ICMP POLICY EFFECTIVENESS MONITORING TO MEET LGA AND RMA REQUIREMENTS

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ABSTRACT

This paper builds on the thinking about policy effectiveness monitoring presented to last year's Rotorua conference as a result of work on the Landcare Research / University of Auckland low impact urban design and development (LIUDD) programme.

The paper reviews New Zealand-based research that could enable the contribution of LIUDD to levels of service, quality of life, resilience and quadruple bottom line sustainability to be better measured by indicators that meet both Resource Management and Local Government Act requirements.

LIUDD often happens at a subdivision scale, but raises broader monitoring issues. This paper therefore takes the example of integrated catchment management plans, or ICMPs (many being prepared in New Zealand at present), and proposes for critique an integrated monitoring framework that meets the monitoring requirements of both Acts.

Based on measuring outputs, uptake and outcomes of interventions to documents such as district plans and asset management plans, the paper presents a worked example of a monitoring framework, showing how it needs to pass muster in terms of logical rigour and cost-effectiveness while capturing the environmental, economic, cultural and social changes arising from LIUDD developments within an ICM planning framework.

KEY WORDS

Low impact urban design and development (LIUDD), monitoring, policy effectiveness evaluation, integrated catchment management plans (ICMPs), Resource Management Act (RMA), Local Government Act (LGA).

PRESENTER PROFILE

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1 INTRODUCTION

There is increasing interest in evaluating the cost- and environmental- effectiveness of policy and management interventions and this international trend is reflected in recent New Zealand research and public policy (Feeney and Greenaway, 2006).

This paper overviews New Zealand-based research that could enable the contribution of LIUDD to levels of service, quality of life, resilience and quadruple bottom line sustainability to be better measured in a way that meets both Resource Management and Local Government Act requirements for environmental and policy effectiveness monitoring.

However, because LIUDD often happens at a subdivision scale, but raises broader monitoring issues, this paper puts forward for debate a worked example for an ICMP.

The information on which this paper is based is widely available: the paper's main purpose is to commend this valuable material to catchment and water managers in order to promote a more integrated and cost-effective approach to monitoring the environmental (and other) outcomes of integrated catchment management plans, especially those adopting LIUDD measures.

2 REQUIREMENTS TO MONITOR

The Resource Management Act 1991 and the Local Government Act 2002 together define the requirements for monitoring relevant to LIUDD and ICMPs in New Zealand. Together, these Acts effectively require quadruple bottom line (QBL) monitoring and reporting on social, economic, environmental, and cultural well-being of their communities.

The requirements fall into several broad camps, including the requirement to:

- monitor the state of the environment and social, cultural and economic indicators;
- monitor plan effectiveness, including monitoring the effectiveness of other tools including delegations, transfers and the exercise of resource consents;
- take appropriate action as required in light of the findings of the above;
- report on progress towards the environmental, social, cultural and economic outcomes agreed with the community during the process of preparing a wide range of plans.

2.1 THE RESOURCE MANAGEMENT ACT

Under the RMA, policy statements and regional and district plans must or may state, among other things, some or all of the following:

- issues that the plan seeks to address;
- objectives for the region or district;
- policies to implement the objectives;
- rules (if any) and other methods to implement the policies;
- principal reasons for adopting the policies and methods;
- environmental results expected from the policies and methods; and
- procedures for monitoring the efficiency and effectiveness of the policies and methods.

Section 35 of the RMA also imposes a duty for councils to monitor, for example:

"(2) Every local authority shall monitor—

(a) The state of the whole or any part of the environment of its region or district to the extent that is appropriate to enable the local authority to effectively carry out its functions under this Act; and

(b) the efficiency and effectiveness of policies, rules, or other methods in its policy statement or its plan; and

(c) the exercise of any functions, powers, or duties delegated or transferred by it; and

(d) the exercise of the resource consents that have effect in its region or district, as the case may be; and

(e) in the case of a regional council, the exercise of a recognised customary activity in its region, including any controls imposed under Schedule 12 on that activity,—

and take appropriate action (having regard to the methods available to it under this Act)."

This sets out a clear requirement for monitoring both the state of the environment and the efficiency and effectiveness of policies and methods for its management.

2.2 THE LOCAL GOVERNMENT ACT

Monitoring is also a focus of LTCCPs (long-term council community plans), which according to Section 93 and Schedule 10 of the Local Government Act, must describe:

- community outcomes for the local authority's district or region and how these have been identified;
- how the local authority will contribute to furthering community outcomes;
- how the community outcomes relate to other key strategic planning documents or processes;
- how the local authority will work with other agencies to further community outcomes;
- what measures will be used to assess progress towards the achievement of community outcomes; and
- how the local authority will monitor and, not less than once in every 3 years, report on the community's progress towards achieving community outcomes.

The focus here is on outcomes –but the reporting on "measures of progress" towards them implies a need to assess the effectiveness of the methods adopted to achieve them.

