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PR101

Regulatory Framework Development: Understanding Current Sustainability Regulations and Policy

A report prepared for **Beacon Pathway Limited**

by

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REGULATORY FRAMEWORK DEVELOPMENT: UNDERSTANDING CURRENT SUSTAINABILITY REGULATIONS AND POLICY

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CONTENTS

- 1. INTRODUCTION..... 8
- 2. POLICY/REGULATORY DEVELOPMENT - CENTRAL GOVERNMENT 9
 - 2.1 Resource Management Act (1991) 9
 - 2.2 Building Act (2004) 9
 - 2.3 Land Transport Management Act (2003)..... 10
 - 2.4 The Local Government Act (2002)..... 10
 - 2.5 Resource Management (Energy and Climate Change) Act (2004)..... 11
 - 2.6 Climate change - Kyoto Protocol policies 11
 - 2.7 National Energy Efficiency and Conservation Strategy (NEECS)..... 12
 - 2.8 New Zealand Waste Strategy (NZWS)..... 13
 - 2.9 New Zealand Transport Strategy (NZTS)..... 15
 - 2.10 Sustainable Development Programme of Action (SDPOA) 16
 - 2.10.1 Energy 16
 - 2.10.2 Water 17
 - 2.10.3 Sustainable Cities (including the Urban Design Protocol)..... 17
 - 2.10.4 Child and Youth Development (CYD)..... 19
 - 2.10.5 Learning and Best Practice..... 19
 - 2.11 Growth and Innovation Framework..... 19
 - 2.12 EECA Programmes 20
 - 2.13 MfE initiatives 20
 - 2.13.1 New Packaging Accord..... 20
 - 2.13.2 Govt3..... 21
 - 2.14 The Housing New Zealand Strategy (HNZS)..... 21
 - 2.15 National Environmental Standards (NES) 22
- 3. REVIEW AND RESEARCH - CENTRAL GOVERNMENT 23
 - 3.1 Parliamentary Commissioner for the Environment (PCE)..... 23
 - 3.2 Foundation for Research Science & Technology (FRST) 23
 - 3.3 MfE Sustainable Management Fund (SMF) 27
- 4. POLICY/REGULATORY DEVELOPMENT - LOCAL GOVERNMENT 29
 - 4.1 Energy 29
 - 4.2 Climate change..... 29
 - 4.3 Transport..... 30
 - 4.4 Water..... 30
 - 4.5 Waste 30
 - 4.6 Urban form and design..... 31
 - 4.7 Housing and building..... 31

5.	INCENTIVES FOR SUSTAINABILITY UPTAKE	32
5.1	Energy	32
5.2	Air quality	32
5.3	Climate change.....	32
5.4	Transport.....	32
5.5	Water.....	32
5.6	Waste	33
5.7	Housing and building	33
6.	MISCELLANEOUS.....	34
6.1	Energy	34
6.2	Urban research	34
6.3	Built environment policy	35
6.4	Best Practice in Construction.....	35
6.5	Sustainable housing	35
6.6	Housing and building - overseas.....	36
6.7	Sustainable business and ‘Think-tanks’	36
6.8	Waste initiatives.....	36
6.9	Plastics and sustainability	37
6.10	Best practice procurement.....	37
6.11	Green Procurement - Australia	37
7.	Summary and Conclusions.....	38
	References	39
	Appendix 1 – Initiative Interconnections	40
	Appendix 2 – Timeline of key sustainability policy mechanisms.....	40

EXECUTIVE SUMMARY

This report aims to ensure Beacon and its providers have a clear understanding of the environment surrounding sustainability regulation and policy development in central and local government. To this end, the document contains a review and summary of current and planned initiatives on sustainability by central and local government (and other providers where relevant).

The report is divided into four sections:

- Policy/regulatory development - central government
- Review and research - central government
- Policy/regulatory development - local government;
- Incentives for sustainability uptake
- Miscellaneous initiatives.

At the rear of the document, how initiatives interconnect (via major resource themes selected for this study: energy, climate change, waste, transport, water, buildings/housing and urban design/form) and a timeline of key sustainability mechanisms is presented.

A summary (expanded upon in the report) of key central and local government sustainability programmes, policies or strategies and/or recent developments, associated with key environmental issues, are highlighted below (their high-level sustainability 'statements' are also listed):

- Energy
 - The National Energy Efficiency Strategy (NEECS) and associated EECA programmes which support progress toward high-level targets for 2012
 - The Building Act – *'the need to facilitate the efficient use of energy and energy conservation and the use of renewable sources of energy in buildings'*
 - Sustainable Development Programme of Action – development of formal renewable energy policy (MED, October 2004)
 - Two key regional energy strategies (Southland and Canterbury)
- Climate change
 - Kyoto Protocol to enter into force on 16th February 2005 for period 2008-2012
 - Kyoto policies (e.g. emissions charge from 2007, Projects to Reduce Emissions, etc) will be introduced/reinforced
 - Communities for Climate Protection (July 2004) introduced to assist councils to reduce greenhouse gas emissions at community level
- Transport
 - The New Zealand Transport Strategy (NZTS)
 - Land Transport Management Act 2003
 - Regional Land Transport Strategies
- Water

- The Building Act – *‘the need to facilitate the efficient use of water and water conservation in buildings’*
- Waste
 - The New Zealand Waste Strategy (NZWS)
 - Adoption of plans by several councils for focusing on three core goals specific to construction and demolition (C&D) waste
 - The Building Act – *‘the need to facilitate the reduction in the generation of waste during the construction process’*
- Urban design and form
 - Urban Design Protocol set for release in March 2005
 - Variety of revitalisation initiatives underway in cities such as Auckland, Christchurch, Tauranga
- Buildings and Housing
 - The Building Act – *‘buildings are designed, constructed and able to be used in ways that promote sustainable development’*
 - The New Zealand Housing Strategy (NZHS) to be released mid-2005
 - Sustainable building/homes guidelines produced by Waitakere and Christchurch City Councils.

Key acronyms (as used in report and diagrams)

C&D	Construction and demolition
DBH	Department of Building & Housing
EECA	Energy Efficiency Conservation Authority
DPMC	Department of Prime Minister and Cabinet
GHG	Greenhouse Gas (es)
GIF	Growth and Innovation Framework
HNZC	Housing New Zealand Corporation
LCCP	Long-term Council Community Plan
LGA	Local Government Act
MfE	Ministry for the Environment
MED	Ministry of Economic Development
MoRST	Ministry of Research Science and Technology
MoT	Ministry of Transport
NEECS	National Energy Efficiency Conservation Strategy
NES	National Environmental Standard
NGA	Negotiated Greenhouse Agreements
NZBCSD	New Zealand Business Council for Sustainable Development
NZHS	New Zealand Housing Strategy
NZTS	New Zealand Transport Strategy
NZWS	New Zealand Waste Strategy
PRE	Projects to Reduce Emissions
RLTS	Regional Land Transport Strategy
RMA	Resource Management Act
SBN	Sustainable Business Network
SDPoA	Sustainable Development Programme of Action
UDP	Urban Design Protocol

1. INTRODUCTION

This report aims to ensure Beacon and its providers have a clear understanding of the environment surrounding sustainability regulation and policy development in central and local government. To this end, the document contains a review and summary of current and planned initiatives on sustainability by central and local government (and other providers where relevant).

As a result of increasing man-made pressures impacting on the urban environment, the New Zealand government and regulatory authorities, in the face of strong and convincing evidence (e.g. for climate change, potable water depletion, etc), is responding with a range of sustainability-related policies, strategies and initiatives.

The contemporary discussion of sustainability has its roots in the environmental concerns that began to be raised (e.g. use of pesticides) in the 1960s, however, it is only more recently (later 1990s) that the concept has gained any real traction in New Zealand. The 1992 Earth Summit held in Rio de Janeiro marked the point for the formal international acceptance of *sustainable development*, and the declaration on Environment and Development, the principles of Agenda 21 (PCE, 2002).

The definitions of *sustainable development* and *sustainability* have been described (or attempted to be described – there is no ‘one definition fits all’ description) elsewhere for Beacon and Beacon consortium members (O’Connell 2004; Hargreaves et al 2004) and will not be revisited here. In brief they indicate a quest to improve the quality of our lives and milieu, to prosper financially without destroying resources and life-nurturing systems on which current and future generations depend upon.

2. POLICY/REGULATORY DEVELOPMENT - CENTRAL GOVERNMENT

There is explicit reference to sustainability in a number of statutes including the Resource Management Act (1991), the Energy Efficiency and Conservation Act (2000) and the Building Act (2004). Since 2000, there have been an increasing number of sustainability-related statutes, policies and strategies released or under development.

It should be noted that sustainability is not being singled out for inclusion solely in environmental legislation and policy; it is also being incorporated across many government sectors, for example, sustainability principles have now been included in the Building Act.

Additionally, the culture of 'sustainability thinking' is also being formally infused (since early 2003) across government agencies under the stewardship of the Department of Prime Minister and Cabinet (DPMC), although how successful this process will be is highly dependent on key personnel continuing to be 'drivers' of sustainability thinking and practice. Agencies such as Ministry for the Environment (MfE) are also working with industry taking a partnership role on driving sustainable business practices.

An overview diagram, (*see Appendix 1*), indicates the linkages between key national and regional legislation, policies and organisations that have responsibilities or functions with respect to sustainability. A timeline (*see Appendix 2*) also indicates when key urban-related initiatives, objectives, targets, etc have been, or are to be, introduced.

The PCE stated in 2002 that the government intends to draw together all the strategies and initiatives under an overarching sustainable development strategy. Anecdotally, while there have been some successes in moving the sustainability agenda forward in both central and local government, success is highly dependent on factors such as the retention of a key manager or 'champion' (or restricting loss of momentum and institutional knowledge should those persons leave their position).

Some of the key sustainability policies and strategies, especially those identified as having a close inter-relationship with the built environment, are discussed below in more detail. Key aims, objectives and targets have been identified. The actual (or where brevity is necessary, abbreviated) policy, strategy, etc statements are highlighted in *italicised blue*; in some instances, important detail will be shown in *italicised red*.

2.1 Resource Management Act (1991)

Key agencies: *Ministry for the Environment*

Release date: *October 1991*

Key Contact: *Phil Gurnsey*

The RMA (1991) is the core of the legislation intended to help achieve sustainability in New Zealand. The Act's purpose is to promote the *sustainable management* of natural and physical resources. The RMA, through district plans, has a number of built environment functions including: subdivision control, density/intensity of development and building orientation. It largely establishes the external context for buildings and other physical infrastructure.

