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BEES INTERIM REPORT
Building Energy End-Use Study – Year 5

BARRIERS TO RESOURCE EFFICIENCY
Kay Saville-Smith

BUILDING ENERGY END-USE STUDY (BEES) YEAR 5: BARRIERS TO RESOURCE EFFICIENCY

BRANZ Study Report SR 277/2

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Reference

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PREFACE

Understanding how energy and water resources are used in non-residential buildings is key to improving the energy and water efficiency of New Zealand's building stock. More efficient buildings will help reduce greenhouse gas emissions and enhance business competitiveness. The Building Energy End-Use Study (BEES) is taking the first step towards this by establishing where and how energy and water resources are used in non-residential buildings and what factors drive the use of these resources.

BEES started in 2007 and will run for six years, gathering information on energy and water use by conducting surveys and monitoring non-residential buildings. By analysing the information gathered, we aim to answer eight key research questions about resource use in buildings:

1. What is the aggregate energy and water use of non-residential buildings in New Zealand?
2. What is the average energy and water use per unit area per year?
3. What characterises the buildings that use the most energy and water?
4. What is the average energy use per unit area for different categories of building use?
5. What are the distributions of energy and water use?
6. What are the determinants of water and energy-use patterns – e.g. structure, form, function, occupancy, building management, etc.?
7. Where are the critical intervention points to improve resource use efficiency?
8. What are the likely future changes as the building stock type and distribution change?

Understanding the importance and interaction of users, owners and those who service non-residential buildings is also an important component of the study.

For BEES, non-residential buildings have been defined using categories in the New Zealand Building Code, but in general terms the study mainly looks at commercial office and retail buildings. These vary from small corner store dairies to large multi-storey office buildings. For more information on the building types included in the study please refer to BRANZ report SR224 Building Energy End-Use Study (BEES) Years 1 & 2 (2009) available on the BEES website (www.branz.co.nz/BEES).

The study has two main methods of data collection – a high level survey of buildings and businesses, and intensive detailed monitoring of individual premises.

The high level survey initially involved collecting data on a large number of buildings. From this large sample, a smaller study of businesses within buildings was carried out which included a phone survey, and collecting records of energy and water use, and data on floor areas. The information will enable a picture to be built up of the total and average energy and water use in non-residential buildings, the intensity of this use and resources used by different categories of building use, answering research questions one to four.

The detailed monitoring of individual premises involves energy and indoor condition monitoring, occupant questionnaires and a number of audits, including appliances, lighting, building, hot water, water and equipment.

This report presents data arising from further surveys of property managers, building owners and building owner-occupiers respectively. It considers the extent to which these stakeholders recognise or are committed to resource efficiency and the actions that they do, or do not, institute to optimise resource use in non-residential buildings. It also provides a brief review of issues around resource optimisation in the non-residential building stock and findings of the BEES programme to date in relation to the interests, outcomes and motivations surrounding the ownership, leasing and management of non-residential buildings and their implications for resource optimisation.

SUMMARY

- It is clear from earlier BEES work that the importance of resource optimisation for the building is affected by both the ownership and the management of the building.
- This report presents results from a survey of property managers, building owners and building owner-occupiers which was done to explore how different segments act on issues of resource optimisation.
- The data emerging from these surveys reinforces a persistent sense of under-awareness and significant inertia on the part of building owners, owner-occupiers and property managers in relation to active management of energy and water use.
- There is no one solution to improve resource optimisation in buildings as Building owners and tenants were found to be a diverse set of organisations and individuals with different values and priorities.

The data emerging from the BEES programme has highlighted the multi-dimensional nature of the factors that determine resource efficiency. The building, its design, materials and plant are important drivers of resource use. They also present some of the solutions for resource optimisation. So too do the ways the occupants and users of buildings behave including their patterns of occupation over a day and a week. In addition to those aspects of building use and management, BEES data and international experience indicate that the take-up of resource efficiency measures is contingent on the way in which buildings are managed by owners, owner-occupiers and property managers. This report presents data from surveys of these three critical players in the management of non-residential buildings.

The report provides a brief review of issues around resource optimisation in the non-residential building stock and findings of the BEES programme to date in relation to the interests, outcomes and motivations surrounding the ownership, leasing and management of non-residential buildings and their implications for resource optimisation.

