with indicators developed for other amenity purposes – such as to preserve cultural heritage

and ensure safety and accessibility. So there may be some overlaps in indicators for urban design and some of the other indicators listed in the tables in the previous chapter.

Urban design – top tier national urban amenity indicator

Second tier indicators for use where relevant in selected locations

- residents perceptions on layout and design of buildings, structures and open space
- compliance with conditions in the development plan
- stock of heritage and cultural assets *(as in example 4)*
- land converted from non-urban to urban uses *(similar to example 3)*
- public urban green space per capita *(as in example 2)*
- residential density
- sense of place, vitality
- accessibility and safety
- fit of buildings
- social cohesion
- mixed land use ratio… etc

Methodology – use of public satisfaction surveys

Satisfaction surveys carried out locally by councils and the responses to the surveys could help assess and confirm the key urban amenity attributes across the country, and then these could be applied to the actual values in relation to urban amenity at a more local level.

The use of *satisfaction surveys* for monitoring people's sense of amenity was identified as a plausible method, in MfE's Technical Paper 54 (MfE, 1999) once indicators had been agreed. A recommendation in this paper was that local and regional government should be encouraged to pursue satisfaction surveys on a more widespread basis.

This would involve extending the annual residents' survey currently commissioned by many councils to gauge performance and service satisfaction levels in their respective communities. Such surveys have been used by many councils in their strategic planning. They therefore have the merit of being a familiar and proven technique. Surveys of residents' values and views would be an important step in defining rankings of and between amenity values/indicators.

Most submitters on technical paper 54 supported the use of satisfaction surveys. Councils already carrying out surveys of residents include: Waitakere, Christchurch, North Shore, Wellington, Manukau and Auckland Cities. These councils are all involved in the National Indicators Project, and an initiative under this project is to attempt to standardise some of the questions in satisfaction surveys, so that the results can be compared in different cities.

There is an issue relating to the scale of surveys used that was raised by Christchurch City Council (in case study discussions and in relation to Technical paper 54 (MfE, 1999)). They questioned the usefulness of city–wide responses to issues that are really neighbourhood based. One of the case studies being carried out under this project may help to address this issue, as it is being trialled by a small and largely rural/peri-urban council.

9 Urban amenity indicators of relevance to Maori

Amenity values of significance to Maori can only be established by direct dialogue with Maori.

This section of the report attempts to raise awareness of the significance of urban amenity indicators in relation to matters of significance to Maori. The term 'matters of significance' is used as these are likely to encompass the full range of issues raised by Maori, including both process issues and values associated with resources.

Environmental effects of significance to Maori

Urban amenity issues that are of concern to the general public are often also of concern to Maori (e.g. people's satisfaction with where they live, work and play). Differences are likely to occur in relation to the nature and significance of the effect, particularly regarding effects on traditional value systems and resource use.

This discussion:

- Summarises relevant findings of other working papers regarding Maori EPIs;
- Flags some areas that may be matters of significance to Maori; and
- Recommends a process to gain Maori input into this work.

It should be noted that this section of the report was prepared by and reflects the views of the consultants who wrote this report. It has not included direct consultation with Maori as this was outside the Ministry for the Environment brief. These are preliminary views only and will need to be discussed and tested through more considered consultation than has been possible within the timeframe and resources of this study brief.

Ministry for the Environment work on indicators relevant to Maori

The Ministry for the Environment has previously commissioned work towards developing Maori environmental indicators for the EPI Programme. This work provides a context to working on urban amenity indicators and is summarised below.

Tuanuku Consultants

Tuanuku Consultant's report *"Tohu Waotu"* was the first report, which scoped issues regarding Maori involvement in the EPI programme. The report identifies two Maori environmental monitoring categories - ecocentric and anthropocentric indicators.

The report assumed that a Maori Advisory Group would be convened by Ministry for the Environment and made a number of recommendations including:

- the adoption of a Treaty and tikanga based framework for evaluating and incorporating Maori matters into the EPI programme;
- noting the importance of indigenous knowledge and dealing with such information sensitively;
- a process for Maori involvement in the EPI programme.

Gardiner and Parata Ltd

By holding a series of hui and workshops Gardiner and Parata Ltd (GPL) identified draft Maori indicators for coasts and estuaries, biodiversity, fisheries, and climate change and ozone.

GPL also identified a number of problems with the current process of Maori input into the EPI programme. A Supplementary Report for MfE was therefore prepared suggesting a more focused approach for Maori input:

- adapting existing indicators to include a Maori dimension; and
- allocating a national indicator to Maori to determine.

Maori Environmental Monitoring Group

An independent panel of Maori known as the Maori Environmental Monitoring Group (MEMG) defined the following concept of a Maori Environmental Performance Indicator:

> *"A Maori EPI is a tohu created and configured by Maori to gauge, measure or indicate change in an environmental locality. A Maori EPI leads a Maori community towards and sustains a vision and a set of environmental goals defined by that community."*

The MEMG made a number of recommendations. These included that the development of MEPIs needs to:

- be developed by Maori in an independent manner and in the wider context of Maori environmental planning; and
- be based on traditional concepts including whakapapa and mauri.

The MEMG also recommended that following the independent development of MEPIs, that these be integrated with monitoring programmes of non-Maori through a process based upon the Treaty of Waitangi.

Maori Input Into the Environmental Performance Indicators Programme report

In mid 1999 a report was published inviting Maori to participate in the EPI Programme. This discussion document:

- summarised the lessons learned from Maori input into programme to date;
- sought Maori endorsement for the core set of indicators already developed; and
- proposed indicators specifically relevant to Maori.