The RMA is periodically reviewed and at times amendments to the Act are created to address specific issues (see Section 3.4). Proposed amendments to the RMA currently under consideration include 'the promotion of sustainable urban form' as a function of Regional Councils (section 31(gb)).

2.2 Building Act (2004)

Key agencies: *Department of Building and Housing (DBH), Ministry of Economic Development*

Release date: *30 November 2004*

Key contact(s): *Mike Stannard, Mike Noon, and Peter Thorby (all at DBH)*

The most significant government action to improve the quality of new housing construction and building work is the new Building Act (2004). The purpose of the revised Building Act has been expanded to include concepts of health and safety, and sustainability.

In the Act, under ‘Purpose’, the key clause relating to sustainability is:

- 3 (d) *...buildings are designed, constructed and able to be used in ways that promote sustainable development*

Under ‘Principles’, the key clauses relating to sustainability are:

- 4 (2) (b) *the need to ensure that any harmful effect on human health resulting from the use of particular building methods or products or of a particular building design, or from building work, is prevented or minimised*
- 4 (2) (e) *the costs of a building (including maintenance) over the whole of its life*
- 4 (2) (m) *the need to facilitate the efficient use of energy and energy conservation and the use of renewable sources of energy in buildings*
- 4 (2) (n) *the need to facilitate the efficient and sustainable use in buildings of –*
 - a. *materials (including materials that promote or support human health) and*
 - b. *material conservation*
- 4 (2) (o) *the need to facilitate the efficient use of water and water conservation in buildings*
- 4 (2) (p) *the need to facilitate the reduction in the generation of waste during the construction process.*

Inclusion of sustainability concepts will impact on the New Zealand Building Code as it is reviewed over the next two years. The code will require, *inter alia*, a definition of ‘sustainable development’ taking into account the world view (Hargreaves et al 2004) and the New Zealand context.

DBH, in conjunction with the Consumers’ Institute, have developed [ConsumerBuild](#), a website that aims to provide clear, independent and up-to-date information to the public about building, renovating and maintaining houses in New Zealand. This includes guidance for responsibilities under the Building Act and other relevant legislation. ConsumerBuild also has a [‘green’ home](#) section.

2.3 Land Transport Management Act (2003)

Key agencies: **Ministry of Transport (MoT)**

Release date: **12 November 2003**

Key contact(s): **Jo Buckner**

The purpose of this Act is to contribute to the aim of achieving an integrated, safe, responsive and sustainable land transport system. It provides for a more balanced and flexible funding framework for land transport. While roading will continue to be of strategic key importance, the needs of all road users will be met.

2.4 The Local Government Act (2002)

The purpose of the Local Government Act (LGA) *‘provides for local authorities to play a broad role in promoting the social, economic, environmental and cultural well-being of their communities, taking a sustainable development approach’* (section 3(d)).

The LGA provides local authorities with the mechanism to improve the built environment because it requires a local authority to take a sustainable development approach when performing its role and to take into account the “four well-beings”; the need to maintain and enhance the quality of the environment; and the reasonably foreseeable needs of future generations.

A key component of the LGA is the requirement for local authorities to identify community outcomes for the immediate and long-term future of their districts or regions. The community outcomes process informs the development of a Long-term Council Community Plan (LTCCP). The LTCCP is a ten-year plan describing the activities of the local authority, which provides integrated decision-making and coordination of resources and provides a long-term focus for the decisions and activities of the local authority. The LTCCP also provides an opportunity for public input into the activities of the local council.

2.5 Resource Management (Energy and Climate Change) Act (2004)

The Resource Management (Energy and Climate Change) Amendment Act 2004, released in March 2004, recognises that while greenhouse gas emissions are local, the impact is (inter)national. Greater emphasis will be placed on climate change and energy matters in RMA planning and decision making.

The [Amendment Act](#) also makes explicit provisions within Section 7 of the RMA for all those persons exercising functions and powers under the Act to note particularly:

- *effects of climate change*
- *efficient use of energy from minerals and other sources of energy*
- *benefits to be derived from the use and development from renewable energy.*

2.6 Climate change - Kyoto Protocol policies

Key agencies: [Ministry for the Environment, New Zealand Climate Change Office](#)

Release date: [December 2002](#)

Key Contact: [Bill Bayfield](#)

The Kyoto Protocol came into force on 16th February 2005. The Kyoto Protocol will commit New Zealand to reducing its greenhouse gas emissions back to 1990 levels, on average, over the period 2008 to 2012 or to take responsibility for any emissions above this level if it cannot meet this target.

There are also linkages to energy sustainability outcomes (refer to the NEECS programme below) dependent on formal implementation of the Protocol.

Now that the Kyoto Protocol has come into force, of key significance in New Zealand will be introduction of a 'carbon tax' on greenhouse gas emissions in 2007. Additionally, New Zealand industry will be encouraged to participate in schemes such as Negotiated Greenhouse Agreements (NGA), Projects to Reduce Emissions (PRE), Joint Implementation and the Clean Development Mechanism (CDM).

These policies will also support national sustainable energy initiatives such as the NEECS.

The main policies and key aspects of those policies are outlined below:

Emissions Charge

- *an emissions charge will be applied to fossil fuels and industrial process emissions*
- *emissions charge capped at \$NZ25 per tonne in the period 2008-2012 (first commitment period of the Protocol)*
- *revenue will fund other climate change projects and programmes*
- *option for emissions trading.*

Projects to Reduce Emissions (PRE)

The Projects to Reduce Emissions programme is designed to reduce New Zealand's greenhouse gas emissions by supporting projects that:

- *provide emission reductions in the Protocol's first commitment period*
- *go beyond reductions that would have occurred without the project*
- *are not viable without the tendered emission units incentive.*

Projects must result in a measurable reduction in greenhouse gases and go beyond business as usual. They must also take place in New Zealand and reduce greenhouse gas emissions that are counted in New Zealand's greenhouse gas inventory.

Two PRE tender rounds have taken place since 2003. The owners of the successful projects (which included wind farms and micro-hydro schemes) include large and small organisations in both the private and public sectors.

Negotiated Greenhouse Agreements (NGA)

During the first Protocol commitment period, the government has recognised that the international competitiveness of some New Zealand firms or industry groupings could be at risk because of the emissions charge. For firms that are prepared to undertake meeting world best practice targets in the management of their greenhouse gas emissions, the Government is prepared to negotiate a full or partial exemption from the emissions charge. This is called a Negotiated Greenhouse Agreement (NGA).

Synthetic Gases

The synthetic gases are between two and four orders of magnitude more potent greenhouse gases than carbon dioxide. They are normally released through processes such as aluminium smelting. The government has taken a voluntary approach to synthetic gases, e.g. an agreement will be worked out between government and industry to limit leakage of sulphur hexafluoride. A [discussion paper](#) has been recently released by MfE as part of the New Zealand Climate Change Programme on the minimisation of synthetic gases.

2.7 National Energy Efficiency and Conservation Strategy (NEECS)

Key agencies: **Energy Efficiency Conservation Authority (EECA), Ministry for the Environment**

Release date: **September 2001**

Key contact (s): **Katie Matheson (EECA)**

The government has identified three essential building blocks for a sustainable energy future: *energy efficiency*, *energy conservation*, and *renewable energy systems* (EECA and MfE 2001).

The NEECS has two key policy directions, more explicitly two high-level **targets** – one which relates to energy efficiency, the second to the level of energy supply from renewable sources: These are:

1. *achievement of at least 20% improvement in economy-wide energy efficiency by 2012*
2. *increase renewable energy supply to provide a further 25-55PJ of consumer energy by 2012.*

The NEECS is designed to support national energy sustainability initiatives through the achievement of six goals spread across the three dimensions of sustainability. A key goal of the strategy is to reduce the carbon dioxide (CO₂) emissions through fostering a number of initiatives such as renewable energy, transport and building programmes, all of which have the potential to impact on Beacon's objectives.

'Renewable energy' refers to utilisation of solar, wind, tidal, etc forms of energy. By 2010, achieving of these two targets will noticeably change the direction of future consumer energy supply. Overall, the indications are that the country is on target to achieve the renewable energy target (an additional 30PJ of energy by 2012 from renewable sources) (EECA 2004).

The NEECS is divided into five programmes targeting: central & local government, energy supply, industry, buildings & appliances, and transport. Each of these has 2-3 associated objectives.

Programme 1 - **central and local government**

- *leadership from central and local government through target setting and integration of sustainable energy outcomes into corporate commitments*
- *cross-sectoral activities and policy development to support achievement of the strategy goals and targets.*

Programme 2 – **energy supply**

- *increase supply from renewable sources over time including developing a local renewable energy industry base*
- *improve whole-system efficiencies in the energy supply sector*
- *improve institutional arrangements within the energy supply sector so prices to energy consumers consistently support sustainability outcomes.*

Programme 3 – **industry**

- *progressive energy efficiency improvement to meet best practice, industry by industry*
- *maximise the cost-effective utilisation of renewable energy*

Programme 4 – **buildings and appliances**

- *progressively upgrade energy performance across all sectors of the existing building stock*
- *achieve best practice energy performance in new residential and commercial buildings*
- *improve appliance energy efficiency to best practice.*

Programme 5 – **transport**

It should be noted that energy efficiency alone does not drive transport policy. Refer also to the Transport Strategy (NZTS) below.

- *reduce energy use through reducing the need to travel*
- *progressively improve the energy performance of the transport fleet*
- *improve the provision and uptake of low energy transport options.*

The Buildings/appliances and Transport Programmes make more explicit reference to the urban environment than the other three. Invariably though, all five will eventually have some impact on Beacon's activities, the common theme being the creation of a sustainable energy future for New Zealand.

2.8 New Zealand Waste Strategy (NZWS)

Key agencies: **Ministry for the Environment, Local Government New Zealand**

Release date: **February 2002**

Key contact(s): **Maryanne MacLeod (MfE)**

Reducing waste in this country is a cornerstone of the government's commitment to sustainable development. The NZWS (MfE and EECA 2002) aims to 'break the strong link between economic development and waste generation'. Up until 2002, waste policies had focused on *end-of-pipe* solutions, i.e. dealing with disposal rather than focusing on waste prevention. The NZWS includes core policies such as efficient (waste disposal) pricing and higher environmental standards to better utilise the resources currently wasted.