This report presents data arising from further surveys of property managers, building owners and building owner-occupiers respectively. It considers the extent to which these stakeholders recognise or are committed to resource efficiency and the actions that they do, or do not, institute to optimise resource use in non-residential buildings.

Table A: Property Managers and Building Owners Taking No Specified Actions

No Action To:	Building Owners and Property Managers	% Building Owners and Property Managers (*n* = 109)
Set targets for energy or water use reductions	83	76.1%
Provide information to staff or tenants	80	73.4%
Establish formal policy	89	81.7%
Have a person responsible for resource management	72	66.1%
Do formal resource audits	77	70.6%
Benchmark use	71	65.1%

The results of the surveying shows, over three-quarters of building owners and property managers set no targets for energy or water use reductions with similar proportions providing no information to occupants, tenants or staff about ways to reduce energy or water consumption (Table A). About two-thirds of property managers and building owners report having no position with responsibility to optimise water or energy management or benchmarking use. A slightly larger proportion, 71.6 percent of property managers and building owners report they have not undertaken energy or water audits in their buildings.

For the owner-occupier group two other tendencies emerge:

- A large majority of owner-occupiers take no action to improve the management of energy (Table B) and water consumption (Table 16, see section 7.3) with the exception of installation of a limited range of products such as energy-efficient light bulbs and monitoring energy use.

- Where owner-occupiers do institute actions to address energy and water use issues, those actions tend to involve implementing them within their own business rather than across the whole building. For instance, only 17.6 percent of owner-occupiers report monitoring the energy use in the building, although 33.3 percent of owner-occupiers report monitoring their own energy use.

Table B: Owner-Occupiers Taking No Actions for Energy Management

No Action To:	Owner-Occupiers	% Owner-Occupiers (*n* = 51)
Monitor energy use	25	49.0%
Set targets for energy reductions	42	82.4%
Provide information to occupants on energy use	42	82.4%
Establish formal energy management policy	45	88.2%
Have a person responsible for energy management	41	80.4%
Do formal energy audits	44	86.3%
Benchmark energy use	48	94.1%
Dedicate a budget for energy management	46	90.2%
Install energy-saving technologies	27	52.9%

The data emerging from these surveys reinforces a persistent sense of under-awareness and significant inertia on the part of building owners, owner-occupiers and property managers in relation to active management of energy and water use. This would suggest that improvements in resource consumption are most effectively achieved through building resource-efficient, non-residential stock. This presents a profound challenge to the building industry. How can resource efficiency be achieved while restraining the cost margins of designing and building resource-efficient, non-residential buildings?

Associated with that problem is ensuring resource efficiency can be built into the numerous units of stock which are delivered into the smaller end of the market and are likely to be acquired and managed by owners with relatively few stock units. The problem with a focus on new-builds in the non-residential stock is of course its limited transformational impact. The small proportion of new-builds added to the existing non-residential stock on an annual basis is low.

This suggests that:

- Technical solutions need to be devised to provide both cost-effective new-builds and cost-effective retrofit.

- Cost-effective and easily-managed operational systems need to be developed and promoted.

- Considerable thought needs to be directed at prompting take-up for technologies, designs and materials, as well as operational systems. In this context, transformation is going to require awareness-building among building owners, property managers and tenants.

- Awareness-building and take-up will need to be supported by credible and tailored value cases that take into account the different imperatives that these stakeholders bring.

In short, ensuring that New Zealand's non-residential buildings neither burn an energy or water hole in businesses' pockets or consume more resource than New Zealand can sustain, means recognising that not only are buildings different – neither tenants nor building owners can be treated as homogenous groups. Not all tenants are the same nor do they have the same preoccupations. Building owners are also a diverse set of organisations and individuals.

Under those circumstances, a strong evidence base is clearly important in developing strategic policy responses and value cases. So too is a multi-dimensional approach to initiatives designed to promote take-up and discourage the over-consumption of resources. This has already been recognised internationally.

Although debate around the relative merits of each of the various instruments has been dominated by theoretical economics with little reference to empirical evaluation or, indeed, experience, there is now emerging a body of empirical evaluation which compares these tools directly.

The 2007 United Nations Environment Programme (UNEP) undertook a comprehensive review of instruments directed to optimising building energy performance. UNEP concluded that combinations of instruments are more effective than the use of single instruments; regulatory and control instruments can be necessary; economic instruments, subsidies and informational levers as single items have variable results but are important to a mutually-reinforcing package; and these packages need to be tailored specifically to prevailing institutional, cultural and market conditions.