In particular feedback was sought from Maori regarding whether the idea of a Maori-specific strand should be developed and whether this should focus on mahinga kai.

Conclusion on Maori involvement in indicators

The Ministry has sought advice from a number of Maori on indicators and Maori involvement in the EPI Programme. The need for Tikanga and Treaty-driven indicators and processes of Maori involvement was a common recommendation of the above reports. The MEMG have also provided a useful definition of a Maori EPI and useful feedback was obtained following the release of the Maori indicators discussion document in mid 1999, and a series of hui with Maori around the country in late 1999.

Matters of Significance to Maori

There are matters of significance to Tangata Whenua that are relevant to all strands being developed for the EPI programme. Such matters can be summarised as:

- direct and effective involvement of Maori;
- recognition of customary rights and the Treaty of Waitangi; and
- providing for traditional concepts, including whakapapa, mana and mauri.

Such matters have been raised in the previous work on Maori input into the EPI Programme (refer to introduction) and would relate to the preparation, implementation and review of the EPI Programme. Matters of significance to Maori associated with land, air and water that have been raised can be grouped under the following headings, and have relevance to Maori interest in urban amenity.

Kaitiakitanga

There has been a lot written on Kaitiakitanga. Briefly, the following points are emphasised:

- Through whakapapa, Tangata Whenua have ancestral obligations as Kaitiaki to care for taonga. Taonga is all encompassing, and includes people;
- Kaitiakitanga cannot be exercised without Rangatiratanga or authority. It is often impossible to protect resources without also exercising a degree of control. In this context, retaining ownership of resources is also an important component;
- Tikanga or customary rules are followed to maintain the balance between people and natural resources. While there are tikanga that are universal to Maori, there are also tikanga that are specific to different Whanau, Hapuuu and Iwi.

Manaakitanga

While an abundance of food is valued for the physical sustenance it provides, enormous value is placed on the concept of Manaakitanga. The ability to provide an abundance of food to guests is a matter of tribal mana and wellbeing. Important traditional foods included birds, fruit, vegetables, plants, kiore, fish, shellfish and invertebrates. Birds (e.g. tiitii), kumara, fish, shellfish, invertebrates and eels continue to be important traditional food resources to Tangata Whenua. The increasing participation of Maori in the tourism industry is a natural extension of Maori hospitality. The tourism industry is largely dependent upon the quality of the natural environment and the ability of the people to feel good about their rohe.

Cultural Heritage

Cultural Heritage refers to all those matters that are inherited from previous generations, providing important linkages between the past, present and future (e.g. waahi tapu, archaeological sites, landforms, buildings, place names). Waahi tapu are a particular category of ancestral land or water held in the highest regard by Tangata Whenua. Such tapu places include but are not limited to those associated with death (e.g. urupa, battlefields, caves, trees), rituals (e.g. tuahu, trees) birth, (e.g. burial places of placenta), ara purahoura or sacred pathways, mauri stones or trees, tauranga waka, maunga, mahinga kai, and waahi taonga mahi a ringa. Waahi tapu may be *tangible or intangible.*

Wai

Water is essential to all life forms and is regarded as important to mauri. Rainwater represents the tears of Ranginui and is regarded as waiora (pure water). Rivers and streams are regarded as the veins of Papatuanuku, and each would have a traditional use (e.g. irrigation, drinking, cleaning). If water is polluted the people are violated and this can affect people's well being and the liveability in their *rohe.*

Land, Marae and Papakainga

As reflected in the name Tangata Whenua, ancestral land is central to the identity and wellbeing of Maori. This includes the ability to live on and enjoy ancestral land in accordance with traditions. As noted in the discussion on Kaitiakitanga, this necessarily includes land ownership.

In light of the pressures and effects of colonisation, the importance of Marae for sustaining Maori culture and traditions has increased. Some regard Marae as one of the few remaining places where Hapuu and Iwi can truly express themselves. Marae also serve as a sanctuary for many Maori and Papakainga serve a similar purpose for whanau.

It is interesting to note that very few of the indicators developed by councils to monitor urban amenity relate specifically to Maori but most of those developed will be of interest to and relevant to Maori. There are a few for cultural heritage that may be able to be developed further to ensure that Maori are considered in the development of urban amenity indicators. For example, change in the "heritage value" index of a city.

A process to ensure Maori relevant urban amenity indicators are developed

It is recommended that to progress this work, that councils and the Urban Amenity Focus Group are reminded of the importance of providing for matters of significance to Tangata Whenua (as a matter of national importance under the RMA – under section 6(a), 7(e) and 8), and encouraged to consult with local Maori as they apply the top tier urban amenity indicators to the community vision, aspirations and values people have locally.

10 Conclusions

For the purposes of this work urban amenity has been defined as the liveability of urban environments.

It is challenging to develop a core set of national urban amenity indicators. Urban amenity is of interest to most people but we all have our own ideas about what it means and how to define, manage, and monitor it.

> *"Every human being knows that some of the most important things in life – freedom, love, fear, hope, beauty, harmony, fulfilment, fairness (and even the beauty of objective precision) – are qualities, not quantities. It is important, therefore, to acknowledge inherent subjectivity in all indicators, and to respect indicators of quality however hard they may be to define. If we guide ourselves only by 'objective' (quantitative) indicators, we should not be surprised if we produce a world characterised only by its size".*
>
> *(Dr John Peet, 1996)*

Urban amenity raises the question of overlaps between social, environmental and economic effects and this project takes an approach not purely focused on the biophysical and easily measured elements of urban amenity. There is a suite of regulatory and non-regulatory methods available for managing urban amenity. Some will be better placed in strategic plans or design guidelines rather than RMA Plans.