3 MONITORING IN NEW ZEALAND

3.1 WHO MONITORS WHAT?

Both regional and territorial councils must monitor similar but not identical things under the Resource Management and Local Government Acts. However, under the Resource Management Act, their different functions and duties mean they must also monitor different things. For example, the functions of councils include:

- regional councils: integrated management of the natural and physical resources of the region (section 30 lists a large number of environmental aspects and impacts); and
- territorial councils: integrated management of the effects of the use, development, or protection of land and associated natural and physical resources of the district (section 31 lists a small subset of the same environmental aspects and impacts and also adds subdivision).

Ideally, the councils' respective monitoring programmes should complement each other so as to build a coherent body of information capable of identifying causal links between land use and its environmental effects – and hence the effectiveness of various controls to avoid, remedy or mitigate adverse effects.

In practice, however, the monitoring under the Resource Management Act vs Local Government Act; and by regional councils vs their constituent territorial local authorities has been highly variable, as shown next.

3.2 HOW WELL ARE WE DOING OUR MONITORING?

Very useful overviews of how well councils are preparing plans and doing environmental, QBL and policy effectiveness monitoring are provided by the Quality of Life surveys and the PUCM research programme, which are discussed below.

3.2.1 QUALITY OF LIFE SURVEYS

The Quality of Life Project was established in 1999 to provide social, economic and environmental indicators of quality of life in New Zealand's six largest cities. It was initiated in response to growing pressures on urban communities, concern about the impacts of urbanisation and the effects of this on the wellbeing of residents. The Quality of Life Project has since expanded to include twelve territorial authorities.

The project's purpose is "To provide information to decision-makers to improve the quality of life in major New Zealand urban areas." Its most recent full report was in 2003. Some of its most useful findings have highlighted difficulties with monitoring, indicators, outcome measurement, sustainability and data management, including (2003):

- the importance of ongoing monitoring;
- lack of co-ordination of environmental monitoring between councils;
- constraints to good analysis posed by inconsistent or incompatible data sets and lack of data on many key issues including soil quality, biodiversity, beach water quality, open space and building consents;
- the need to align social, economic, cultural and environmental indicators; and
- the need for a collective effort to ensure the availability of data to support comparable monitoring and decision-making.

3.2.2 PUCM RESEARCH PROGRAMME

Some of the findings of the research programme PUCM (planning under co-operative mandates) on the quality of the preparation and implementation of plans produced under the RMA were summarised in Feeney and Greenaway (2006). More recently the PUCM team has also analysed LTCCPs produced under the LGA.

The team has identified eight ingredients of a good plan (Ericksen et al, 2003a). As well as being well-organised and presented for ease of use by lay and professional alike, a good plan demonstrates:

- appropriate interpretation of the legal mandate for the local area;
- clearly stated purpose and outcomes;
- clear identification of issues;
- well-developed fact base;
- internal consistency (objectives clearly linked to issues; polices to objectives; methods to policies; anticipated results, rules and indicators to all the above);
- integration with other plans and policy instruments; and
- monitoring.

Monitoring provisions and responsibilities need to be included in plans so councils can assess progress towards sustainability: according to Ericksen et al (ibid), this involves:

- referring to a monitoring strategy or framework for environmental monitoring, e.g.:
  - overviewing monitoring responsibilities and a broad strategy for undertaking monitoring;
  - referring to detailed monitoring plans or programmes which sit outside the plan;
  - identifying data and information sources for monitoring and linking to specific indicators;
- including provisions for monitoring the performance of the plan , e.g.:
  - identifying specific indicators and linking to the relevant environmental results, such as number of conservation covenants for indigenous vegetation protection;
  - highlighting key areas or priorities for improving performance and collecting data;

- outlining the process of monitoring and the feedback loop to any necessary policy changes;

- integrating with other organisations with monitoring or information provision responsibilities:
  - referring to other agencies and their monitoring programmes and explaining how information will be shared; and
  - understanding other agencies' monitoring direction and forward planning and co-ordinating best use of resources.

Based on these criteria for monitoring, the regional policy statements analysed (ibid) scored on a 1-10 scale an average of just over 2/10 and district plans just under 4/10.

The overall conclusion is therefore that we are not yet doing either state of the environment or plan effectiveness monitoring very well.

4 INTEGRATED MONITORING

Section 93 and Schedule 10 of the LGA require councils to consider how their community outcomes relate to other key strategic planning documents or processes and how they will work with other agencies to further these – a clear steer towards integrated planning, implementation and monitoring. Key actions of other plans and policy instruments produced internally and externally therefore need to be integrated with every council plan: according to Ericksen et al (ibid), this involves:

- clearly explaining the relationship with other policies or policy instruments relevant to the plan to ensure co-ordinated and consistent management of resources, e.g.:
  - ensuring the plan is not inconsistent with relevant regional policy statement(s) and the New Zealand Coastal Policy Statement;
  - explaining the relationship between the plan and those plans produced at different levels of government, i.e. district, regional and national;
- clearly explaining cross-boundary issues and how integration will be promoted, e.g.:
  - explaining the difference between regional and territorial authority functions;
  - identifying significant cross-boundary issues in particular areas and stating how they are to be managed and how the plan promotes integrated management of the resources;
- avoiding duplication of policy instruments, e.g.:
  - understanding how effects are managed by regional and territorial authorities, such as for earthworks and water quality, so that rules and other methods in district and regional plans are complementary;
- adding value to other policy instruments to meet similar goals, e.g.:
  - identifying methods and strategies undertaken by other agencies e.g. for biodiversity or sustainable development and identifying how they can be reinforced or complemented; and
  - recognising other resource management plans, such as iwi management plans or flood management plans [or ICMPs] and explaining the plan's integration with them.