The findings reported here on the perceptions, attitudes, actions and preoccupations of New Zealand non-residential building owner-occupiers, building owners and property managers can contribute to the development of those packages for this country.

ABBREVIATIONS

BEES   Building Energy End-Use Study

CATI   Computer-Assisted Telephone Interviewing

CRESA   Centre for Research, Evaluation and Social Assessment

HVAC   Heating, Ventilation and Air-Conditioning

UNEP   United Nations Environment Programme

CONTENTS

FIGURES

TABLES

INFOBOXES

1. INTRODUCTION

The data emerging from the BEES programme has highlighted the multi-dimensional nature of the factors that determine resource efficiency. The building, its design, materials and plant are important drivers of resource use. They also present some of the solutions for resource optimisation. So too do the ways the occupants and users of buildings behave including their patterns of occupation over a day and a week. In addition to those aspects of building use and management, BEES data and international experience also indicate that the take-up of resource efficiency measures is also contingent on the way in which buildings are managed by owners, owner-occupiers and property managers. This report presents data from surveys of these three critical players in the management of non-residential buildings.

The report provides first, a brief review of issues around resource optimisation in the non-residential building stock. Second, it presents the findings of the BEES programme to date in relation to the interests, outcomes and motivations surrounding the ownership, leasing and management of non-residential buildings and their implications for resource optimisation. The latter data was generated by a set of qualitative interviews with landlords of non-residential stock who directly manage their buildings; facilities managers that manage buildings on behalf of landlords; property portfolio managers who acquire, dispose of, and manage buildings across a wide portfolio of buildings leased and rented to a diverse set of tenants; and property managers for businesses who manage those buildings (acquired through ownership or lease) necessary to deliver business operations or services.

Those initial analyses prompted the further surveying; it is the results of that surveying which are the primary focus of this report. This report presents data arising from surveys of property managers, building owners and building owner-occupiers respectively. It considers the extent to which these stakeholders recognise or are committed to resource efficiency and the actions that they do, or do not, institute to optimise resource use in non-residential buildings.

The following report is structured as follows:

- Section 2 sets out the objectives of the BEES programme and its focus on providing an evidential basis for resource efficiency optimisation.

- Section 3 reviews BEES findings around the issue of change and resource optimisation in non-residential buildings.

- Section 4 provides a brief summary of BEES data related to barriers arising from BEES surveying in 2010/11.

- Section 5 describes the current surveys of property managers, owners and owner-occupiers.

- Section 6 presents data relating to the number, distribution and nature of the buildings owned or managed by the owner and property manager respondents as well as their approach to resource, particularly energy management.

- Section 7 presents data relating to the owner-occupiers of buildings already involved in the BEES programme.

- Section 8 comments on the implications of these findings for developing a more proactive stance in relation to non-residential resource efficiency.

2. THE BEES PROGRAMME

The Building Energy End-Use Study (BEES) programme is concerned with understanding energy and water use in New Zealand's non-residential buildings. It is designed to assist private and public sector agencies and organisations by providing new knowledge and better understanding of the relative importance of building design, use and function; quantity and types of energy and water end-uses; and opportunities for targeted management to optimise energy and water use through building design and construction, building management and occupant behaviours.

The BEES programme excludes residential buildings but all non-residential buildings are included except outbuildings; ancillary buildings; industrial buildings (except warehouses); and communal non-residential assembly service. Infobox 1 provides a summary of the key research questions driving BEES and their alignment with policy, management and practice issues. The BEES research components are fourfold and set out along with the primary research methods in Infobox 2.

Infobox 1: Alignment of BEES Objectives and Policy, Management and Practice

Key Research Questions	Contribution to Policy, Management and Practice
1. What is the aggregate energy/water consumption of non-residential sector buildings? 2. What is the average $kWh/m^2/annum$? 3. What categories of non-residential buildings appear to contribute most to the aggregate energy/water consumption of the commercial sector buildings?	■ Highlight importance of commercial buildings in context of New Zealand energy/water use ■ Allow policy sector to consider potential of intervention in relation to quantum of resource use. ■ Provide crude indication of possible intervention targets.