The NZWS covers solid, liquid and gaseous waste. It also recognises that there is a long-term challenge in the objective of '*moving towards zero waste and a sustainable New Zealand*'.

The NZWS has three core goals, one each directed at the three pillars of sustainability:

- Economic: *increasing economic benefit by more efficient use of materials*
- Social: *lowering the social cost and risks of waste*
- Environmental: *reducing the damage to the environment from waste generation and disposal.*

Organisations, including territorial authorities (see Section 5.5), are able to play a strong role in waste reduction. Obviously this can be directly as *waste generators*, but also indirectly as *designers, manufacturers* and *distributors* of the products and services used by the general population.

Three priorities, *waste minimisation, hazardous wastes* and *waste disposal* have been targeted for action in the NZWS. Each of these incorporates detail for specific waste streams and includes specific targets (two key C&D targets are detailed – refer to MfE 2002 and 2004a for greater detail):

Priority 1 - **Waste minimisation**

- *construction and demolition waste* – make up about 70% (concrete 35%, timber 24%, plasterboard 12%) of the waste stream by weight; presently little financial incentive to reuse or recycle
 - *by December 2005, all territorial authorities will have instituted a measurement programme to identify existing C&D waste quantities and set local targets for diversion from landfills*
 - *by December 2008, there will have been a reduction of C&D waste to landfills of 50% of December 2005 levels measured by weight.*
- *organic wastes* – essentially domestic in origin; includes sewage sludge
- *special wastes* – wastes that need special management, e.g. oil, electronics.

Priority 2 - **Hazardous wastes**

- *trade wastes* – generated and disposed from industrial/ manufacturing processes through sewerage system, or to water and land
- *contaminated sites* and *organochlorine compounds*

Priority 3 - **Waste disposal**

- *waste disposal targets* are being progressively phased in to encourage waste generators to pay the true cost of waste treatment and disposal

The targets (e.g. for C&D waste) in the NZWS are not yet mandatory. They are national targets and their achievement is significantly dependent on the actions of local authorities. For example, Auckland and Christchurch City Councils have been progressive in putting waste management plans in place which take explicit account of the NZWS.

The targets in the NZWS have been recently reviewed (MfE 2004a) and have also been adapted for regional contexts (see Section 3). Waste gas emissions (primarily methane) from landfills are also being addressed. The government are proposing the introduction of environmental standards, using the RMA (refer to separate discussion below) to control greenhouse gas emissions from landfills.

MfE is currently running its [Construction & Demolition Waste Reduction Project](#). This project aims to provide resources for local and regional authorities, businesses and the community to reduce construction and demolition waste. There are a number of tools being examined:

- development of markets (identifying ways to increase the diversion of waste from landfill)
- recycler verification system (that C & D waste is being transported, handled, reused, recycled or recovered in accordance with industry best practice)
- regulatory tools and best practice guidelines.

2.9 New Zealand Transport Strategy (NZTS)

Key agencies: **Ministry of Transport (MoT)**

Release date: **December 2002**

Key contact: **Jo Buckner**

The government's vision for transport requires that economic development, social cohesion and environmental improvements must be progressed in parallel (MoT 2002). Transport decisions that are made will need to reflect the wider government commitment to sustainability.

The government's overall vision for transport is:

- *By 2010 New Zealand will have an affordable, integrated, safe, responsive and sustainable transport system*

The government has stated that transport policy will reflect New Zealand's national commitment to energy efficiency (the NEECS) and internationally to the Kyoto Protocol, and will recognise the role transport plays in meeting this commitment (NZTS, 2002).

Ensuring the long-term environmental sustainability of the transport sector will ultimately be a function of two broad approaches:

- *the transport system reducing its negative environmental impacts (on land, air, water, communities and ecosystems)*
- *the transport system making more efficient use of its resources, reducing use of non-renewable resources, and shifting from non-renewable to renewable resources.*

Accordingly, the achieving of environmental sustainability will require a reorientation of businesses' transport decisions over time. Any re-orientation of transport infrastructure and systems will have a major influence on business aspects such as employee commuting, provision of materials and services and construction of infrastructure (buildings, roading, etc).

Tied closely with the NZTS are the energy efficiency specific goals set out in the NEECS which address transport energy reduction and efficiency improvements. The main ones affecting the built environment have been bullet-pointed above in the NEECS section. Additionally territorial local authorities produce their own (land) transport strategies, the objectives (and targets) of which may have specific regional implications for business.

In addition to lowering business costs, reducing transport energy consumption will, importantly, reduce localised air pollution problems and global greenhouse gas (mainly carbon dioxide) emissions.

Transport infrastructure also has a strong influence on the development and form of urban areas. The government is examining transport linkages in the built environment and how the various components can be best accommodated in the future.

MoT is also undertaking some research (MfE 2004c):

Project: Towards more sustainable cities; Provider: Boffa Miskell, Hill Young Cooper Ltd, Jeff Kenworthy (Murdoch University, WA); Contact: Jo Buckner; Timeframe: draft submitted Dec 2002

Description: to determine what a sustainable settlement is within the New Zealand context; how progress towards more sustainable settlements can be measured; the influences on the development of settlements and the role of transport; and what actions can be taken to influence communities to become more sustainable in terms of transport and movement patterns.

2.10 Sustainable Development Programme of Action (SDPoA)

Key agencies: [Department of Prime Minister and Cabinet \(DPMC\)](#), [MfE](#)

Release date: [January 2003](#)

Key contact: [John Hutchings \(DPMC\)](#)

The SDPoA, released in January 2003 (DPMC 2003) establishes a set of principles which help to define what the government means by the concept “sustainable development, and adopts the Brundtland definition of sustainable development. It singles out four key development issues where the principles can be applied in practice, and which must be addressed in order for growth to be sustainable:

- [water quality and allocation](#)
- [energy](#)
- [sustainable cities](#)
- [child and youth development](#)

A further focus area on “learning and best practice” is concerned with embedding the sustainable development approach across the public sector.

The action areas were chosen because (i) they are issues we need to address now (ii) they are complex and challenging, requiring innovative solutions; (iii) there are important connections between them; and (iv) there are opportunities for collaboration and shared learning. The taking of a sustainable development approach to these issues will lead to more integrated and holistic thinking to develop required solutions, e.g. on how to address urban systems issues in Auckland and other cities.

The energy and sustainable cities issues have direct and significant implications for the built environment. The water theme has less relevance, at least at this stage; its emphasis is on allocation and quality. The child/youth theme has only indirect relevance in this report’s context though it contains reference to important future connotations (10 - 25 years).

2.10.1 Energy

As described in the NEECS section, the government is committed to a sustainable and efficient energy future. The overarching goal of the energy theme is:

- [to ensure the delivery of energy services to all classes of consumer in an efficient, fair, reliable and sustainable manner.](#)

The government is taking an active leadership role on energy, e.g. by developing and regulating the energy market, encouraging the development of renewable energy projects and infrastructure, and using EECA to promote efficient energy use.

Increasingly, the government will be seeking alliances with industry, both as suppliers and major users.

The SDPoA, specific to energy and drawing upon finer detail contained in the NEECS, etc, requires that a number of actions be taken by a wide variety of organisations. These are that:

- *energy use in New Zealand becomes progressively more efficient and less wasteful*
- *renewable sources of energy are developed and maximised*
- *New Zealand consumers have a secure supply of electricity.*

In October 2004, the Ministry of Economic Development (MED) released a document entitled '[Sustainable Energy: Creating a sustainable energy system](#)' as part of ongoing work in the energy theme. The document is designed as the focal point for six months of consultation. The outcome of this process will be the starting point for formal sustainable energy policy development. The document explores what a sustainable energy system might look like, and how New Zealanders might achieve it with regard to economic, social and environmental impacts.

2.10.2 Water

The overarching goal of the water theme is: *adequate, clean freshwater available for all*. Access to water is seen a fundamental precondition for development and is obviously vital to the functioning of industrial processes, buildings, etc.

The work programme for water will focus on addressing key impediments relating to allocation and quality of water resources. Some of the 'urban' impediments are:

- *identifying and implementing means of addressing water shortages*
- *preserving/improving current water quality and identifying and mitigating sources of freshwater contamination*
- *establishing and implementing industry and sector partnerships to improve freshwater quality.*

Much of the country's urban water infrastructure is aging (in some places around 100 years old) and in need of replacement. There are issues surrounding costs of improving water supplies and wastewater/stormwater management.

Alternative urban water solutions do exist to address such issues, such as those which can temporarily retain water (e.g. on a domestic property), thereby reducing the need for expensive underground piping.

MfE released in December 2004 a document entitled '[Freshwater for a Sustainable Future: issues and options](#)'. This public discussion document is based on work by the Water Programme of Action inter-departmental working groups which were established to look at three main areas, including water quality. However, the programme has not focused, at least in the shorter term, on urban water quality issues.

2.10.3 Sustainable Cities (including the Urban Design Protocol)

The overarching goal of the sustainable cities theme is that:

- *sustainable cities are healthy, safe and attractive places where business, social and cultural life can flourish.*

New Zealand's largest urban communities are increasingly facing challenges over sustainable production and consumption of *energy*, *water* and other resources. Urban communities have a considerable impact on the physical environment and have detrimental impacts on local air and water quality.

The recent creation of the Urban Affairs and Auckland Issues portfolios enable the fragmentation of urban policy to be addressed within government and the priority targeting of major urban issues in Auckland.

There are currently two work streams under the SDPoA:

a) National:

The Urban Affairs portfolio, includes the Urban Design Protocol and a Statement of Strategic Priorities for Urban Affairs (whose purpose is to develop a strategy for the whole of government management and coordination of urban affairs).;

The Urban Design [Protocol](#) (MfE, to be launched March 2005), aims to make New Zealand towns and cities more successful by using quality urban design to help them become more competitive, liveable, environmentally responsible, inclusive, distinctive and well-governed. Signatories to the Protocol will state their commitment to quality urban design, and to preparing an Urban Design Action Plan for their organisation. Actions could range from aligning research where appropriate to urban design, through to ensuring retrofitted/new buildings have quality (sustainable) urban design incorporated (more details are set out in the Action Pack part of the Protocol).

MfE is developing a supporting package of information about urban design. A survey of urban design research has been undertaken by MfE and BRANZ to identify the individuals and/or organisations in New Zealand (which includes central and regional government authorities) that are conducting urban design research, or research that has urban design implications (either directly or indirectly). This [information](#) is updated approximately quarterly.