The approach to developing national urban amenity indicators has been influenced by the range of people who have contributed to thinking about how urban amenity should or could be monitored – including the Urban Amenity Focus Group, Case Study councils, the literature, the councils that responded to the survey, and the people previously involved in the Ministry for the Environment work on urban amenity (such as the 1998 workshop participants).

Section 3 of this draft report recommended a process to follow to develop urban amenity indicators for use in New Zealand locally and possibly at the national level as well. The proposed process was to:

- Collate common indicators included in council work and elsewhere for urban amenity.
- Consultant team to highlight areas of commonality in the indicators. These become what will be called the possible draft *"Top tier indicators of urban amenity"(based on common attributes throughout the country).*
- Focus Group to discuss the usefulness of aggregating these council indicators and some others developed internationally to the national level (on 20th July 2000) and to identify any gaps.
- Assess the most relevant indicators against the Ministry for the Environment selection criteria and discuss the usefulness of the criteria for urban amenity indicators. Agree on the criteria that will be commonly applied to indicators developed by councils and others, for urban amenity.
- Prioritise the indicators (using the Ministry for the Environment selection process if relevant). The high priority indicators will become the *draft proposed top tier national*

indicators of urban amenity (based on common attributes throughout the country) that will be given to local authorities for their comment and discussion and to assess if there is support for these indicators from local authorities.

- Identify the key outcomes nationally, that people are trying to achieve locally.
- Apply the *proposed top tier national indicators of urban amenity (based on common attributes throughout the country)* at the local level and assess them against local community *vision and values* to ensure relevance. These indicators become what we call the *draft proposed second tier local urban amenity indicators (based on local urban amenity values)*, to be applied only in locations where they are relevant. (Councils will do this last step.)

The following recommendations were made throughout this report, and these recommendations will form the basis for discussions at the second Urban Amenity Focus Group Meeting on 20 June 2000.

Recommendations:

It is recommended that:

- **in order to develop meaningful and useful urban amenity indicators, the *attributes* of urban amenity are distinguished separately in the first instance from the *values* we place on those attributes, so that the values can be ascribed at a local level**

- **the scope of these urban amenity indicators be broader than just focusing on the biophysical and tangible elements of urban amenity. To be of value this work on urban amenity is being considered beyond the biophysical environment, but the priority is on environmental implications and effects**

- **once this project has identified urban amenity indicators that the Ministry for the Environment consider expanding these indicators so that they deal with rural amenity as well and do not make the arbitrary distinction that is currently being made between rural and urban environments**

- **in preparing urban amenity indicators, that matters of significance to Maori be considered and that Maori are consulted on the preparation of urban amenity indicators**

- **the Ministry for the Environment and local government should collectively assess what indicators have been developed by local government across the country, in consultation with their local community, and compare these to some examples of similar indicators developed overseas, to manage and monitor urban amenity**

- **the Ministry for the Environment aggregate any satisfaction surveys and the results of the survey of councils. By finding out the key attributes the majority of New Zealanders value as urban amenity, the actual values could then be applied to these attributes at a more local level**

- **the Ministry for the Environment consider expanding the scope of this work in the future and develop urban sustainability indicators**

- **the Focus Group use the EPI Programme indicator selection criteria**

- **the Focus Group use the process developed by the Ministry for the Environment, to select indicators, to develop a broad list of indicators that may be useful at a local level to monitor urban amenity values**

- **the common themes that have emerged in the past work on urban amenity be combined to give a suggested list of areas from which to develop the process outlined earlier for indicator development. The significant areas of commonality in relation to urban amenity include:**

    - **Noise and vibration**
    - **Nuisance effects (dust, odour, glare etc)**
    - **Open space (public and private) / recreational space**
    - **Population, housing, and urban density**
    - **Vegetation**
    - **Landscape**
    - **Urban design (architecture, "fit of buildings" etc)**
    - **Cultural heritage and features**
    - **Character of neighbourhoods/special character areas**
    - **Visual amenity and views**
    - **Public personal safety and accessibility**
    - **Sense of place and well-being**

It is important to assign priorities for defining, managing and monitoring urban amenity values at the local level. The development of robust community processes to establish what specific communities want in terms of their urban amenity is critical. Communities need to identify the most significant amenity issues, attributes and values to manage and monitor. On going communication is a key to defining, managing and monitoring urban amenity and this must happen at a local level. Councils have a critical role to play in the development of urban amenity indicators and in making these urban amenity indicators work in practice.

Central government also has a critical role to play in the management and monitoring of the urban environment. There is a lot of data about the social, economic and biophysical aspects of the urban environment, but this data is dispersed, variable in quality, sourced from many different organisations and for many different purposes. We often do not know the extent of information available to us on the urban environment, and need better access and integration of the information that does exist. Central government has a role to play in regular reporting on the state of our urban environment in New Zealand.

This draft report makes a big step forward in the journey of developing and implementing urban amenity indicators for use in New Zealand. It provides information on how urban amenity is being monitored by councils and other agencies in New Zealand and overseas, and having this information available in one place is in itself valuable. It also recommends some top tier urban amenity indicators – based on key attributes identified as important in New Zealand and a process for applying these indicators at a local level, based on current indicators that have previously been developed to manage and monitor urban amenity values.