4. What is the average $kWh/m^2/annum$ of each selected non-residential building category?
5. What are the uses to which energy/water are directed?
6. What are the determinants of those patterns of use:
   a. Building structure and form
   b. Function
   c. Other attributes:
      ■ Climate
      ■ Ownership
      ■ Multi-use
      ■ Occupancy
      ■ City/town position
      ■ Building age
	■ Allow policy sector to consider potential of intervention in relation to quantum of resource use.
	
	■ Indicate possible intervention targets and the variables important in developing interventions.
	
	■ Establish extent of variation in resource use and determinants.
	
	■ Provide crude indicator of the types of intervention that might be critical ranging from education/information, incentives and disincentives, regulation.

7. What are the critical intervention points to improve non-residential building resource efficiency:
      ■ Building envelope and amenities
      ■ Building Management
      ■ Occupant behaviour
	■ Establish the range of interventions programmes and regulatory requirements for building stock efficiency improvements.

8. What is the likely change in energy and resource demand from the non-residential sector buildings into the future as stock type and distribution changes?	■ Provide forecasts of resource efficiency as building stock changes in quantum and type. ■ Identify risks and opportunities for manage resource consumption in the commercial sector.

Infobox 2: Research Components, Method and Research Question Alignment

Research Component	Method	Key Questions
• Aggregate resource use patterns (energy and water).	Valuation data extraction and analysis. Web search data and analysis. Premise phone surveys, meter data.	1-3
• Determinants of resource use (energy and water).	End-use monitoring in sub-set of buildings. Interviewing and surveying.	4-6
• Managing and improving resource efficiency.	Case studies, feasibility studies and topic analysis.	1-7
	In-depth interviews and analysis. Review of international practice.	
• Future demand and potential.	Modelling and simulation. Topic reports.	8

3. RECOGNISING THE CHALLENGE OF CHANGE

The BEES programme directly engages with the considerable and ongoing international debate about the extent to which the non-residential building sector's resource efficiency, particularly energy efficiency, is critical to economic, social and environmental outcomes.

It also recognises that the resource performance in non-residential buildings reflects a complex interaction between the:

- Design, materials and construction of a building;

- Equipment used within the building which in turn can be broadly divided into equipment that is used to operate the building and equipment used by premises within the building to undertake their business functions;

- Behaviour of building users; and

- Ownership and managerial arrangement of the building and its operation within the context of those arrangements.

Most importantly, the BEES programme is directed to identify the range of technological solutions that suit not only New Zealand's unique building typology but the reality of New Zealand's non-residential building ownership, tenancies and management.

With regard to the latter, the BEES programme has sought to explore and test aspects of the international experience and its applicability to New Zealand. For instance a recent European survey suggested at least tenants, investors, owners and developers had an interest in green buildings both as a business asset and as providing benefits in relation to operating costs. That survey found relatively little variation between landlords and tenants around the benefits of buildings that minimise resource use. Benefits reported by European landlords and tenants together were that 24 percent sought to reduce energy and water consumption; 23 percent sought to make savings in building running costs; 9 percent wanted reductions in carbon emissions; and 6 percent wanted to enhance corporate image (Rossall, et al., 2009).

This raises issues around whether a similar pattern prevails in New Zealand. Similarly, we can ask whether the "hard" benefits related to costs for tenants and, consequently, potential for higher capital returns to owners and developers are more attractive to New Zealand landlords and tenants as they are to European stakeholders than "soft" benefits such as image and corporate responsibility related concerns about climate change.

BEES has used Pett and Ramsay's (2003) categories of non-residential building stakeholders, each with somewhat different interests and roles (Infobox 3), to explore the complex value chain evident in the non-residential building sector and these issues of difference and similarity between New Zealand and the broad patterns of international experience.

Infobox 3: Stakeholders and Roles in Non-Residential Buildings

Investors	Invest in property to earn income and/or capital growth. Range from private individuals to banks and financial companies to balance fund portfolios. Companies invest in their own and other property to maximise return on capital assets. Insurance/superannuation companies use investments to manage future liabilities.
Property developers	Profit from buying land or property, developing and redeveloping property, property to earn increased returns on investment and costs of upgrade. Can carry out design and building process, may subsequently own and manage property. They employ construction companies, architects and property management companies.
Construction companies	May be property developers but may simply make profit from the construction process.
Property managers	Rent, lease and manage tenancies of properties often on behalf of other organisations. Maximise rental return for the owners (landlords or investors).
Professional advisers	Includes architects, designers, land surveyors, valuation surveyors, building services engineers and facilities managers.
Policy and regulatory agencies	Those involved in policy, planning and legislation relating to property and environment including policing regulatory compliance.
Users	Strategic users – managers of firms using offices and require them to provide a place where the firm operates. Operational users – are premises managers and may be environmental or energy managers. Passive users – are for this purpose taken to be anyone who works in or uses the building as a client or consumer. Firms that use offices fall into owner-occupiers or tenants, whether they own the building (owner-occupiers) or whether they lease it (tenants).