This summary clearly shows the need for integration of monitoring under different plans produced within a council (under both the LGA and RMA, and where relevant, other legislation such as the Reserves Act); and by other regional and territorial councils and other agencies. These two aspects are discussed next.

4.1 INTEGRATING RMA AND LGA MONITORING

The LGA contains innovative provisions for long-term council community planning that aim to (Borrie and Memon, 2005):

- promote greater engagement between the civil sector and the local and central government sectors (a participatory democracy objective);

- improve co-ordination and encourage partnerships between central and local government agencies, the voluntary sector and other service providers in responding to community needs (a "whole of government" objective); and
- promote greater corporate discipline in allocating financial resources within the local government sector (a fiscal objective).

Territorial (city, district and unitary) authorities and regional councils now have similar responsibilities and councils of neighbouring local authorities are expected to work in co-operation with each other, with central government departments, other service providers, Māori and the community to respond to community wellbeing outcomes.

The PUCM team (ibid) is now researching how local, regional and central government and the civil sector perceive and exercise their respective roles in LTCCP plan-making and implementation. Preliminary findings show some improvement compared with the findings of its earlier research into plans made under the RMA, but has also identified many of the same issues, largely arising from lack of resourcing. A key feature of feedback from councils surveyed was that the relationship between LTCCPs as strategic planning instruments and other statutory planning instruments, such as RMA planning instruments, lacks clarity, while little progress has been made in reaching agreement as to how the LTCCP process relates to existing related statutory and non-statutory plans.

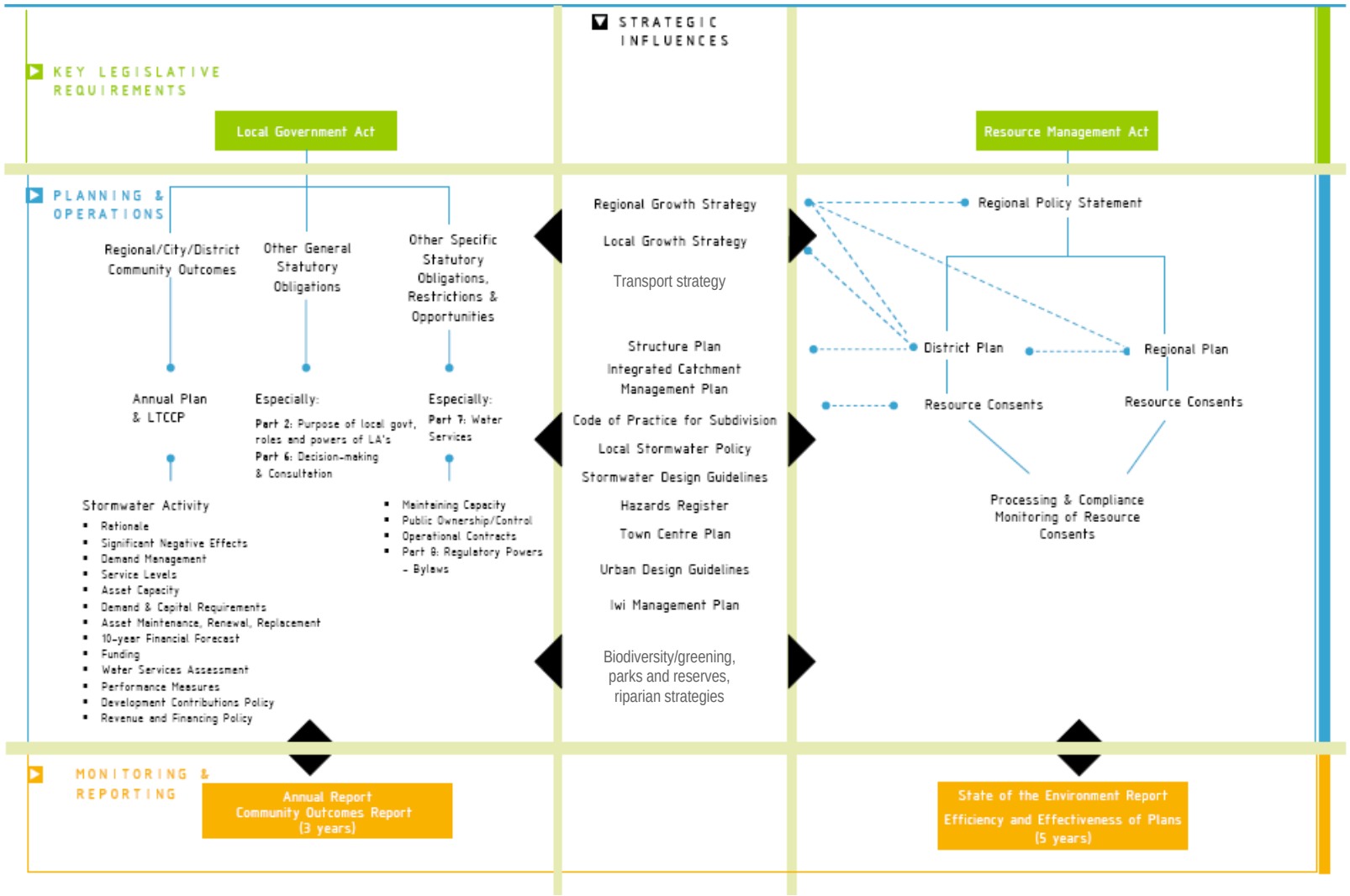
Figure 1 shows the policy and institutional framework for planning, operating, monitoring and reporting opportunities for influencing and implementing the stormwater aspects of LIUDD. It reveals considerable overlap between the tools used under the LGA and RMA.