This year, 2005, has been designated the [Year of the Built Environment](#) (YBE). YBE is a collaborative effort between the government, the NZ Institute of Architects and a consortium of local government, industry, research organisations and professional institutes. A series of events throughout 2005 (including the launch of the UDP) is designed to challenge the impact, meaning and significance of the built environment for all New Zealanders.

b) Regional:

This work stream is initially focussed on the Auckland Sustainable Cities Programme (ASCP) - a three year whole of region/whole of government project based in the Auckland Region.

The Auckland Sustainable Cities Programme (ASCP) is a whole of region/whole of government partnership, focussed on creating a more sustainable Auckland region. It is working to improve the partnership and alignment between central and local government sustainability efforts. The ASCP contains six work strands, each developing signature projects that require central and local government input. The work strands are:

- Regional Child & Youth Development
- Migrant Settlement
- Urban Form Design & Development
- Transport
- Sustainable Communities
- Long Term Framework

The Urban Form Design & Development, Transport and Sustainable Communities work strands have direct relevance to the built environment.

2.10.4 Child and Youth Development (CYD)

Ensuring the wellbeing of children and young people will bring long-term a number of benefits to the country including a skilled workforce in key sectors such as building and construction. One of the steps to a sustainable future is by raising the quality of the current and future workforce through knowledge and skill acquisition workers.

The work programme for CYD involves:

- *supporting of low-income families' access to affordable, appropriate and healthy housing*
- *implementing Healthy Housing initiatives to reduce overcrowding.*

By the government 'showing the way' with the initiatives below, it is the intent that these templates can be applied to industry and other sectors.

2.10.5 Learning and Best Practice

A 'fifth' focus of the SPDoA relates to the sharing of learning and best practice, and encouraging sustainability thinking in government departments. (NB this was formerly referred to as the 'infusion' work stream of the SDPOA).

Additionally, sustainability principles are being built into the budgeting process for all new bids and are increasingly being incorporated into new policy and strategy releases.

2.11 Growth and Innovation Framework

Key agencies: **Ministry of Research, Science & Technology (MoRST)**

Release date: **January 2002**

Key contact: **Marrienne Doczi**

The Growth and Innovation Framework (GIF) is designed to focus the Government and business on an innovative, knowledge-driven approach to business development (NZG 2002).

At a high level, the GIF takes environmental and social goals explicitly into account. The GIF states that:

- *the government does not believe we can put on hold social and environmental progress; and*
- *...the choice of economic policy instruments will be influenced by their interaction with social and environmental factors. Sustainability will be paramount.*

From these statements, clearly the government does not see economic development as preceding, being a precondition for, or being more important than, social or cultural development or environmental protection (Chapman et al 2004). The dimensions should, implicitly, all be advanced together.

It will help to prepare New Zealand businesses to operate in a global market where greenhouse gas emissions are acknowledged as having a cost, i.e. the cost of externalities borne by the environment will be internalised by businesses bearing the cost.

As a result of such a transition, national and international markets will increasingly demand new solutions, innovation and technologies to address emissions.

While not directly relating to the urban environment, a design strategy produced by the Design Taskforce in support of the GIF aims to make New Zealand businesses 'design capable' (NZTE 2003). This strategy may have some future bearing on design and production of building and construction products especially in international markets.

2.12 EECA Programmes

EECA has eight [programme areas](#), each of which consists of a number of projects developed to achieve programme objectives. These projects have evolved to facilitate the targets set in the NEECS above. These are in brief outlined below:

- [Transport fuels](#) - involves supporting the introduction of renewable fuels into the country such as biodiesel and bioethanol
- [Renewable energy](#) - to increase the use of renewable sources of energy in New Zealand by expanding existing markets and developing new markets for smaller-scale renewable energy technologies (e.g. solar water heating)
- [Building regulations](#) – using regulations such as the New Zealand Building Code (NZBC) as the most effective way to ensure minimum levels of energy efficiency in new commercial and residential buildings
- [Business costs](#) - Many of these initiatives are being applied in both the commercial and industrial sectors. This includes the [Emprove](#) programme and developments in [demand side participation](#)
- [Travel planning](#) - focuses on offering alternatives to driving by presenting people with real options and removing physical and attitudinal barriers associated with their individual journeys
- [Residential housing](#) – aims to assist homeowners in improving the energy efficiency of their house and to improve the way they use energy in their behaviours at home. [EnergyWise Home Grants](#) and [Warm Home Energy Check](#) (a Christchurch-based programme – see also [Section 4](#)) are projects that improve residential energy use. EECA are currently developing a strategy to implement a HERS scheme (probably based on WHEC) nationwide.
- [Demand response](#) – aims to identify, firstly, the potential demand response that exists in the electricity market and, secondly, how industry participants can work together to realise this potential
- [Energy efficiency of products](#) - about ensuring only efficient appliances and equipment are available for the market, and that information on product efficiency is available for households and businesses. Energy performance information (e.g. on competing models) is available to consumers via [Energy Rating Labels](#). Ensuring that only efficient products are available for sale is done via [Minimum Energy Performance Standards \(MEPS\)](#). EECA is also planning to expand the coverage of the programme – the [Forward Programme](#).

2.13 MfE initiatives

Key agencies: [Ministry for the Environment](#)

Key contact: [Bill Bayfield](#)

The Ministry for the Environment is taking a partnership role in promoting sustainable business practices. Some of the key sustainable industry initiatives the Ministry is working with industry on are:

2.13.1 New Packaging Accord

The Packaging Council and the Sustainable Industry Group have brought together packaging brand owners, retailers, importers, recyclers and local government to negotiate a [New Zealand Packaging Accord](#). The objectives of the Accord are to improve the sustainability of packaging used in New Zealand.

The Accord is aimed at encouraging:

- *improved efficiency in production, use and recovery of packaging materials*
- *fostering of markets for sustainably produced packaged goods*
- *new uses for recovered packaging materials.*

Targets have been set for the recovery (by 2008) of the five main packaging materials: paper, plastic, aluminium, steel and glass.

2.13.2 Govt3

With the assistance of EECA, MfE has formed a pilot group of government agencies that are taking practical steps towards sustainability. The Govt³ programme will enable government agencies to assess the main environmental impacts of their operations and get underway with eco-efficient procurement (supply-chain management). In time, the programme is planned to include the wider public sector, e.g. local government, health and education sectors.

As a result, the government sector will minimise: their energy and materials use, the amount of landfill waste and carbon dioxide emissions.

The document [Govt³: Towards sustainable practice](#) provides information about the agencies taking part in Govt³ and resources which may be useful to other industries.

2.14 The Housing New Zealand Strategy (HNZS)

Key agencies: [Housing New Zealand Corporation \(HNZC\)](#)

Release date: [April 2004 \(discussion document\)](#)

Key contact: [Erin Wynne](#)

Written submissions were received until the end of July 2004 on a document entitled '*Building a Future: Towards a New Zealand Housing Strategy*'. The Housing New Zealand Strategy is due for release in late 2004. The [Strategy](#) will provide a vision and strategic direction for housing for the next 10 years.

The vision for the HNZS is that:

- *all New Zealanders have access to affordable, sustainable, good quality housing appropriate to their needs.*

The long-term social and economic costs of poor quality housing (e.g. poor health and educational achievement) mean that an investment in good quality housing makes good social and economic sense. The discussion document identified six areas for action to achieve the HNZS vision:

- *improving housing quality*
 - *improving the regulatory framework to ensure good quality construction, e.g. via the revised Building Act 2004 (see further comment below)*
- *Building capacity and capability across the housing sector (construction industry, etc) by:*
 - *supporting growth of housing research*
- *improving housing assistance and housing affordability*
- *responding to housing markets under stress*
- *innovative home ownership programmes*

- *developing the private rental sector.*

While a final timeframe has not yet been established, a final strategy could be released by mid-2005¹.

2.15 National Environmental Standards (NES)

Key agencies: **Ministry for the Environment**

Release date: **October 2004**

Key Contact: **Glenn Wigley**

MfE have also developed a first suite of [national environmental standards](#) - mandatory "bottom-line" regulations that apply nationally.

These standards are aimed at creating a 'level playing field' for industry; at providing consistency and certainty in decision making; and providing a minimum level of protection of health and the environment. The first batch of standards focused on air quality; potable water quality standards are due in 2005.

NES require councils and communities to deal with poor air quality in their areas. As part of the response to this issue, MfE is leading the [Warm Homes](#) project which investigates how families can be encouraged to make their homes more energy efficient and to install cleaner heating. The project is expected to run until June 2005 (contact: Matt Hickman).

The research commissioned by MfE includes:

- a baseline home heating survey
- a study which rates heating appliances against a range of criteria
- a social drivers study to examine encouraging behaviour change
- the development of a national Home Energy Rating Scheme (work led by EECA).

¹ Erin Wynne, Senior Policy Analyst, Housing New Zealand Corporation, pers comm., 17 January 2005

3. REVIEW AND RESEARCH - CENTRAL GOVERNMENT

3.1 Parliamentary Commissioner for the Environment (PCE)

Key Contact: [Dr Morgan Williams](#)

The [PCE](#) reviewed progress on sustainable development in New Zealand in 2002 – Creating Our Future (PCE 2002) in the lead up to the World Summit held in Johannesburg in August 2002. Arguably, this report has proved a significant factor in positively influencing since then the scope and direction of sustainability policy at both national and regional levels.

The Commissioner's tasks key tasks include:

- [heightening awareness and reduce confusion of what sustainability is about](#)
- [promoting establishment of an overarching National Sustainable Development Strategy](#)
- [enabling a focus and action on *education* for sustainability](#) (PCE 2004a).

The PCE is now assessing on an annual basis the environmental performance of the broader electricity sector (PCE 2004b). The scope of the assessments includes the electricity industry, government agencies that regulate this industry, electricity users, and demand management service providers.

3.2 Foundation for Research Science & Technology (FRST)

Key contact: [Ruth Berry](#)

Urban design research funded by FRST totals approximately \$14 million and spans three Foundation portfolios; Sustainable Communities; Resilient Infrastructure and Communities; and Network Services and Utilities. Below is a summary of urban design research projects currently being funded under a range of categories relating to urban sustainability.

Sustainability (1)

Project: *Building Capacity* (C09X0310); Provider: Landcare Research; Contact: Richard Gordon; Timeframe: Oct 2003 – Jun 2009

Brief description: A six-year programme which focuses on the key issues faced by society embarking on the sustainable development journey, namely the understanding of sustainability, attitudes and behaviours shown by individuals and organisations.