In doing so, it is recognised that New Zealand also has a similarly complex value chain in the non-residential building sector, but may have quite different regulatory, institutional and cultural conditions.

Overseas, the non-residential building sector's complex value chain has been identified as underpinning both:

- A shared experience of resistance to taking up technical solutions to optimise resource use; and

- The need for jurisdictions to adopt an integrated range of tools and mechanisms if they are to successfully promote resource-efficient new buildings and encourage retrofitting in existing buildings (Saville-Smith & Warren, 2010).

Critical questions for the BEES programme are whether such imperatives prevail in New Zealand; and, the extent to which the explanatory models used to define, explain and, indeed, address the barriers to taking up resource efficiency solutions are applicable in New Zealand – the vicious circle of blame (see Figure 1) and split incentives respectively.
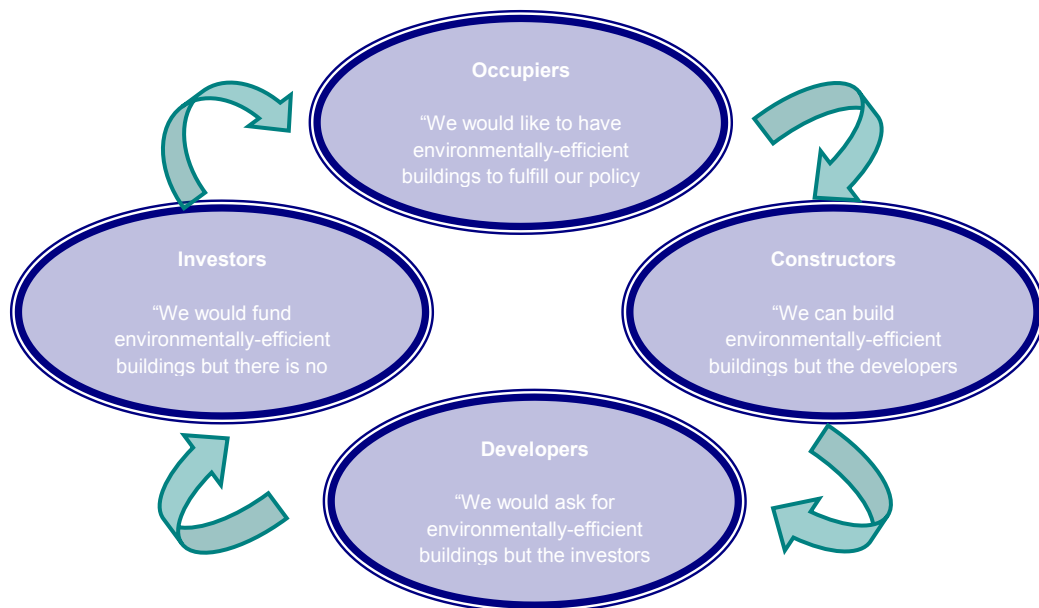
Figure 1: The Commercial Building Sector "Vicious Circle of Blame" (Pett & Ramsay, 2003)

Both of these explanatory models have been detailed in previous BEES reports (Saville-Smith, 2011). The vicious cycle of blame characterises the supply chain as self-maximisers who persistently rationalise their own and the supply chain as a whole's, failure to deliver on resource performance as an inevitable consequence of other members of the supply chain as unwilling or unable to take-up performance-enhancing designs and technologies. The split incentive model suggests principal-agent market barriers exist in the non-residential building sector because the structure of the value chain means that parties that make decisions about resource use and the resource performance of buildings and the appliances and equipment used in them, are not affected by the consequences of those decisions. Parties acting in ways that incur costs that they themselves do not have to bear, according to economists, generate moral hazard and ultimately distorted and inefficient markets.

The BEES research thus far suggests that those models do have descriptive merit. However, as will be discussed later, there are differences in the building stock and the institutional structure and dynamics of the non-residential building sector in New Zealand compared with Europe, North America and even Australia that suggests effective responses to addressing such problems as split incentives in New Zealand may not be simply a matter of applying overseas initiatives or approaches.