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Appendix 1 Indicators developed under the EPI Programme

Strand	Stage	EPI Indicators
Air	1	Particulate matter (PM_{10})
	1	Carbon monoxide (CO)
	1	Sulphur dioxide (SO_2)
	1	Nitrogen dioxide (NO_2)
	1	Ground level ozone (O_3)
	2	Benzene
	2	Particulate matter ($PM_{2.5}$)
	2	Lichen diversity/coverage
	2	Visibility
Fresh water	1	Dissolved oxygen
	1	Ammonia
	1	Temperature
	1	Clarity
	1	Trophic State Index (TSI)
	1	% population with good water supply
	1	Periphyton (effects of slime on bathing)
	2	Occurrence of native fish· Giant Kokopu· Red Finned
	2	Bully
	2	Macroinvertebrates (insects in rivers)
		Periphyton (effects of slime in rivers)
	2	Riparian condition
	2	Wetland condition and extent
	2	Groundwater · nitrates, abstraction quality
	2	Water abstraction
Land	1	Changes in areas susceptible to hill country erosion
	1	% change in area of slip at selected sites
	2	Change in area susceptible to high country degradation
	2	Change in area susceptible to agricultural impacts
	2	Acidity or alkalinity of soil
	2	Organic matter
	2	Change in area susceptible to reduction in soil health
	2	Bulk density of soil
	2	pH soil test
	2	Organic carbon
Climate change	1	Total emissions (global warming potential) per sector per year
	1	Background levels of greenhouse gases (CO_2, CH_4 and
	1	N_2O)
		Monthly average New Zealand temperature

Ozone	1	Spectroradiometer UV measurement
	1	Dobson spectrophotometer ozone readings
	1	The state of the Antartic ozone hole
	1	Tropospheric concetration of total active chlorine
	1	Data on New Zealand's consumption of ozone-depleting substances
Solid waste	1	Quantity of waste disposed to landfills.
	1	Composition of waste disposed to landfills.
	1	Source of waste disposed to landfills:· Residential· Non-residential
	1	Number of landfills in each category of a 'landfill grading system'
Haz subs	2	Quantity of major discharges to water:· BOD
	2	Stock effluent equivalent of total nitrogen.
	1	The number of incidents reported.
	1	The number of new substances registered under HSNO.
	1	The number of substances deregistered under HSNO.
	1	The number and quantities of toxic and ecotoxic hazardous substances:
	2	Produced· Imported· Exported ·
	1	The number of incidents which fall into the following categories:· Major· Minor.
	2	The quantity of hazardous waste which is: accepted at landfills: imported: exported
	2	The quantity of hazardous waste being generated from industrial sources
		The quantity of hazardous waste being effectively treated to remove its Hazardous characteristics
	2	The quantity of hazardous waste being disposed to landfill sewer export imp
Contaminated sites	1	Total no. sites and no. high risk sites falling into the following categories no of - additional sites added to the register during the past year not investigated - under investigation confirmed contaminated remediated site; not contaminated.
		
Toxic contaminants	1	Toxic contaminants in meat
	1	Toxic contaminants in diet
	1	Toxic contaminants in human milk
	2	Benzene in air
	2	Nitrates in groundwater
	2	Toxic contaminants in fresh water eels
	2	Toxic contaminants in marine mussels
	2	Toxic contaminants in marine sediments
Marine	1	The number of confirmed spills by source and type, and the number of spills over 100L
	1	Change in the number of taxa in different IUCN and NZ threat categories
	1	Change in the number and distribution (range) of selected alien species in the marine environment

	1	% bathing beaches and shellfish gathering areas complying with microbial guidelines
	1	Frequency, location, and species of toxic and algal blooms
	1	Quantity (number of items; combined weight) of litter per unit area in the stranding-zone of representative beaches.
	1	Fish stock
	1	The number of marine mammals and seabirds caught by species, by fishery (method), by area, by year
	1	The level of fishing effort, by method, by area, by year
	2	% change in land-erosion susceptibility for estuaries susceptible to sedimentation
	2	% change in area susceptible to agricultural impacts for estuaries susceptible to eutrophication
	2	% change in the tidal prism for estuaries susceptible to sedimentation
	2	Toxic and ecotoxic contaminant levels in shellfish and sediments at selected monitoring sites
	2	Change in the extent and condition of selected marine habitats compared to historic and current baselines
	2	The % and area of each of New Zealand's different marine
	2	environments that are legally protected % of New Zealand coastline in public ownership
	2	% of coastal environment in each category of natural character
	2	The area of marine farms by type, location and by habitat
Biodiversity	1	Change in the extent of each land cover class
	1	% / area of each of New Zealand's different environments under legal protection
	1	Change in the extent of indigenous vegetation compared to historic and current baselines
	1	Change in gross habitat fragmentation of indigenous vegetation cover for each of New Zealand's different environments
	1	Change in the distribution (range) of selected alien predators and herbivores
	1	The number and percentage of extinct species in selected taxonomic groups
	1	The number of taxa in IUCN and NZ threat categories
	1	The genetic diversity and /or distinctiveness of selected valued introduced species
	1	The number of taxa in IUCN and NZ threat categories
	1	The genetic diversity and /or distinctiveness of selected valued introduced species
	2	Change in the extent of each land use pressure on biodiversity
	2	The condition of selected ecosystem types compared to historic and current baselines
	2	Change in the distribution of selected invasive weed species
	2	The relative abundance and distribution of kiwi (all species) compared to historic and current baselines
	2	The evolutionary diversity remaining in selected taxonomic groups (first group, birds) compared to historic and current baselines
	2	% / area of New Zealand's remaining freshwater ecosystem types