Sustainability (2)

Project: *Sustainable Pathways* (MAUX0306); Provider: Massey University; Contact: Assoc Prof Murray Patterson; Timeframe: Oct 2003 – Jun 2009

Brief description: This research will enable cities and regions to plan for sustainable development, by providing them with authoritative information on alternative future development scenarios.

Sustainability (3)

Project: *Learning Sustainability* (OPSX0303); Provider: Opus International Consultants; Contact: William Pitt; Timeframe: Oct 2003 – Jun 2009

Brief description: This research recognises the strong relationships between settlement form, liveability and environmental performance.

Transport (1)

Project: *New Technology Rural Bridges* (C08X0304); Provider: Industrial Research Ltd; Contact: Graeme Finch; Timeframe: Oct 2003 – Jun 2007

Brief description: The research programme will develop techniques for the design and construction of small permanent single span composite bridges initially for application in rural locations throughout New Zealand.

Transport (2)

Project: *Roading Enhanced by Maori knowledge and values* (OPSX0301); Provider: Opus International Consultants; Contact: William Pitt; Timeframe: Oct 2003 – Jun 2007

Brief description: Development of culturally appropriate tools and processes that allow for incorporation of Maori values and knowledge into roading projects.

Transport (3)

Project: *High Performance Rooding* (OPSX0302); Provider: Opus International Consultants; Contact: Philip Herrington; Timeframe: Oct 2003 – Jun 2007

Brief description: To significantly improve the cost-effectiveness of the road network for road owners and users.

Housing-related (1)

Project: *Housing Advances for Environmental Responsibility and Sustainable Living Learning Sustainability* (BCON0401); Provider: Beacon Pathway Ltd; Contact: Nick Collins

Timeframe: Oct 2003 – Jun 2007

Brief description: The programme aims to achieve its goal of enhanced sustainability in the residential sector and growth of the new build technologies industry through addressing five key elements.

Housing-related (2)

Project: *Weathertight Buildings* (BRAX0302); Provider: BRANZ Ltd; Contact: Mark Bassett; Timeframe: Jul 2003 – June 2009

Brief description: To improve the ability of buildings to control moisture from rain water leaks and other sources

Housing-related (3)

Project: *Sustainable Earth-fibre Housing* (UOAX0305); Provider: University of Auckland; Contact: Kepa Morgan; Timeframe: Jul 2003 – June 2007

Brief description: This research will develop appropriate technology for earth fibre composite wall construction and optimise end-user adoption of the technology trial results.

Housing-related (4)

Project: *Future Building Systems* (UOCX0302); Provider: University of Canterbury; Contact: Professor John Mander; Timeframe: Jul 2003 – June 2009

Brief description: This research will investigate and develop a completely new, modular, seismically damage-resistant, building system constructed from modern high performance concrete materials.

Health (1)

Project: *Urban Air Quality Processes* (CO1X0216); Provider: NIWA; Contact: Jeff Bluett; Timeframe: Completed Sep 2004

Brief description: More effective understanding of New Zealand's air resource to ensure good air quality and healthy and safe living environments in urban cities and settlements.

Health (2)

Project: *Functional Safe Built Environments* (WROX0302); Provider: Canesis; Contact: Simon Causer; Timeframe: Jul 2003 – Jun 2007

Brief description: To quantify exposure to major particulate indoor air pollutants and come up with a range of methods to reduce exposure to these substances.

Low Impact Urban Design (1)

Project: *Low Impact Urban Design* (C09X0309); Provider: Landcare Research; Contact: Dr Charles Eason; Timeframe: Oct 2003 – Jun 2009

Brief description: The programme is designed to radically improve urban sustainability by making LIUDD mainstream practice by implementing a four pronged approach: (i) identifying ways of overcoming social and institutional barriers to LIUDD; (ii) integrating natural features and technologies and improved catchment management processes in urban development; (iii) comparing cost-benefits of different approaches to underpin rational choices; and (iv) improving the interactions between governance and land use.

Energy (Efficiency) (1)

Project: *Improving Rural Maori Communities through New Energy Technologies* (CO1X0201); Provider: NIWA; Contact: Charlotte Serverne; Timeframe: Jul 2002 – Jun 2006

Brief description: The programme will review and implement a number of trial distributed energy technologies (e.g. small scale wind generation units, and micro-hydro systems) for small, rural; Maori communities.

Energy (Efficiency) (2)

Project: *Renewable Distributed Energy* (CO8X0203); Provider: Industrial Research Ltd; Contact: Alistair Gardner; Timeframe: Jul 2002 – Jun 2008

Brief description: The programme aims to show that it is possible in many regions to deliver a positive economic result for distribution network management by combining novel control and metering techniques with emerging demand side micro-scale distributed energy technologies.

Energy (Efficiency) (3)

Project: *Power to the Coast* (CO8X0301); Provider: Industrial Research Ltd; Contact: Alistair Gardner; Timeframe: Jul 2003 – Jun 2007

Brief description: The goal of this programme is to address the inhibiting effect that the lack of network capacity has on local energy supply options and to improve the availability of cost effective services to the community.

Energy (Efficiency) (4)

Project: *Mitigating CO₂ Emissions through Enhanced Uptake of Energy Efficiency* (UOOX0206); Provider: University of Otago; Contact: Assoc Prof Bob Lloyd; Timeframe: Jul 2002 – Jun 2006

Brief description: The research programme investigates energy efficiency gains in public housing as Housing New Zealand implements a government sponsored residential assistance programme.

Energy (Efficiency) (5)

Project: *Towards the Zero Energy House* (BRAX0201); Provider: BRANZ Ltd; Contact: Albrecht Stoecklein; Timeframe: Jul 2002 – Jun 2006

Brief description: This programme seeks to establish a framework to allow the evaluation of new technologies related to energy efficiency in the building fabric, understanding the effects on matching the energy supply and demand.

Energy (Efficiency) (6)

Project: *An Energy Demand Model of New Zealand Residential Buildings* (BRAX0301); Provider: BRANZ Ltd; Contact: Nigel Isaacs; Timeframe: Jul 2003 – Jun 2007

Brief description: From the knowledge of how, where and why energy is used in New Zealand homes, a model of the residential energy sector will be developed with a goal of improving the overall energy

efficiency, reduce greenhouse gas emissions and identify new energy opportunities in the residential sector.

Energy (Efficiency) (7)

Project: *Solutions for Energy Efficiency at Work and at Home* (UOWX0302); Provider: University of Waikato; Contact: Dr Bernard Guerin; Timeframe: Jul 2003 – Jun 2007

Brief description: To improve competitiveness for New Zealand industry through research aimed at achieving increased energy efficiency and conservation by two major players – intensive industry and households.

Other (1)

Project: *Living Urban Environments* (CO9X0208); Provider: Landcare Research; Contact: Dr Charles Eason; Timeframe: Jul 2002 – Jun 2005

Brief description: The programme aims to enhance the indigenous biodiversity of urban environments and increase their resilience to human activities.

Other (2)

Project: *Planning Under Co-operative Mandates* (RMA and Local Government Act); Provider: University of Waikato; Contact: Prof Neil Ericksen; Timeframe: Jul 2003 – Jun 2009

Brief description: The programme aims to determine the effectiveness of district plans achieving their expected environmental results under the RMA (1991) and Local Government Act (2002).

Other (3)

Project: *Post-Earthquake Functioning of Cities* (CO5X0301); Provider: Institute of Geological & Nuclear Sciences; Contact: Dr Jim Cousins; Timeframe: Jul 2003 – Jun 2009

Brief description: To minimise post-earthquake trauma and economic impact for people in urban areas by minimizing damage to buildings, contents and infrastructure.

Other (4)

Project: *Retrofit Solutions for New Zealand* (UOAX0411); Provider: University of Auckland; Contact: Dr Jason Ingham; Timeframe: Jul 2004 – Jun 2010

Brief description: Research that will define (seismic) retrofit solutions for building classes differentiated by their age and construction materials.

Other (5)

Project: *Organisational Systems for New Zealand* (UOCX0401); Provider: University of Canterbury; Contact: Dr Erica Dalziell; Timeframe: Jul 2004 – Jun 2010

Brief description: To assist New Zealand organisations to recover competitiveness after hazard events by improving their organizational systems.

Other (6)

Project: *Community Resilience* (OPSX0401); Provider: Opus International Consultants; Contact: Vincent Dravitski; Timeframe: Jul 2004 – Jun 2010

Brief description: The development of civil defence and emergency management strategy which seeks to build resilient individuals and communities so as to strengthen recovery after natural disaster.

Other (7)

Project: *Host Communities: siting and Effects of Facilities* (TBAX0203); Provider: Taylor Baines and Associates; Contact: James Baines; Timeframe: Completed Jun 2003

Brief description: Development of new paradigms for infrastructure/host community relationships.

3.3 MfE Sustainable Management Fund (SMF)

Key contact: [Pam Harvey](#)

The objectives of the SMF are to make a positive difference to the environment by funding projects that fit under one of the following four topic areas ([Freshwater Management Initiatives](#); [‘Adopt A’ Schemes](#); [Urban Sustainability](#); [Community-level Climate Change](#)); that strengthen proactive partnerships between the community, industry, iwi and local government; and those that involve the community in practically focused “action for the environment”.

Urban (1)

Project: *Real Life Emission Standards & Emissions Testing for Domestic Solid Fuel Heaters* (2205); Provider: Environment Canterbury; Contact: Myles McCauley; Timeframe: Apr 2002 – Mar 2004

Brief description: To provide scientifically defensible emission data for use in air quality assessments in New Zealand.

Urban (2)

Project: *Reducing Stormwater Pollution in Gisborne* (2206); Provider: Gisborne Environmental Centre Inc.; Contact: unknown; Timeframe: Sep 2003 – Aug 2004

Brief description: To design, publish and deliver to Gisborne urban households an information brochure which identifies local stormwater problems and householder pollution reducing strategies.

Urban (3)

Project: *Stormwater Management Resources Programme* (2207); Provider: New Zealand Water Environment Research Foundation; Contact: unknown; Timeframe: Feb 2003 – Jan 2005

Brief description: The Programme comprises three main inter-related components: a Stormwater Management Resources Directory; a Decision Making Guide for the Best Approaches to Stormwater Management; and Guidelines for On-Site Stormwater Source Control.