Market failures associated with split incentives and moral hazard have overseas and, to a lesser extent, here, prompted calls for interventions ranging from regulation to government incentives to stronger market-based instruments. In particular, these include managing split incentives through contractual mechanisms and instituting market mechanisms which make transparent the performance of buildings and provide for premium market pricing. These are manifest in the emergence overseas of:

- Green leases and contracts;

- Building accreditation, certification and performance measurement; and

- Changes in accountancy valuation and payback analyses.

But even overseas there is debate about both the explanatory models and the tools and instruments for stimulating market transformation in the non-residential buildings sector. There is still limited systematic evaluation of different policy instruments (Ries, et al., 2009). There are still deficiencies in the data which might demonstrate the performance benefits (financial and otherwise) of commercial buildings that optimise

resource use compared to those that do not (Nelson, et al., 2010). There is limited agreement around the standards that should be attached to resource-optimal and other buildings.

The application of these tools in New Zealand may be even more problematic for a number of reasons. Firstly, in the international context, developments such as green leases are geared to that part of the non-residential building sector involved in new building development, significant redevelopment and/or organised around the interests of major investors and significant anchor tenants.

In New Zealand, however, it appears there is a reasonably substantial owner-occupier population in the non-residential building stock that occupy relatively small buildings. There are also different exposures to water and energy pricing in New Zealand relative to patterns found overseas. There is, for instance, very little transparent exposure to water charging and tenants rather than building owners tend to pay directly for electricity. Moreover, there has long been inconsistent, albeit anecdotal, evidence around the extent to which either tenants or landlords in New Zealand are concerned with and seek to manage costs related to energy and water respectively.

4. 2010/2011 SURVEYING AND INTERVIEWS

Those issues were explored in a preliminary way with an analysis of data pertaining to the non-residential building sector drawn from surveys of 366 premises undertaken in the BEES programme in 2010 and a small set of qualitative interviews with owners and active users of non-residential buildings. The results have been reported in more detail elsewhere (Saville-Smith, 2011). In summary, those interviews and analysis of the premise data available at that time found that:

- A minority of premises are occupied by owner-occupiers, but it nevertheless constitutes an important minority of 14.5 percent overall and was 60 percent of premises situated in buildings in Stratum 1 of the sample surveyed at that time. Stratum 1 buildings were expected to be less than 650 m^2.

- New Zealand is characterised by very different forms of resource price exposures. In relation to water, a minority of tenants are directly exposed to water pricing while the majority of tenants are exposed to energy prices because they pay for energy directly to the supplier.

- For owner-occupiers, who make up a large minority of small building occupiers, there are no split incentives for energy but water payment systems and price signalling around water are obscured and New Zealand has a diversity of regional and local approaches to water charging.

- While the international literature suggests that change of tenancy and refitting offer opportunities to tenants and landlords respectively to retrofit and improve the resource performance of existing buildings, in New Zealand:

- A substantial minority of businesses have not changed buildings in the 12 years prior to surveying.

- Owner-occupiers have particularly long duration of occupancy.

- Premises in smaller buildings less than 650 m^2 and in buildings of 1,500-3,499 m^2 had longer average duration of occupancy than very large buildings[1].

- Most premises undertake some sort of refit, often at the point of lease take-up. The nature and extent of fit-outs tends to vary according to building size, with premises in medium and smaller buildings focusing on minor spatial rearrangement and cosmetic improvements.

- Even where premises referred specifically to installing or changing the air-conditioning and/or heating system, and undertaking plumbing or lighting fit-outs, there was no indication that premises were prompted by or concerned with reducing energy or water consumption.

- Premises experience very little building management with many neither reporting a building manager or an actively-managing landlord.

- Buildings are physically diverse and are put to a diversity of uses across business sectors.

The premise survey data has been further amplified since this initial analysis was undertaken. The more recent analysis has been undertaken over 791 premises. That analysis is presented in Saville-Smith and Fraser (2012), but its results are, by and large, consistent with the patterns noted in the analysis of the original subset of premises. For the 791 premises, almost 13 percent of premises were owner-occupied with just over 30 percent of smaller buildings owner-occupied. Around two-thirds of premises were subject to fixed-term leases. Over one-fifth had occupied their current building 12 years or more with 7.7 percent of premises in buildings of less than 650 m^2. The premises principally use reticulated electricity and 70.5

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[1] This reflects in part the impact of the association of owner-occupiers with smaller buildings.

percent purchase all their energy, irrespective of source and type, from suppliers rather than through their leases with the building owners. This contrasts with water, the supply of which tends be provided by the building owner and is included, unitemised, within premise rents.