		under legal protection
	2	The extent and condition of selected freshwater ecosystem types (wetlands, lakes, rivers, karst and geothermal) compared to historic and current baselines
	2	Change in the number and distribution (range) of selected invasive alien freshwater species
	2	The relative abundance and distribution (or occurrence) of selected indicator species compared to historic and current baselines
	2	The evolutionary diversity remaining in selected taxonomic groups (first group, freshwater fish) compared to historic and current baselines
Transport	1	Vehicle fleet composition
	1	Usual mode of journey to work
	1	Total vehicle-kms for road vehicles per year
	2	Road Congestion
	2	Percentage of main arterial roads with active water treatment
Energy	1	Total primary energy supply (TPES), by energy type per year
	1	Total consumer energy (TCE), by energy type by sector per year
	1	TCE / TPES as a percentage per year
	1	Non-renewable primary energy supply as a proportion of TPES
	1	National average efficiency of thermal electricity generation, including co-generation (MWh / PJ)
	2	Avoidable spillage in the hydro-electricity system (GWh) per year
	1	Transport sector energy use per vehicle km travelled per year (PJ / VKT)
	1	Commercial sector energy use per employee per year (GJ / employee)
	1	Residential energy use per household (GJ/household)
	1	Industrial sector energy use as a proportion of industrial GDP (PJ/$m)

Appendix 2 Previous work on noise indicators under the Environmental Performance Indicators Programme

As part of the development of transport indicators, noise was considered. In the final analysis the decision was made to deal with noise indicators as part of the development of urban amenity indicators, rather than include them in the core set of transport indicators. Below is the discussion from the background technical paper on transport indicators.

5.2 Noise and vibration

5.2.1 Significance

Sound is air pressure waves propagated through air that are sensed through hearing. Noise is unwanted sound. Noise emission is an effect that has always been prominent in the environmental assessment of transport projects, reflecting public sensitivity to excessive or unwanted noise.

Vibration is a manifestation of low frequency pressure waves, but transmitted through the ground and structures instead of through air. While locally significant, if ground conditions promote vibration propagation and the receptor is sensitive, it is doubtful that vibration could be regarded as being of widespread significance.

Main concerns

Road and air transport are the transport modes most frequently associated with noise disturbance in NZ. Rail transport noise features more prominently in countries with extensive rail systems but does give rise to some localised problems in NZ.

Noise from port depots, which usually include rail shunting as well as cargo movements on wharf, is a localised problem that occurs in some centres. NZ cities have historically developed closed to ports, and in most cases, the original port locations have had sufficient channel and berthing depths to grow to accommodate modern vessels without having to relocate. Road and rail traffic into and out of the port areas have to pass through the urban development.

Other sources of noise annoyance are: outboard motors on small boats and jetskis, light aircraft and helicopters flying low over urban development or in otherwise quiet rural recreational areas.

Noise measurement and disturbance

Measurement of noise must take account of the amplitude, frequency and duration of sound as each of these attributes relate to noise disturbance and/or health effects. While extremes of sound level can damage hearing, most transport noise effects are below this level but cause disturbance through masking of other sounds, such as conversation, sleep disturbance, and intrusion in otherwise quiet environments. The ambient noise level from other sources and the nature of the activities impacted both influence the impact of transportation noise.

Attenuation

Noise is attenuated by distance and screening. The degree of attenuation provided by the building structure depends upon window openings and wall materials. Guidelines based upon outdoor noise level should take account of attenuation provided by NZ building systems, which differ from overseas. Timber frame, weatherboard houses with large window openings and a warm climate that leads to windows being open in summer weather, provide less attenuation than masonry construction in a cooler climate with windows more likely to be closed or double glazed for heat insulation.

Road traffic noise

Noise is a ubiquitous environmental effect of road traffic. Exposure of existing development to noise from busy main roads is often be above levels that would trigger the need for some form of environmental mitigation in a new development. Such situations arise gradually over time as traffic volumes increase.

For road transport, engine noise and transmission noise is less of a contributor to noise emission than formerly, noise from tyre/road interaction and aerodynamically produced noise now being more dominant. Road surface texture is an important element, and Transit NZ has recognised this in its resurfacing policies. Weather also plays a part, wet surfaces generating more noise than dry surfaces.

Models of road traffic noise generation have been developed which allow roadside noise levels to be predicted with reasonable accuracy from traffic and road conditions for both uninterrupted and interrupted traffic flow. For uninterrupted traffic flow, vehicle numbers, speed and proportion of heavy trucks are the main traffic factors, while surface type, wet or dry and gradient are the main highway factors. For interrupted

traffic, stopping and starting generates higher levels of noise than smooth traffic flow.

Propagation and exposure to noise is determined by distance, wind direction, noise screening and the reflective or absorptive characteristics of the surroundings.

In the Land Transport Pricing Study – Environmental Externalities, a comparison was made of three methods of estimating the exposure of NZ residential population to road traffic noise. While the various methods gave varying results, between 0.8% and 3.4% of houses were estimated to be exposed to outside noise levels greater than 65 dBA (12h Leq), and possibly up to half of households to a level above 55dBA (although this result was much less certain). In OECD terms, 55 dBA represents a level where noise starts to intrude and become an annoyances, while 65 dBA is an upper level of acceptability. On this basis NZ does experience significant environmental impact from road traffic noise. These costs were roughly estimated at between $230 and $2600 million annual social cost, using hedonic pricing methodology based on property value.