Urban (4)

Project: *Clean Up NZ Week & ‘Reduce Your Rubbish’ School Campaign and Research Project* (4190); Provider: Clean Up New Zealand Trust; Contact: unknown; Timeframe: Feb 2003 – Jan 2004

Brief description: To promote and encourage schools to undertake rubbish reduction education.

Urban (5)

Project: *Sustainable Building and Promotion* (6127); Provider: BRANZ; Contact: Chris Kane; Timeframe: complete

Brief description: Nation-wide promotion and training on resource efficient design and building through a series of workshops for Local Authorities.

Urban (6)

Project: *Urban Sustainability Information Resource* (6150); Provider: BRANZ; Contact: Rachel Hargreaves; Timeframe: completed 2003 (BRANZ project EC 0583)

Brief description: Preparation of a report on New Zealand urban sustainability information.

Urban (7)

Project: *TUSC – Tools for Urban Sustainability Engineering Code of Practice* (6156); Provider: Waitakere City Council; Contact: Darren Utting; Timeframe: Jan 2003 – Dec 2005

Brief description: The purpose for the TUSC project is to provide a single user-friendly interface for Developers, Practitioners, Compliance Officers, and Policy Makers that will deliver cost-effective urban sustainability outcomes in both new developments and urban retrofit or intensification projects.

Urban (8)

Project: *Plastics Environmental Best Practice Programme* (6157); Provider: Plastics New Zealand Ltd; Contact: Carolyn Cox; Timeframe: Feb 2003 – Jan 2004

Brief description: The project will identify key environmental performance indicators, demonstrate and sell the business case for change, and engage key stakeholder groups in driving environmental best practice across the industry supply chain.

Community (1)

Project: *The Sustainable Household Programme* (7067); Provider: Marlborough District Council; Contact: unknown; Timeframe: Feb 2001 – Jan 2003

Brief description: The programme aimed to help groups of households work together to take actions in their homes and make choices in their daily lives that benefit the environment.

The pilot programme was held in the Marlborough region and has since been rolled out nationwide. Sustainable Households (contact: Rhys Taylor) has now been established as a separate entity with a [website](#) that provides downloadable information and resources.

Waste (1)

Project: *Construction and Demolition Waste Reduction* (4194); Provider: Building Research, various Territorial Authorities (TAs) and Recycling Operators of NZ Inc (RONZ); Contact: Roman Jaques; Timeframe: Jul 2003 – Jun 2006

Brief description: Work continues on examining the potential for the reuse/recycling of waste materials.

Building Research are currently involved in a two-year collaborative project with nine TAs and RONZ, providing a comprehensive set of measures aimed at reducing waste. Educational, legislative and practical support documentation for seven industry sectors will be provided, as part of this program. The [website](#) charting progress is frequently updated.

4. POLICY/REGULATORY DEVELOPMENT - LOCAL GOVERNMENT

All regional councils are required to or have prepared under the RMA a Regional Policy Statement (RPS) which highlights the need to address issues with regard to energy, water, urban form, transport, etc. Key regional government initiatives/policies/strategies (and occasionally, research) identified from internet searches and MfE's Urban Design Research paper (MfE 2004c) are outlined below.

Incentives used to encourage sustainability uptake are not widespread but do appear to be growing. Sinner and Salmon (2003a) strongly advocate economic incentives for 'sustainable development' arguing that communities (and councils) and businesses can resolve environmental problems constructively taking this approach.

4.1 Energy

There are relatively few councils active in developing sustainable/renewable/locality energy strategies. The most comprehensive ones are those for the Southland and Canterbury regions². The Southland strategy could conceivably be considered as a template for nationwide implementation.

Venture Southland (a joint initiative of Invercargill City Council Southland District Council, Gore District Council and the Community Trust of Southland) has produced (July 2004) the [Southland Regional Energy Strategy](#). The strategy has eight key areas of focus which will be implemented according to priority, funding and resources. This includes energy efficiency programmes (e.g. residential and energy efficiency public awareness), energy generation opportunities (e.g. assessment for potential of small-scale hydro power) and facilitating energy sector skills and trades.

Environment Canterbury (ECan) has also recently produced (April 2004) a [Regional Energy Strategy](#) for consultation. While not as comprehensive as Southland region's strategy, there are four core activity areas: monitoring and management of internal use; monitoring of carbon dioxide emissions via a bi-annual regional energy survey; domestic heating and residential energy efficiency; and sustainable transportation.

The Warm Home Energy Check (WHEC) pilot programme was launched by EECA in Christchurch, in partnership with ECan and their Clean Heat scheme. It will give Christchurch residents more information about their home's energy efficiency in the form of a star rating.

Environment Waikato has an [Energy Policy](#) (for Energy Efficiency and Conservation) to '*promote efficiency and conservation in the production, transmission and consumption of energy*'. Among six implementation methods listed for this policy, it states that it will '*Advocate energy efficiency in the design, location and operation of buildings and other structures, through community information, regional plans and resource consents*'.

Nelson City Council has an Energy Strategy ([Energy Strategy 2004 – 2006](#)) though this is relatively non-specific in its objectives (e.g. '*reduce fossil fuel and consider renewable energy sources where possible*').

4.2 Climate change

Key agencies: **Ministry for the Environment, New Zealand Climate Change Office, Regional and Local Councils**

Release date: **2003/4**

Key contacts: **Justine Daw**

As part of its portfolio of climate change work, the New Zealand Climate Change Office (NZCCO) has begun a programme to assist regional councils and territorial authorities to better understand and take into account climate change impacts when carrying out their day-to-day operations. This has been

² Norman Smith, Senior Adjunct Associate, Rocky Mountain Institute (NZ), pers comm., 12 January 2005

designed to provide underpinning information for the climate change public awareness programme '[4 Million Careful Owners](#)' and to respond to expectations that central government will provide guidance to councils on climate change effects under the provisions of the [RMA \(Energy and Climate Change\) Amendment Act](#) which came into effect in March 2004.

Also, the '[Communities for Climate Protection](#)' initiative released in July 2004 by the Government (and delivered by the International Council for Local Environmental Initiatives – ICLEI) is part of a programme to help councils reduce greenhouse gas emissions at the community level.

4.3 Transport

Virtually all major councils and regions have, as obliged under their regional plans, implemented a Regional Land Transport Strategy. The Wellington region is typical for the country. The Wellington Regional Land Transport Strategy (RLTS) 1999-2004 describes the land transport needs of the region and how those needs are to be met.

It has objectives consistent with the NZTS (including sustainability) and covers roading, public transport, freight transport, cycling and walking. The strategy covers a five-year period and is reviewed at least every two years.

4.4 Water

There appear to be no specific strategies aimed urban water though many councils are working with consultants on improving or upgrading stormwater infrastructure. Water is a key sustainability aspect of the new Building Act; changes to the NZBC will very likely require amendments to regional authority planning and policy (relating to buildings) to reflect this.

Analysis of historical water consumption records for all water supply Local Network Operators in the Auckland Region demonstrates that consumption responds to variable water charges (Sinner and Salmon 2003b). Since the drought of 1994-95, both Metrowater (serving Auckland City) and United Water (serving the Papakura District Council area) have implemented user-pays wastewater charges in addition to the user-pays tariffs already charged for water supply. In addition to introduction of variable water charges, it is likely that installation of meters have had an effect on public awareness of water consumption and therefore led to reductions in per capita consumption levels.

4.5 Waste

The NZWS has been an effective catalyst for action in the regions. Important developments include adoption of strategy targets by a large number of local authorities, and/or expanding their own waste management and minimisation services such as providing more curbside recycling and a project to reduce the volume of construction and demolition waste.

All regional councils appear to adopt their targets directly from the NZWS with subtle variations to these targets (e.g. in Taranaki). Environment Waikato produced a [Regional Waste Management Strategy](#) in September 2003. In what is fairly indicative of regional council approaches to date, the strategy (which is non-statutory guidance) outlines how Environment Waikato will work with territorial authorities and local communities to implement the NZWS with regard to construction and demolition wastes.

Other regional strategies include those by Environment Bay of Plenty ((draft) [Bay of Plenty Regional Waste Strategy: Zero Waste and a Sustainable Bay of Plenty](#) (Feb 2004)); Taranaki Regional Council ([Regional Waste Strategy for Taranaki](#)) (Feb 2004); and Nelson City Council – [Waste Management Plan 2004](#) (Dec 2004).

Hamilton City Council (contact: Sven Hanne) has produced the '*Hamilton City Council Draft Waste Management Plan*' (MfE 2004c). One of its targets is to amend building regulations to incorporate space allocation for recycling facilities in multi-unit residential and commercial buildings. This

council has also produced a guide for assisting schools in making decisions when building or renovating school facilities - *'Enviro-Classrooms: a design guide for schools'* (MfE 2004c).

4.6 Urban form and design

As part of a cross-government desire to improve the quality and liveability of our urban areas, the Auckland Regional Council, in conjunction with MfE, has showcased some [good examples of urban design](#) and development from across New Zealand. These urban design case studies, some of which made sustainability features a key criteria of the design, demonstrate attempts to embody and deliver urban design principles and the benefits of incorporating quality urban design.

The [Auckland Regional Growth Strategy](#) sets a vision for how Auckland can sustainably manage its growth for the next 50 years. It has been developed by all eight councils in the Auckland region, with the goal; **70% of future growth will happen within the existing urban area**. It links in with the Regional Land Transport Strategy (RTLTS) and suggests that the biggest proportion of future growth should be accommodated within the existing urban area, around transport routes. The strategy realises [growing UP rather than OUT will help protect the environment](#), so places considerable focus on limiting sprawling development and provides a framework around future growth where most of the housing would be built at 'medium density'.

Christchurch City Council (CCC) has a number of projects relating to urban design and form (MfE 2004c). These include development of an 'Urban Development Strategy' (approved to start Mar 2004; contact: Mark Bachels) and the 'Central City Urban Revitalisation' project (Contact: Miranda Charles). This council is also working with the University of Canterbury (UoC) (contacts: Dr Susan Krumdieck, Green Products and Processes Research Group, Engineering School, UoC; and Dr Andre Dantas, CCC) on a number of sustainable/renewable energy projects.

Manukau City Council has a project underway *'Crime prevention through environmental design guidelines'* (contact: Helena Maxwell-Numa) which is examining how best-practice standards can be established for perceived unsafe public locations (MfE 2004c).