The other component of the preliminary work into the non-technological barriers to resource optimisation in non-residential buildings was in-depth interviews with four types of stakeholders in the non-residential building sector. Table 1 summarises the categories of building managers interviewed and the focus of the in-depth interviews. Infobox 4 provides data related to each interviewee.

Table 1: Categories of Building Managers

Sector	Focus of indepth interview
A. Facilities management • Hands-on landlords/multi-tenant building • Owner-occupier landlord with tenants • Provider of facilities management on behalf of landlords • High-end complex building facilities management	• Extent/intensity of management and scope of work. • Focus of facilities management in particular building. • Engagement with tenants. • Key priorities for facilities manager. • Mechanisms used to define facilities managers' performance. • Mechanisms to measure building performance.
B. Property portfolio managers	• Priority of resource (energy and water) optimisation in investment, acquisition and disposal choices. • Mechanism for ensuring resource optimisation in building design. • Mechanisms to manage tenant resource use. • Extent of control over facilities management in buildings and focus/priorities for facilities management.
C. Property managers for green/social responsibility companies	• Extent green brand drives building selection/operation. • Criteria for building selection. • Extent of management to optimise resource use. • Management tools and user education.

Infobox 4: Building Stakeholder Interviewees – Brief Profile

Building Stakeholder	Characteristics
Owner-occupier with tenants	A residential landlord for 30 years and landlord of commercial buildings for ten years. Owns four commercial buildings in Wellington and retains a residential portfolio that exceeds in number his commercial portfolio. In addition to his property portfolio, he runs a service business from one of the buildings he owns. He estimates that managing his commercial buildings takes around 2.5 per cent of his time.
Hands-on landlord with multi-tenant building	This landlord started his career running a building company and as a builder. He previously had an extensive residential property portfolio that he rented until 2005. He has divested himself of that portfolio and replaced it with a single multi-storey and multi-tenanted building in the central business district. He has been a commercial landlord for that building for the last eight years. On average he expects to spend around 1.5 hours or less a day managing the building. This varies according to his tenancy and refit schedule.
Facilities manager on behalf of landlords	This interviewee is the national facilities manager for a trust that acquires properties which will lead the market in terms of operational efficiency. The interviewee is a full-time manager of the portfolio's facilities and has been with this landlord since 1997. He manages outsourcing of facilities management of individual buildings in a property portfolio valued at $NZ1.85 billion. The majority (60 percent) of the property assets consist of retail while the remainder is made up of office buildings. Auckland represents the location of 49 percent of this property with the rest in Christchurch, Wellington, Palmerston North and Hamilton.
Property portfolio manager	This interviewee joined a property trust in 1994 and has been in a managerial position since 2003 within a property network with a portfolio of 81 buildings valued at $NZ933 million and housing over 290 tenants. The average value of a property is $NZ11.4 million. The interviewee's role is to ensure the portfolio's investment performance and rental yield performance.

Those interviews revealed two quite different approaches among owners and property managers which we have labelled broadly as:

- Building ownership for self-employment; and

- Non-residential buildings for investment.

The former take a do-it-yourself approach to building management and are interested in reducing their own – not necessarily their tenants – exposure to direct and indirect costs, having uncomplaining and undemanding tenants, securing a steady but not necessarily maximised income stream and being able to work for themselves.

Those concerned with non-residential buildings as an investment are concerned with buildings that show strong income potential and investment returns. Their management approach is focused on reducing the operational costs of the building and recruiting and retaining tenants willing to pay premium pricing within the market using buildings of that particular rating. This can involve dedicating significant in-house and contracted resources to building management for higher performance.

The former were largely unconcerned with the building performance of their assets and the maximisation of income had a very different meaning for the self-employed landlords compared to those operating within an investment paradigm. For the self-employed, the stability of income was the underpinning theme and performance and income were largely decoupled. By way of contrast, the investment-oriented looking to maximise the income potential of the asset linked building performance and income. For the investors, energy and water consumption were seen as important aspects of a building in terms of attracting and retaining tenants.