For example, an ICMP (a non-statutory RMA plan) both influences and is influenced by the district plan (a statutory RMA plan), which must give effect to/consider/not be inconsistent with statutory RMA regional and national instruments. The ICMP is also a key supporting document for network consent applications under the RMA, and hence also exerts a major influence on the stormwater activity (asset management) plan. The stormwater activity plan is a non-statutory LGA plan that, among other things, ensures the management of the asset and its effects give effect to the ICMP, network consents and district plan under the RMA. Like the other plans shown on each side of the diagram, it is subject to the strategic influences of the many plans, guidelines and strategies shown in the centre.

This proliferation of instruments and agencies makes it very difficult for already over-extended council staff to ensure that their councils' respective monitoring programmes "complement each other so as to build a coherent body of information capable of identifying causal links between land use and its environmental effects – and hence the effectiveness of various controls to avoid, remedy or mitigate adverse effects", as identified in section 3.1 above. How realistic is it then to promote integrated monitoring?

Figure 1: *The policy and institutional framework for planning, operating, monitoring and reporting opportunities for influencing and implementing the stormwater aspects of LIUDD*

Source: Paula Hunter, Montgomery Watson Harza, 2006. Prepared for the University of Auckland/Landcare Research LIUDD programme



While the monitoring requirements of territorial vs regional councils under the LGA and RMA may appear to some require discrete data sets, Figure 1 shows that a strategic overview of the four community wellbeings they are all required to promote could potentially generate some net cost-savings, and also yield a more integrated set of state of the environment and plan effectiveness data. This potential is briefly overviewed next.

4.2 INTEGRATING INTER-AGENCY MONITORING

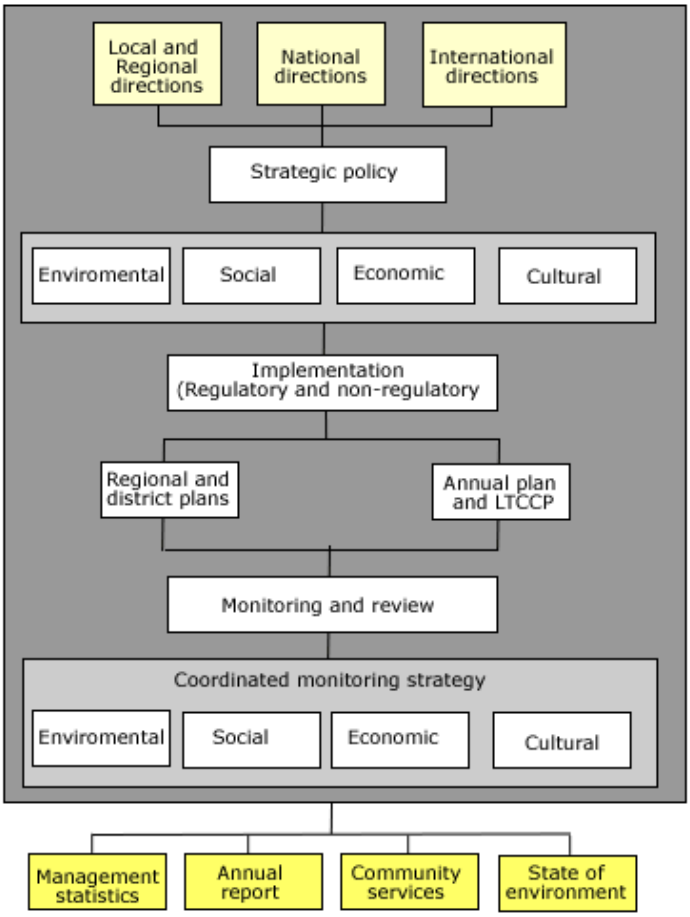
The observations in this subsection are drawn from the Quality Planning website.