Airport noise

Aircraft noise is concentrated on airport approach and take-off paths and is primarily engine noise. Modern high bypass turbofan aircraft are much quieter than older generation jet engines or turboprop aircraft.

A knowledge of aircraft types, schedules and approach/departure procedures allows noise contours to be mapped in the vicinity of the airport. Population exposure to noise can then be assessed in relation to these contours.

Railway noise

Railway noise includes from engine noise, wheel/track noise, and railyard noises such as wheel squeal and coupling impact noise. Similarly to road, wheel/track noise dominates at higher speed, and engine noise at lower speed (for diesel-electrics). The movement of goods trains at night through urban areas can be a source of disturbance, although the noise disturbance in relation to tonnage of goods moved can be expected to be less than for road.

5.2.2 Overseas standards, guidelines and indicators

Noise standards and guidelines

Noise generation at source by transport vehicles is not a focus of overseas monitoring. Control of individual vehicle noise at source is generally through legal sanctions against excessive noise, which can form the basis for enforcement but is not particularly suited to an indicator and through vehicle design rules.

Controls of this type are more appropriate to air than to road, where the noise generated by a traffic stream over time, rather than by individual vehicles, forms the basis of the adverse effect.

MOT (1996) summarises overseas noise standards. Some of these are shown below (24h Leq dBA or equivalent unless indicated):

- Victoria EPA – noise barriers in new designs for > 60 dBA; alongside existing motorways where > 65 dBA
- NSW Road and Traffic Authority – 60 dBA and 55 dBA (8h) for new construction; remedial action if noise level rises > 12 dBA above pre-construction level.
- Queensland Department of Transport – 60 dBA target for new limited access roads; remedial measures where existing road noise levels rise above 65 dBA
- South Australia – 65 dBA target for new roads; remedial action if noise rises by 10 dBA and existing is greater than 60 dBA
- Tasmania – 60 dBA for new construction
- US EPA – 63 dBA boundary of acceptability
- UK – remedial measures if noise exceeds 65 dBA within 15 years of construction and existing noise level < 65 dBA

Indicators - general

Noise does not feature as environmental effect in many of the overseas indicator frameworks, for example Bakkes et al (1994) provide a 'state-of-the-art' report for UNEP that fails to even mention noise; similarly the World Bank (1998) in 'Monitoring Environmental Progress ". A number of country indicator sets similarly ignore noise as an environmental effect.

However, most transport-oriented discussions of environmental effects include noise as a prominent impact. The reason why some discussions exclude noise appears to be

because its effects are transitory – noise is not a cumulative pollutant in the biosphere; and noise does not obviously involve issues of sustainability.

OECD

Noise is not currently part of the measured OECD indicator set for transport (OECD, 1998b) although one indicator is proposed - the population exposed to an outdoor daytime transport noise level greater than or equal to 65dB(A) Leq as an upper limit of acceptability (OECD, 1998a), and a level of 55 dBA as a desirable target, a level at which noise starts to become annoying.

OECD presents country estimates that show the percentage of the population exposed to 12 hour Leq levels of 55, 60, 65, 70 and 75 dBA, separately for road, rail and aircraft noise (only aircraft noise is reported for NZ and exposure is relatively low in comparison to other OECD countries).

US EPA

The US EPA suggests indicators of the percentage of population exposed to noise from road, rail and air which appears to be based on an OECD assessment in 1993, using 1990 data. No regular programme of indicator measurement appears to be in place.

Australia

Mandis Roberts (1998) has prepared an environmental strategy for Austroads that includes a proposed performance measure of the exposure of the community to traffic noise.

5.2.4 Current standards, guidelines and monitoring in NZ

National standards and legislation

There are a number of NZ standards covering noise measurement and management:

NZS 6801:1977 Methods of Measuring Noise

NZS 6802:1991 Assessment of Environmental Sound

NZS 6803:1984 The Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work

NZS 6805:1992 Airport Noise Management and Land Use Planning

NZS 6807:1994 Noise Management and Land Use Planning for Helicopter Landing Areas

The Traffic Regulations 1976 control emissions at source for new and in-service vehicles. In addition the operation of vehicles creating excessive noise is prohibited. The Transport Act 1962 allows road controlling authorities to restrict traffic from use of specific routes, one ground for which can be noise control.

Road traffic noise

For land transport, noise measurements are made on a case-by-case basis when a particular need arises, such as an application for, or appeal against, a resource consent or, by Councils in enforcement of noise controls in their District Plans or as otherwise provided in law. Councils are able to control noise generating activities using the zoning provisions of their Plans and noise level limits according to time of day, or day of week.

Councils will generally maintain files on noise complaints which provides a crude indicator of noise disturbance.

They do not in general monitor road traffic noise at selected sites, although the intention to do so is now being signalled through District Plan objectives in some cases.

Transit NZ (1994) has published guidelines for the management of traffic noise for state highway improvements (not existing roads). It recommends design levels of 55 to 70 dBA (24h Leq) depending on the ambient noise level for residential land use exposure. Design levels are intended to be no more than 12 to 13 dbA above ambient levels.

Airport noise

Noise in the vicinity of airports is the subject of NZS 6805, and is intended to be applicable to all airports and aerodromes. The standard uses the concept of an "airnoise boundary" within which only compatible land uses are intended to be sited. Noise is measure in day/night weighted sound exposure Ldn.

Noise exposure can be prevented or mitigated through the control provisions of District Plans, which limit development according to airport's existing and projected noise footprint.