An 'Urban Intensification Policy Approach' has been adopted by Tauranga City Council (contact: Andy Ralph) with intent of applying Smart Growth policy within Tauranga City (MfE 2004c).

The TUSC ([Tools for Urban Sustainability – Code of Practice](#)) project (see also Section 4.3) is a two year project initiated (with the assistance of Waitakere City Council and MfE) aimed at producing a web-based analysis tool to assess and plan new urban developments against sustainability indices. TUSC intends to be a framework that produces a flexible and evolving Code of Practice that easily adapts to make use of latest analysis techniques, accurate and contextual environmental data, new treatment technologies and design practices, up-to-date monitoring databases and an expanding set real-life case studies. It is being designed to fit within local planning contexts and aid implementation of local community goals and objectives throughout the country.

4.7 Housing and building

Waitakere City Council prepared ['The Sustainable Home Guidelines'](#) in 1998. The guidelines provide a practical guide for good practice eco-building with up to date information about energy, water, materials, safety, waste and other eco-building issues for (eco) home builders and/or retrofitters.

Christchurch City Council produced a [Sustainable Building Guide](#) in 2004. The aim of this guide is to promote environmentally sustainable development and to encourage people to design new residential buildings so that they interact positively with the various elements of their local environment.

Auckland Regional Council is undertaking research ('Regional intensification: intensive housing demand and supply issues') to identify market-based mechanisms that can be used to promote further nodal-based intensification in the Auckland region (in accordance with the Auckland Regional Growth Strategy).

5. INCENTIVES FOR SUSTAINABILITY UPTAKE

Incentives used to encourage sustainability uptake are not widespread but do appear to be growing. Sinner and Salmon (2003a) strongly advocate economic incentives for ‘sustainable development’ arguing that communities (and councils) and businesses can resolve environmental problems constructively taking this approach.

5.1 Energy

The Solar Industry Association in conjunction with EECA is offering [interest-free loans](#) for household solar water heating systems. To qualify, a system must be purchased from an accredited supplier and meet minimum price and panel area criteria.

5.2 Air quality

Air pollution is both a big city and small town problem in New Zealand. ECan and Nelson City Council have both produced air quality plans that attempt to reduce air pollution by phasing out open fires and inefficient, older model appliances. There are incentives in both cases for low-income households to install alternative heating.

Sinner and Salmon argue for the ‘trading of emission allowances’ whereby each emitting sector (including households) would be assigned a share of total emissions and required to reduce these allowances over time to achieve a target standard of air quality (trading can occur between sectors to achieve this).

The authors argue further that councils would manage emission allowances for households and vehicles. Costs would be passed on via emissions charges on fireplaces and wood-burners with financial assistance provided to those who convert appliances.

Emission charges and tradable allowances appear able to be implemented under the RMA (Sinner and Salmon 2003a) but to date this no council has taken action along this line.

5.3 Climate change

The emissions charge that will be introduced in 2007 will ensure that energy users face the truer cost of their emissions – thereby having an incentive to identify and adopt more energy-efficient alternatives for their homes, transportation, etc. It is expected that most of the revenue from the emissions charge will be ‘recycled’ to the economy via tax reductions (Sinner and Salmon 2003a).

5.4 Transport

Traffic congestion is a huge burden on a region’s (especially Auckland’s) communities, commuting workforce as well as manufacturing, distribution and service businesses.

In New Zealand, road users are charged through a surtax on petrol. ‘Congestion pricing’ (as adopted by City of London and Singapore), via electronic road user charging (ERUC - currently under investigation by MoT) means essentially it will cost more to travel heavily-used routes at peak time (Sinner and Salmon 2003a). Currently, no council or region has implemented such a pricing system given the inherent political problems of public acceptance, etc.

5.5 Water

Analysis of historical water consumption records for all water supply Local Network Operators in the Auckland Region demonstrates that consumption responds to variable water charges (Sinner and Salmon 2003b).

Since the drought of 1994-95, both Metrowater (serving Auckland City) and United Water (serving the Papakura District Council area) have implemented user-pays wastewater charges in addition to the user-pays tariffs already charged for water supply.

In addition to introduction of variable water charges, it is likely that installation of meters have had an effect on public awareness of water consumption and therefore led to reductions in per capita consumption levels.

5.6 Waste

The NZWS focuses on solid waste from households and industry. It commits to zero waste as a long term vision. However, actual practice regionally is variable. Strong barriers to waste reduction remain such as the low cost of waste disposal in some regions, the subsidising of landfills from rates and curbside recycling being undercut by 'wheelie-bin' collection.

Christchurch City Council has pioneered the concept of imposing a levy on household waste going to landfill and uses it to fund the [Recovered Materials Foundation](#). The Foundation acts to increase the diversion of materials from the waste stream for reuse and recycling.

5.7 Housing and building

A number of lending institutions in Australia are promoting '[green mortgages](#)' that offer reduced loan interest rates for energy-efficient houses. However, homeowners often are required to have a high star-rating on their home to be eligible; in some states (e.g. Victoria) all new homes, which will need to be built to a mandatory five-star rating standard (as of July 2004), would automatically qualify for a 'green' loan (in this case, the Green Home Company).

Such a scheme does not appear as yet close to fruition in New Zealand but the feasibility of this type of initiative has been discussed as part of the MfE Warm Homes project.

6. MISCELLANEOUS

While not strictly associated with government, the following are important players or initiatives associated with sustainability and/or sustainability policy that should be acknowledged in terms of emerging ideas, key contacts, and where there may be collaboration opportunities (or alternatively allows future conflicting interests to be identified).

6.1 Energy

Lake Taupo Development Company (contact: Ron McEwen), in collaboration with Innovation Waikato is proposing the establishment of the New Zealand Clean Energy Centre in Taupo. The Centre aims primarily to facilitate new technology from renewable sources and explore new uses for geothermal heat in the region.

Simon Upton, the former Minister for Research Science & Technology, proposes a [new approach](#) in dealing with energy, climate change and future framework conditions, both for the short and longer (post 2012) terms. One of Simon Upton's arguments is that if policy-makers are not prepared to price environmental costs into energy prices, then they may have to use other means of bringing novel energy sources to the market place such as requiring energy suppliers to deliver a percentage of their power from renewable sources.

Landcare Research have developed the 'E-Manage' tool (available as [demonstration](#) programme - contact: Ian Turney, Lincoln campus) which can be used to identify and monitor energy savings, assist in PRE (Projects to Reduce Emissions) applications, and assessment of the risk for future carbon emission charges.

6.2 Urban research

The University of Auckland (School of Architecture – key contacts: Professor Brenda Vale or Assoc Professor Robert Vale) is proposing a study to demonstrate cost-effective (zero CO₂) sustainable housing undertaking. It has also recently completed or is undertaking a number of projects outlined below:

(1)

Project: *Zero Energy Retrofit*; Contact: Dr P Mithraratne; Timeframe: unknown

Brief description: To investigate and demonstrate ways of converting existing houses into sustainable houses, through the use of simple upgrades combined with photovoltaic technology.

(2)

Project: *How to Assess Appropriate Levels of Insulated Mass for the New Zealand Climate*; Contact: Dr P Mithraratne; Timeframe: unknown

Brief description: To develop modelling software to deal with annual storage of energy in buildings.

(3)

Project: *Sustainability Indicators for Residential Blocks*; Contact: Sumita Ghosh; Timeframe: completed (2004)

Brief description: To examine, using appropriate indicators (energy, transport, food, carbon sequestration and waste), the potential of residential blocks to be sustainable, using aerial photography.

(4)

Project: *The Environmental Impact of New Ways of Working in the Office*; Contact: Dr Paul Jurasovich; Timeframe: completed (2003)

Brief description: To measure the environmental impact of office buildings, the home office and the journey to work and assess which way of working offers the lowest environmental impact.

6.3 Built environment policy

Key agencies: **Construction Industry Council, New Zealand Institute of Architects**

Release date: **October 2002**

Key contact: **John Duncan (Building Research)**

A 'National Policy on the Built Environment' was drafted by the New Zealand Institute of Architects in 2000 (CLG 2000), endorsed by the Construction Industry Council (NZCIC) and submitted to the government in 2002. A research agenda to create the new knowledge needed to underpin this policy has also been developed (NZCIC 2002).

The built environment policy includes:

- *integrated, coordinated approach to achieving environmental, social and economic underpinnings of sustainability*
- *strategic, government-led, direction for urban change and development*
- *framework within which the building professions, academia and other organisations can effectively focus their efforts*
- *leverage for high-quality design and research into the built environment, driven by industry consortia and organisations such as the Design Taskforce.*

A formal built environment policy has yet to emerge. However, the importance of achieving good urban design is a key action identified through the Urban Design Protocol in Sustainable Cities theme contained in the SDPA (discussed in Section 2.10).

6.4 Best Practice in Construction

Key agencies: **Centre for Advanced Engineering (CAE), Building Research**

Start date: **September 2004**

Key contact: **Amanda Warren (CAE)**

Brief description: To bring about process improvements in the delivery and procurement of construction services within the New Zealand construction and facilities management sector. CAE has plans to launch a national set of Key Performance Indicators (KPI) for the New Zealand construction industry in association with Building Research (www.branz.org.nz).

The indicators are intended to show how New Zealand compares internationally. This should allow the industry and owners to set targets to improve in any weaker areas such as time, cost, safety, quality and profitability, and measure their progress.

The final project deliverables will be launched at a national conference at Te Papa on April 12 and 13, 2005. A KPI Project Steering Group, comprising a number of prominent buyers and sellers in the construction industry, is currently being formed.

6.5 Sustainable housing

A number of companies are beginning to appear who are offering their customers, on a more mainstream rather than one-off basis, housing with 'energy efficient' and/or 'environmentally friendly' features as prominent aspects in their product. These include [Powered Living](#) (Nelson-based), [Arhaus](#) (Auckland-based) and [Evolution Homes](#) (Christchurch-based). There is no scope in this report to make any comparison of these home products with the proposed [Now Home](#) though, generally speaking, these companies are targeting 'new build' rather than the retrofit market.

6.6 Housing and building - overseas

The Gold Coast City Council has recently endorsed a regional local government push towards sustainable home construction and has asked the Queensland State Government to implement a mandatory Sustainable Housing Code (SHC). The code would require new homes to use energy-efficient hot-water systems and a AAA-rated shower rose, as well as meeting a selection of other design options to achieve sufficient points to comply.