The RMA and LGA provide the basis for monitoring and signal that an integrated approach is required: councils need to link their RMA state of the environment, policy and plan effectiveness, resource consent, compliance, complaint, delegations and transfers monitoring are linked to each other and to the broader monitoring being under taken as part of the long term council community planning process.

Integrated monitoring makes the best use of existing information and collection systems, saving valuable time and money. An important first step in integrating monitoring is to identify connections, possibly through preparation of a monitoring strategy. Because there are connections between the various roles and responsibilities of councils, information from one area of council activity will often also be relevant for monitoring council policies and activities and those of other agencies (see Figure 2).

Figure 2: Integrated monitoring and reporting by regional and territorial councils under the RMA and LGA

Source: Quality Planning website http://www.qualityplanning.org.nz/monitoring/index.php



The diagram shows the span of integrated monitoring and reporting by local bodies. Local and regional policy directions, along with national and international directions, influence strategic policy, which takes into account environmental, social, economic and cultural factors. The strategic policy is implemented via regulatory and non-regulatory mechanisms, including regional and district plans, annual plans and long term council community plans. The implementation of policy is then monitored and reviewed via a coordinated monitoring strategy, which covers the spectrum of environmental, social, economic and cultural indicators. The monitoring conducted feeds into management statistics, annual reports, the implementation of community services and the perception of the state of the environment.

There are links between baseline monitoring and the monitoring of impacts and systems. Integration of the monitoring of processes such as resource consents, outputs, outcomes and impacts is also important and is addressed in the website's guidance notes.

There are also links between state of the environment, policy and plan, resource consent, compliance and complaint monitoring. Integration is also needed between RMA policy implementation and strategic policy outcomes such as environmental, social/community, economic and cultural. This sets up a significant link to the requirements under the LGA. Through a coordinated approach to monitoring, information systems can be set up or amended so the right information is collected at the right time. This also helps ensure that consistent and useful information is provided for decision making to meet a number of legislative requirements.

4.2.1 THE INTEGRATED MONITORING MANUAL

Integrated monitoring has been promoted by many agencies including the Ministry for the Environment, notably in its 1996 guide and in the integrated monitoring manual for practitioners (Beanland and Huser, 1999). Beanland and Huser note (page i) that an approach that includes other relevant agencies is required to reap the full benefits of integrated monitoring, including cost-effectiveness.

The authors identify similar problems with data scope and quality as those later identified by the Quality of Life project in 2003, and note that working together enables agencies to identify their information needs, review existing data, programmes and gaps, identify opportunities for collaboration and develop indicators and new monitoring programmes together. This manual provides an excellent example of an approach to monitoring that would overcome many of the problems highlighted in this paper.

4.2.2 REGIONAL MONITORING FORUMS

Partnerships between agencies have proved a valuable way of making progress with monitoring. When groups work collaboratively the sharing of data, information and ideas can occur. There are some active regional information and monitoring forums in the Northland, Bay of Plenty and Waikato regions: they have developed in response to the need for an integrated and strategic approach to monitoring assessment and reporting across organisations. They enable access to information, sharing of ideas on emerging good practice and integration within regions. Some of their experience relevant to LIUDD and ICMPs is summarised below (http://www.qualityplanning.org.nz/monitoring/region-info.php).

WAIKATO INFORMATION FORUM (WINFO)

Experience in the Waikato since setting up this forum in 1996 has also been positive, though with the large number of councils it was found that working with a smaller number of local authorities on specific issues can produce outputs in a more timely fashion. Having two districts partly in another region also poses some issues for indicator selection and data management.

NORTHLAND MONITORING FORUM

Set up in 2002 to exchange and share data, knowledge and expertise in information and data management; advance the measurement of environmental performance indicators; (including social & economic indicators) and enhance state of the environment reporting in Northland, this forum has been a useful forum for discussing and reviewing monitoring initiatives.

BAY OF PLENTY: ISHAREBOP

Established in 2002, forum participants include Environment Bay of Plenty; Western Bay, Tauranga, Whakatane, Opotiki, Kawerau, Rotorua and Taupo district councils; Bay of Plenty District Health Board; Ministry for the Environment and other invited members. The forum purpose is to exchange and sharing of data, knowledge and expertise in information and data management; advance the measurement of environmental performance indicators; enhance state of the environment reporting in the Bay of Plenty and to identify and resolve data acquisition, information technology and management issues. The group meets 4-montly and initial progress has been good, showing the forum is useful for discussing and reviewing monitoring initiatives.

A Memorandum of Understanding details the mutual benefits to be gained and member responsibilities and summarises measured parameters, identifying which agencies collect information for each parameter and whether the indicators are confirmed, supported and measured by each agency.