The recommended noise control criteria in NZS 6805 are:

Within the airnoise boundary:

- > 65 dBA (Ldn)noise insulation to existing housing; new housing, schools, hospitals prohibited
- > 70 dBA (Ldn)consider purchasing existng homes and rezoning
- > 75 dBA (Ldn)no residential or other noise sensitive use

Outside the airnoise boundary:

- > 55 dBA (Ldn)new residential and other sensitive land uses prohibited unless permitted by the District Plan and subject to acoustic insulation

Railway Noise

No specific noise standards apply to railway noise

5.2.5 Gaps

There is a good understanding of how noise disturbs human activities and appropriate measurement methods of measuring noise exposure that can be correlated against annoyance.

There is, however, no framework for monitoring transport noise exposure of the population.

New road improvements requiring resource consent will generally include noise impact assessment, so that if these data were collated, they would provide a measure of the change in noise exposure due to new construction.

However, currently there is no mechanism for monitoring the more significant, and changing, noise exposure from traffic growth on existing roads.

A few surrogates for road traffic noise mitigation may be considered as response indicators, such as the erection of noise barriers or provision of low noise road surfacings.

5.2.6 Candidates for a NZ Indicator set

Types of indicator

The international review shows that where indicators for transport noise have been considered, the most appropriate form of monitoring is exposure to noise above various threshold levels for annoyance, acceptability or mandatory amelioration.

Indicators of noise generation by transport vehicles are not as closely related to effects. However, it may be useful to develop an index that monitors change in noise level in relation to traffic flow or transport volume to measure the changing noise performance of each mode.

Airport noise

For airport noise, the number of sites is limited and those with significant existing or potential noise impact on surrounding land use are mostly well defined with some degree of monitoring already in place. It should therefore be reasonably straightforward to construct an indicator such as that suggested by the OECD of population exposed to airport noise above threshold levels.

Other aircraft noise

Apart from airport noise, small fixed wing aircraft and helicopter operations over urban areas and in quiet rural environments impose noise disturbance. Apart from general monitoring of hours flown, or number of complaints received, neither of which would be very good indicators, it is difficult to envisage how a useful indicator for this effect could be developed.

Road traffic noise

For road transport, a credible methodology for sampling traffic noise exposure and expanding the sample to a national estimate would be required. A database of road lengths, traffic volumes and congestion would be needed, coupled with assessments of neighbouring land use, separation and population density. The National Traffic Database goes some way to providing this framework, but would probably need to be matched with GIS based mapping of land use and population from Statistics NZ. A good database coupled with traffic noise prediction models may allow the sampling to be reduced to a minimum sufficient to check modelling calibration.

As indoor noise is as important as external noise, a similar indicator could be proposed for indoor noise at the property façade.

A set of indicator sites could also be proposed to measure changes in noise generation of the road vehicle fleet. In this case a comparison would be made between traffic noise as measured and as predicted by an appropriate mathematical modelling method. The aim of such an index would be to

track changes over time in the noise generation of the vehicle fleet. The sample sites could possibly be common to both indexes.

A further index could be proposed to measure the progress of the road controlling authorities in providing low noise road surfaces. This could simply be the total percentage of road by surface texture category, divided into urban and rural conditions and by traffic volume category. A very similar indicator is already in use by Transit NZ for road roughness.

Proposed indicators

Proposed indicator TNR1

- residential population exposed to outside road traffic noise levels greater than 55, 60, 65 and 70 dBA (24h Leq) at the front property boundary; numbers and percentage of total population.

Proposed indicator TNR2

- residential population exposed to indoor road traffic noise levels greater than 45, 50, 55 and 60 dBA (24h Leq) at the property facade; numbers and percentage of total population.

Proposed indicator TNR3

- change in vehicle fleet noise generation; ratio of measured to modelled traffic noise normalised for traffic volume, heavy vehicle component and road surface effects, averaged over a set of indicator sites.

Proposed indicator TNR4

- percentage of road system by road surface texture, subdivided into urban/rural and by traffic volume category.

Rail Transport Noise

None proposed at this point

Air Transport Noise

Proposed indicator TNA1

- Number of private dwellings and percentage of total private dwellings within 55, 65, 70 and 75 dBA (Ldn) airport noise contours at selected NZ airports.

Port noise

None proposed at this point.

5.2.7 Initial evaluation

Table 5.6 Transport noise - candidate indicators

Evaluation criteria	Candidate Indicators					
	TNR1	TNR2	TNR3	TNR4	TNA1	
Relevance	✋✋✋	✋✋✋	✋✋	✋✋	✋✋✋	
Analytical validitiy	✋✋	✋✋	✋	✋✋✋	✋✋✋	
Cost effectiveness	✋✋	✋	✋✋	✋✋✋	✋✋	
Ease of understanding	✋✋✋	✋✋	✋	✋✋✋	✋✋✋	
Overall Assessment	✋✋✋	✋✋	✋	✋✋✋	✋✋✋	
Stage indicator	**2**	**2**	**2**	**1**	**1**	

5.2.8 Monitoring

Responsibility

Road controlling authorities and airport companies

Location and frequency of monitoring

Annual measurement at indicator sites

Some noise indicators relating to Maori were included for discussion in the technical paper on transport indicators.