The code deals with energy, water and building/design issues for new homes, requiring energy efficiency, promoting water conservation, and delivering an improved standard of disability access, safety and security; and goes well beyond requirements currently embodied in the *Building Code of Australia*. Gold Coast City's Second *Innovation House* (IH2) is currently being constructed and will feature water efficient technology in kitchen, bathroom and gardens, energy efficient lighting and environmentally-friendly building design.

In the UK, a steering group is developing a [Code for Sustainable Buildings](#) as part of the UK government's 2004 pledge to make buildings more 'environmentally friendly'. The initial focus of the Code will be on new housing and feature demonstration projects.

6.7 Sustainable business and 'Think-tanks'

The New Zealand Business Council for Sustainable Development (NZBCSD – key contact: Dr Roger Spiller) is a leading advocate on issues associated with sustainable development. Their mission is to provide business leadership as a catalyst for change toward sustainable development, and to promote eco-efficiency, innovation and responsible entrepreneurship.

NZBCSD seek to contribute towards a sustainable New Zealand and additionally:

- *participate in policy development in order to create a framework that allows business to contribute effectively to sustainable development*
- *develop policy and provided guidance in the areas of e.g. managing greenhouse gas emissions, moving towards zero waste, sustainable supply chains and how economic incentives can motivate sustainable development.*

In 2002, the Sustainable Business Network (SBN – key contact: Rachel Brown) was established to promote understanding and action on sustainability issues among small to medium sized businesses. A number of NZBCSD businesses are also part of the SBN.

[Sustainable Aotearoa New Zealand](#) (SANZ – key contact: Dr John Peet or Dr Jim Salinger), was formed in 2004 as result of a merging of the 'Sustainable Development Forum' (which has been an informal cross-disciplinary grouping of sustainability experts) and Sustainable New Zealand (a largely Auckland-based 'grass-roots' organisation). The intent of SANZ is to make contributions toward:

- creation of a national sustainable development strategy
- advising government on sustainability policy
- promoting public dialogue.

6.8 Waste initiatives

[Lifeafterwaste](#) is an initiative of the Waste Management Institute of New Zealand (WasteMINZ) (contact: Carole Inglis) aimed at achieving a resource efficient and sustainable New Zealand. The organisation brings industry, government and community sectors together to work as a coalition. It provides the opportunity for sectors and their representatives to embrace the principles of resource efficiency and sustainability through leadership and collaboration.

The Lifeafterwaste Steering Group is in the process of developing a two-year work programme to achieve its vision - 'to achieve a resource efficient and sustainable New Zealand' - and a series of goals including giving effect to the Lifeafterwaste programme through a range of innovative actions and projects.

In Australia, the state of South Australia has developed a comprehensive [waste strategy](#) consultation paper in conjunction with Zero Waste SA. The key (five in total) objectives include fostering sustainable behaviour and development of effective policy instruments to encourage avoidance, reduction, reuse and recycling of waste. Among its aims, the plan seeks to (by 2010) divert 75% (up from 65% currently) of all household waste collected to recycling.

6.9 Plastics and sustainability

Plastic is one of the five key packaging materials targets have been set for recovery under the Packaging Accord (see Section 3.12.1). Plastics New Zealand (contact: Carolyn Cox) has developed a five year (started in 2003) agenda for action - [The NZ Plastics Sustainability Initiative](#) – designed to minimise the environmental effects of the plastics industry and its products.

6.10 Best practice procurement

The New Zealand Construction Industry Council (NZCIC) has produced a 'best practice procurement' [document](#) which identifies key issues and drivers for change in the construction industry in relation to the purchase of construction services. There is recognition given to environmental sustainability (among other issues) being a key determinant in the service selection process as a result of increasingly complex project requirements.

NZCIC argue that new procurement processes must obtain 'the best value for money'; the concept of best value to enable environmental/social responsibility as well as whole of life considerations (NZCIC 2004).

6.11 Green Procurement - Australia

Good Environmental Choice Australia (The Australian Environmental Labelling Association - AELA) in association with Clean Up Australia launched '[The State of Green Procurement in Australia](#)' report in September 2004. It provides a comprehensive picture of green procurement activities in Australia's institutions and the consumer environmental preference of everyday Australians.

The report provides a comprehensive overview for companies seeking to position their market activities over the next decade, government officials seeking to articulate environmental and market policy, green procurement officers to understand the different approaches to green procurement in Australia and environmental, academic and industry participants that seek to better understand this somewhat important but poorly articulated area of the market to date.

There are two associated websites: www.goodenvironmentalchoice.org.au (public-oriented to guide people in finding the environmental do's and don't of buying products and living environmentally sensible lifestyles); and www.greenprocurement.org.au (for government authorities and business seeking to specify for and procure environmentally preferable products).

Of interest to the building industry, survey information in the report shows that nearly nine in ten people agreed that and environmental rating on planned building designs, or on choice of materials, fittings or appliances, would influence their decision when building or renovating a house.

7. SUMMARY AND CONCLUSIONS

Sustainability is a complex subject. At the focus level of this report, it is about decision makers in central and local government being aware that the environment, the economy and society are interlinked and that (business) opportunities in any one of those areas may need to be viewed in light of potential impacts on one another so as to avoid adverse future outcomes.

The concepts and practical implementation of sustainability principles are undoubtedly gaining traction within government and business. This is also reflected by legislation such as the Local Government Act (2000), the Energy Efficiency and Conservation Act (2001) and the Building Act (2004) which strongly emphasise the concept of sustainability in their purpose and principles statements. Other policies, strategies, programmes of action, etc originating from government, the research sector, and industry increasingly serve to support sustainability initiatives.

In this report, an overview of all key aims, objectives and targets have been identified in relation to New Zealand's national and regional sustainability / sustainable development initiatives. The caveat here is that there needs to be a good awareness of 'what the other is doing' so as to avoid costly repetition of work especially in terms of practical initiatives. The report allows Beacon to identify any potential conflicts of interest and develop a clearer understanding of sustainability / sustainable development in the residential built environment.

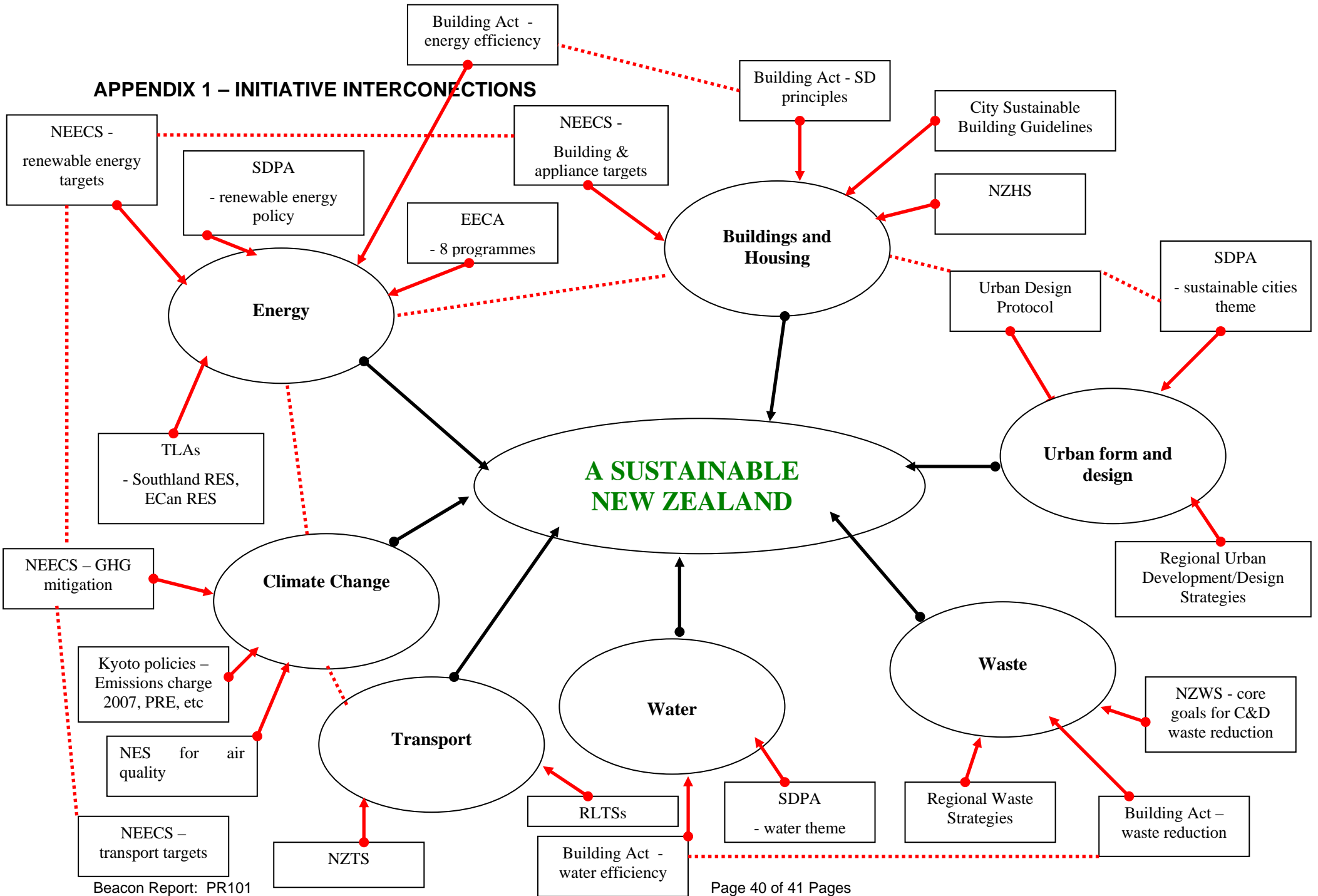
Nationally and regionally, a 'sustainability' awareness is steadily developing with government policy increasingly being produced 'cross-referenced for sustainability'. In this report, it is demonstrated that there have been a considerable number of linkages between central and local government stakeholders who develop and promulgate sustainability policy. Research is also becoming an important part of the linkages.

These linkages will grow in importance as a meshing of 'top-down' (the theory - government policy) meets 'bottom-up' (practical urban sustainability initiatives) to create the means for addressing New Zealand's most pressing sustainability issues.

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APPENDIX 1 – INITIATIVE INTERCONNECTIONS



APPENDIX 2 – TIMELINE OF KEY SUSTAINABILITY POLICY MECHANISMS