Indicators relevant to ICMPs include:

- walkways, reserves and natural heritage (for the latter, indicators include area of protected natural areas; composition of protected natural areas; % of water body margins protected and indexed landscape assessment);
- residential development: indicators include lots with access to Council services; infill subdivision consents granted and lots created pa; value of development contributions collected pa; council spending on urban service upgrades; dwellings per hectare; median area (m2) of sections within the defined urban fence and others;
- natural hazards, including a number of indicators related to flooding;
- riparian management;
- works and network utilities, including indicators of length, number and state of council infrastructure; council spending on maintenance and upgrades or urban services; no and value of development contributions collected;
- stormwater: length of district stormwater piping; quantity of stormwater discharged; quality of stormwater discharged; % increase in quantity of stormwater discharged; % of customers satisfied with district's stormwater system; % compliance with stormwater not entering residential buildings each year;
- sewage: quantity of sewage treated; quality of sewage discharge; % of customers satisfied with district's public toilets; % of customers satisfied with district's sewerage system; no of blockages and breakages; no of emergency discharges (wastewater) or overflows; no of reported pan overflows; % compliance with wastewater resource consent; % compliance with quality of reclaimed water; no of accidents caused by lack of maintenance each year; length of district waste disposal pipes
- consents, monitoring and enforcement; and
- state of the environment indicators for air, streams and rivers, lakes, groundwater, rainfall, coast/marine and land resources.

4.3 INTEGRATED MONITORING INDICATOR SELECTION

Selection of indicators in any plan or programme is an integral part of its development, often involving an iterative process to ensure that objectives are framed so as to be measurable, and that indicators are selected for relevance to the objective. Thinking about data collection, monitoring and policy effectiveness evaluation must start at the very inception of plan development.

Developing an integrated inter-agency monitoring programme under the LGA and RMA will need to be a team process in order to enable the contribution of LIUDD to levels of service, quality of life, resilience and quadruple bottom line sustainability to be better measured by indicators that meet the requirements of both Acts.

Considerable work is being done on indicators by many players in New Zealand at present and this paper does not traverse that ground. Examples include the Quality of Life Project, the LGNZ local government monitoring and reporting team, the Sustainable Development Programme of Action and reviews such as the Review of Official Statistics, the Social Statistics Strategy and the Environmental Statistics Strategy.

However, the following environmental and social indicators were proposed (Bishop, 2006) to more fully quantify any benefits from an LIUDD development:

- chemical and biological receiving water quality measures, i.e. suspended solids, pH, hydrocarbons, heavy metals, pathogens, nutrients and macro-invertebrates;
- model total and peak stormwater runoff by storm frequency;
- type and coverage of riparian vegetation;
- recreational and other uses made of water features and systems;
- degree of retention of natural landforms, patterns and processes;
- occurrence of erosion/sediment problems;
- occurrence of any health and safety issues, mosquitoes breeding areas, drownings, personal or property crime.
- maximum, minimum and average section price;
- proportion of public to private space;
- number of trips and type of transport modes commonly used;
- percentage of water, stormwater and greywater reused by households;
- infrastructure maintenance and management requirements; and
- resident satisfaction surveys.

This leads the discussion into two other key areas of interest for LIUDD and ICMPs: QBL and decoupling indicators.

4.3.1 QBL INDICATORS

With the growing dialogue on sustainability in New Zealand, QBL is coming increasingly to the fore and has been extensively researched elsewhere (e.g. Taylor, 2004). When QBL becomes fully interwoven into all aspects of decision-making, as envisaged by the LGA, engineers, planners and related professionals from both regional and territorial councils involved with LIUDD and ICMPs will, together with their local communities, be asking 'How will a QBL approach influence how I frame my distric/catchment management plan, implement it and monitor its outcomes and effectiveness?' As an intermediate step towards meeting the QBL outcomes of the LGA, practitioners working in a climate of resource scarcity can ask instead, 'How will my actions affect the QBL outcomes for which

others are responsible?' This will help them prepare an implementation plan that is capable of being monitored as part of the process of developing measurable management objectives (Trowsdale, 2007).

"For example, a QBL plan of integrated catchment management might include tasks such as community consultation, setting up a database of local businesses, reporting cultural influences as well as environmental tasks. Taking a QBL planning approach can make the programme costly. And so QBL planning is often done at the high level to aid connection with other programmes. This is aptly demonstrated in the Project Twin Streams evaluation framework (Trotman and Wood, 2006). To make QBL planning useful, the tasks level is often divided into different programs. This makes tasks achievable within the constraints of individual budgets, but makes tasks consistent towards a common vision. QBL planning can promote an holistic and consistent approach. Alternatively, QBL can be used as a reporting tool. In this case the task level is focussed on a single bottom line. QBL are considered at the reporting stage. This might mean that only environmental tasks are done but that they are reported in a number of ways so as to address multi-bottom-lines. An ICMP task might be to map stormwater treatment devices. The QBL reporting approach might recommend communicating this map output to all stakeholders, such as the local community and local businesses to better inform the local community of what is happening with this programme" (ibid).