Proposed indicator TWT10

Stage	Indicator	Unit	Type
2	Number of marae and papakainga and percentage of total exposed to greater than a prescribed dBA Leq road traffic noise level at the property frontage	• total number of marae and papakainga • number of marae and papakainga per year • percentage as proportion of total	State

Proposed indicator TWT11

Stage	Indicator	Unit	Type
2	Number of marae and papakainga within prescribed noise contours at NZ airports	• total number of marae and papakainga • number of marae and papakainga per year • percentage as proportion of total	State

Appendix 3 Ministry for the Environment indicator selection template

Environmental Performance Indicators (EPI) Programme:
Part 1 - Indicator Development

EPI PROGRAMME STRAND: Urban Amenity

ISSUE:

MAIN POLICY GOALS: **Gl)**
G2)
G3)

POLICY GAPS:

POLICY / ISSUE BASED 'PRESSURE -STATE - RESPONSE' INDICATOR FRAMEWORK

P-S-R FRAMEWORK	PRESSURE	STATE (CONDITION)	RESPONSE
Identify the 'pressure' 'state' and 'response' components of the issue	*What causes the issue:*	*Specific part of the environment affected by the issue:*	*Policy/management actions for the issue (existing/current):*

POLICY/ ISSUE BASED 'PRESSURE-STATE-RESPONSE' INDICATOR FRAMEWORK continued:

POTENTIAL INDICATORS	**PRESSURE**	**STATE (CONDITION)**	**RESPONSE**
Measures to best represent pressures/conditions/responses above	*What do we need to measure to track pressures:* a) b) c) d) e)	*What do we need to measure to track condition:* a) b) c) d) e)	*What do we need to measure to track response:* a) b) c) d) e)
Main reasons for choosing above measures / what will the measures tell us: *(a), (b) etc. correspond to a), b), c) … above*	a) b) c) d) e)	a) b) c) d) e)	a) b) c) d) e)
Complete Part 2 : Assessment of potential indicators against indicator criteria			
Prioritise and rank assessed 'potential' indicators: *(based on Part 2: Assessment of potential indicators against indicator criteria)*	1) 2) 3) 4)	1) 2) 3) 4)	1) 2) 3) 4)

Environmental Performance Indicators (EPI) Programme:
Part 2 - Assessing Potential Indicators Against Indicator Criteria

EPI PROGRAMME STRAND:

ISSUE:

NAME POTENTIAL INDICATORS	CRITERIA							
	Policy relevant	Measurable	Analytically valid	Cost effective	Understand able			

Environmental Performance Indicators (EPI) Programme:
Part 3 - 'Nuts and Bolts' for High Priority Indicators

Potential indicator:

What degree of change NEEDS to be detected (threshold/target):

Existing monitoring:

Techniques to use for monitoring *(note methods),*

What degree of change CAN be detected:

Getting a national picture: Scale and geographical extent for monitoring *(note scale and extent of area required for monitoring):*

How frequently to monitor:

Who could monitor:

How/ to whom should information be reported*: (technical/executive summary):*

Links to other indicators (*use for range of situations*)

Recommended:

Stage 1 indicator *Stage 2 indicator* *Discontinue*

Future work required:

Date:

Environmental Performance Indicators: Policy / Issue Based 'Pressure-State-Response' Indicator Framework - instructions

Part 1: Indicator Development:

a) Topic - describes the theme/ subject area for indicator development
b) Issue: relates to a matter that needs to be addressed through State of the Environment monitoring and reporting. Pertains to a resource or environmental problem. Usually includes the cause of the problem.
c) Policy Goals - directly state the policy provisions from statutes and plans relevant to the topic and issue
d) Condensed Goal(s) - summarise policy goals into one general 'focusing' statement
e) Policy Gaps - summarise gaps in policy provisions relevant to the topic and issue
f) Identify the 'pressure', 'state, and 'response' components of the issue, i.e:
    - Pressure: identify what causes the issue (e.g. which natural processes/ human activities)
    - State: identify the specific part of the environment affected by the issue (name the critical components of the environment where the issue manifests itself, e.g. species, habitats, processes, ecosystems etc.)
    - Response: identify and note existing/ current policy provisions or management actions that deal with the issue (controls, regulations, planning, recovery/ restoration programmes etc.)
g) Identify the measures (potential indicators) that best represent the pressure, state and response components of the issue from e):
    - what should be measured to track the pressure, state (environmental condition) or response (e.g. identify and note the type or extent of pressure(s) or state(s); the number or extent of actions that deal with the issue. Include a target or threshold value as appropriate).
h) Identify the main reasons for choosing the measures (potential indicators) in f), e.g the measure:
    - represents the issue
    - is sensitive to change
    - has methods already established
    - is currently monitored.

Part 2: Assessment and Prioritising of Potential Indicators against Indicator Criteria:

a) List the potential indicators from Part 1, f)
b) Assess the potential indicators against the indicator criteria provided by assigning a score of 1 (poor) to 5 (excellent) for each criterion and potential indicator. For example, potential indicator X is policy relevant, so it gets a score of 5 under this criterion heading. Indicator Y is not easily understood, so it gets a score of 1. Add criterion headings scores - total criterion scores in the far right 'total score' column

c) Note priority status (i.e. high, medium or low) of potential indicators based on the total assessment scores from Part 2, b.

Part 3: Nuts and Bolts for High Priority Indicators

Fill in the 'Part 3' information sheet for each priority indicator. Use a new information sheet for each potential indicator. The headings on the sheet are designed to gather information about how the indicator is, would/could be monitored and reported, and by whom, e.g. data capture, information management and reporting:

- monitoring methods and frameworks, areas to monitor (spatial basis/extent), frequency of monitoring (temporal basis/ sampling programmes)
- indicator thresholds or target values (e.g. noise standards)
- reporting levels (e.g. technical, executive summary, State of the Environment).