4.3.2 DECOUPLING INDICATORS

Statistics New Zealand (2002) and the Ministry of Economic Development (Chapman et al, 2003) have been considering decoupling indicators. According to the OECD (2001), the term decoupling refers to breaking the link between "environmental bads" and "economic goods:" decoupling environmental pressures from economic growth is one of the main objectives of the OECD Environmental Strategy for the First Decade of the 21st Century, adopted by OECD Environment Ministers in 2001. Decoupling indicators measure changes over time by using decoupling indicators that have an environmental pressure variable for numerator and an economic variable as denominator. Sometimes, the denominator or driving force may be population growth or some other variable.

Some decoupling indicators that could indicate whether or not LIUDD and other measures in an ICMP were generating the anticipated environmental and other results could be:

- ratio of impervious surface to length of natural stream;
- ratio of piped to natural stormwater drainage density (green vs grey stormwater infrastructure);
- roading density v stream drainage density;
- distributed services (energy, stormwater, water supply, wastewater) as a proportion of total reticulated services;
- percent of assets greened as part of renewal (eg streams daylighted instead of aging stormwater pipes being replaced);
- connectedness of areas of native vegetation as well as/in proportion to areal extent;
- volume vs area of bulk earthworks; and
- ratio of pre- to post- development stream channel width.

Note that some of the indicators collected by the Bay of Plenty Regional Monitoring Forum could possibly be combined to produce useful decoupling indicators, for example length of riparian planting vs length of piped streams. Such indicators could also form the basis for broader quality of life or social/cultural wellbeing indicators.

5 A WORKED EXAMPLE: MONITORING ICMP OUTCOMES

A monitoring framework will necessarily be very catchment-specific, reflecting the local and regional agencies, plans and strategies. This discussion therefore focuses more on a process for setting up a monitoring framework and conducting monitoring. The process draws on Beanland and Huser (1999) and Ericksen et al (2003b), and these documents should be referred to by those wanting more information. The key stages are:

- set up project team:
    - raise internal awareness and gain support;
    - enlist internal and external members and define roles and responsibilities;
    - identify project scope, goals and outputs;
    - find a project sponsor and gain budget;
    - delineate the catchment;
    - prepare detailed project specifications and call for tenders;
    - form a working project team with internal stakeholders and external providers;
- identify strategic objectives and outcomes:
    - review relevant internal and external documents prepared under both the LGA and RMA and the parts of council/other agencies responsible for them;
    - identify strategic guiding objectives/required high level outcomes relevant to catchment management;
- collate information and identify issues:
    - gather catchment, growth and other relevant data;
    - identify catchment management issues;
    - select priority issues for action;
    - define linkages between every issue and all strategic objectives;
- identify operational objectives and tasks:
    - set objectives – SMARTER (specific, measurable, affordable, realistic, time-based, endorsed and relevant) objectives that define desired QBL outcomes / anticipated environmental results and reflect institutional capacity;
    - formulate policies (optional) to guide decision-making based on both objectives;
    - define methods/tasks to achieve operational objectives;
    - show each operational objective will help meet the relevant strategic objective
    - identify responsibilities and budgets for methods;
- develop indicators:
    - develop and agree on an integrated inter-agency monitoring framework that meets the objectives of both the LGA and RMA;
    - test assumptions about causal linkages and relationships among issues, strategic and operational objectives, outcomes and methods;
    - identify data/information needs;
    - identify and review existing data/information;
    - identify indicators that reflect the strategic and operational objectives and reframe objectives as required;
    - undertake a rapid evaluation of the indicators to ensure they are relevant to all previous steps, analytically valid, cost-effective, simple and informative;
- design and implement monitoring programme:
    - prepare an integrated monitoring plan for potential indicators and evaluate and confirm selected indicators using best practice;
    - prepare indicator specification sheets (e.g. frequency, location of sampling);
    - confirm tasks, timelines, responsibilities, budgets, data review and assessment of state of the environment and policy effectiveness;
- check plan logic and quality:
    - use PUCM criteria (Ericksen et al, 2003b) to test the plan's internal logic;
    - verify tasks, tasks, timelines, responsibilities, budgets and internal and external communication.

A model that may be helpful for catchment managers identify causal linkages in their environmental and policy effectiveness monitoring is that proposed by the ICO (1997), which classifies programme monitoring and evaluation data into three categories:

- output: what managers do to promote LIUDD;
- uptake: what regulatory, business and community audiences do in response; and
- outcome: what environmental, social, cultural and economic changes result.

This model has successfully been applied to a low impact design project (Bishop, 2006), showing that it enabled the application of principles to the design phase and facilitated the development of indicators of environmental, social, cultural and economic outcomes as well as of programme effectiveness. It was also considered that it would facilitate replication by and comparison of data from similar studies.

Following the principles set out in this and the earlier paper (Feeney and Greenaway, 2006) will promote the development of ICMPs that have robust internal logic, are cost-effective and capture the environmental, economic, cultural and social changes arising from LIUDD developments.

6 CONCLUSIONS

Despite the benefits of good monitoring, significant barriers still remain to implementation of integrated inter-agency monitoring under the LGA and RMA. Benefits and barriers are summarised below by way of conclusion, together with information on how councils can access support to overcome the barriers identified.

6.1 GOOD MONITORING: BENEFITS

The benefits of good monitoring include (Quality Planning website):

- early warning of issues or problems before they become serious, costly or irreversible;
- action prompts when monitoring shows that current approaches are not working;
- better understanding of the key pressures on the environment, the condition or state of the environment, leading to better responses and results;
- better public participation in resource management;
- better policies, better formulation of policies and rules, and clearer targets;
- more focused rules and standards, more targeted consent conditions and more efficient consent processing as a result of better understanding of the environment;
- clearer accountability; and
- better policy and plan effectiveness and consequently reduced costs.

The further benefits of good integrated monitoring include (after Beanland and Huser, 1999):

- cost-effectively meeting monitoring requirements under both LGA and RMA;
- structured approach to developing indicators and gathering information;
- avoiding duplication or omissions in data collection;
- sharing of data, information and knowledge;
- enhanced availability and accessibility of good quality and policy-relevant information;
- better interaction within and between agencies, resulting in better and more integrated management;

- capacity-building;
- linking compliance, state of the environment and policy effectiveness monitoring;
- more consistent and complementary approaches by agencies to common issues;
- facilitating the shift from policy development to implementation and review; and
- improved decision-making and policy analysis, resulting in better environmental outcomes.

6.2 GOOD MONITORING: BARRIERS

Barriers to good plan preparation, implementation and monitoring have been identified in detail by the PUCM research team (2003) and include:

- political pressure to meet unrealistic deadlines causing rushed plan preparation;
- lack of guidance and support from central government agencies;
- inadequate integration and communication between councils;
- inadequate transfer of information and/or disjunct between regional and territorial councils;
- misplaced concern about putting too much information in plans/trying to keep them thin;
- lack of capacity (knowledge, skills, time, resources) to assess information; and
- council restructuring, especially splitting plan policy from implementation, disrupting the processes of plan preparation, implementation and monitoring.

To these could be added those identified in 1999 by Beanland and Huser:

- the difficulty of selling the concepts to elected representatives and/or senior managers;
- little accountability of councils for poor plan preparation or monitoring of the state of the environment and plan effectiveness; and
- the implications for technology and information management systems, including monitoring equipment, databases, GIS, decision support systems and data presentation software.

6.3 TAKING THE NEXT STEP

6.3.1 IMPLICATIONS FOR COUNCILS PREPARING ICMPS

The PUCM research highlights the essential logical and functional links between the quality of plan preparation, the quality of their implementation and, ultimately, the quality of the environment.

It may (at least initially) take longer to prepare a good plan, link it to other relevant plans and monitor it effectively to see if it makes a difference to the environment. However, for effective and efficient use of public and private resources to meet the objectives of the LGA and RMA, good planning, implementation and monitoring have never been more important.

What would be the practical implications of applying the identified best practices for integrated inter-agency plan preparation, implementation and monitoring under the LGA and RMA to the preparation of ICMPs?

Some might include the need to:

- form an internal council team that links to other parts of council and other relevant agencies (especially regional councils) to prepare a tender brief that spells out the requirement for integrated inter-agency plan preparation, implementation and monitoring, and gives adequate guidance for consultancies preparing tenders;
- involve other professionals in the preparation of ICMPs, especially those familiar with the wide range of internal and external statutory instruments under the relevant Acts;
- work much more closely and collaboratively with consultants preparing ICMPs to ensure the eight ingredients of a good plan (Ericksen et al, 2003a, cited in section 3.2.2) are present;
- be prepared to apply more stringent tests to each stage of the process, especially framing catchment management objectives and selecting indicators of success;
- take a community development approach to identifying issues and solutions, as well as monitoring QBL outcomes and plan effectiveness – going wider than stormwater; and
- identify resourcing and capacity needs and solutions and be prepared to justify these to senior managers and elected representatives in order to do the job properly.

In essence, an ICMP becomes more a process than a product.

When developers, consultants and councils are then applying these best practices to the design, construction and monitoring of LIUDD developments, the mechanisms for monitoring their environmental and other outcomes would then already be in place within the wider catchment plan.

6.3.2 HOW TO FIND OUT MORE

This paper has aimed to show that information and processes are available to help practitioners overcome the significant barriers they face. However, even in a country as small as New Zealand it can be hard to get best practice information disseminated to practitioners.

There is a considerable body of relevant work, much of it summarised or referenced on the Quality Planning Website (http://www.qualityplanning.org.nz).

Training is also available and can be accessed from the Quality Planning website and the PUCM website at http://www.waikato.ac.nz/igci/pucm/Whats%20new.htm.

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