Irrespective of those differences, however, there was strongly-shared discourse around resource consumption being a tenant matter. The use of energy and water was seen very much as part of tenant

independence and a space of tenant decision making. Even among those who were oriented to generating value for investors in non-residential buildings, getting tenants to be committed and willing to invest in resource optimisation was not necessarily an actively pursued challenge.

5. THE 2012 SURVEYING

Overall, that preliminary research and analysis suggested the value chain in the non-residential building sector is, as overseas, complex but also characterised by diversity. Among New Zealand building owners and managers there appeared to be evidence of two important tendencies. Firstly, there appeared to be a shared tendency to see resource management as largely a tenant issue and tenant responsibility. Secondly, there were considerable contrasts around the extent to which building owners and managers coupled or decoupled building performance in relation to their income and business goals.

That diversity and the profound differences in approach tends to reinforce the internationally-held view that energy efficiency gains require a multi-dimensional approach using a range of market, informational and regulatory instruments (Koeppel & Urge-Vorsatz, 2007). Just as importantly, it was concluded that we need to better understand the extent to which these different segments of property managers, building owners and owner-occupiers see and act on issues of energy and resource optimisation. It was to explore those issues that property managers, building owners and building owner-occupiers were surveyed.

5.1 The Populations and Interviewing

One of the most difficult aspects of surveying non-residential building owners, property managers and owner-occupiers is establishing a population from which to sample. There is not a single, accessible repository of these sets of stakeholders. Consequently three population sets were established:

- First, a population of businesses that we knew were owner-occupiers in non-residential buildings from the results of the premise surveying of non-residential buildings in the BEES programme.

- Second, also from the surveying of premises in non-residential buildings undertaken as part of the BEES programme, a list was compiled of property managers and owners that premise respondents had identified.

- Third, property managers and owners listed as members of the New Zealand Property Council were collated removing any duplicates arising from the sets above.

All interviewing was undertaken by telephone using structured interview schedules. The interview schedules for property managers and owners drawn from the BEES premise surveying as well as members of the Property Council were the same. They are set out in Appendix A. The interviewing was undertaken by a dedicated telephone survey company using a CATI system. CRESA undertook interviews with owner-occupiers of non-residential buildings using the interview schedule set out in Appendix B.

5.2 Focus and Analysis

Although there are some differences between the questionnaire for the owner-occupiers, the property managers and owners respectively, they all focus on the same issues. Those are:

- The extent of engagement with non-residential building property ownership and management, and the geographical distribution of buildings managed or owned by respondents.

- The nature of the building and activities undertaken within those buildings.

- The priorities and motivations around water and energy use management.

- Actions taken to manage energy and water use.

The analysis treats the data as quota samples. Initially, the three data sets have been analysed separately to take account of the different population sets. This also provides an opportunity to compare those who are associated with the broader BEES sample with the population of owners and property managers active nationally. Consequently, it provides an opportunity to assess the representativeness of the BEES buildings.

6. OWNERS AND PROPERTY MANAGERS

A total of 109 non-residential building owners and property managers responded to the survey and 51 owner-occupiers of premises already participating in the BEES aggregate survey were also interviewed. Data from the latter are presented in section 6. This section is concerned with the building owners that provide premises to others and the property managers that manage non-residential buildings owned by others.

6.1 Owning and Managing Non-Residential Buildings

It is notable that there is some overlap between building managers and those that deliver property management services to other owners. Among the 109 respondents to the owner and property manager surveys, only 23.9 percent owned no buildings at all, although 61.5 percent undertook no property management for other owners. Overall, about 17 respondents were involved in both direct building ownership and undertaking property management for other building owners. Table 2 shows ownership and management patterns for each of the samples.

Table 2: Ownership and Property Management Patterns by Survey Population

Building Ownership and Property Management Status	BEES	Property Industry	Total
Building owner only	35	32	67
Property management only	6	25	31
Ownership and property management	11	0	11

6.2 The Buildings and their Characteristics

These 109 building owners and property managers are associated with a considerable stock of buildings. They own between them a stock of 1,090 non-residential buildings and manage 823 non-residential buildings.

Their ownership and property management interests tend to be concentrated on Auckland and the larger metropolitan areas. Of the 78 respondents who owned non-residential buildings, 46.2 percent had at least one non-residential building in the Auckland area. Of the 42 respondents that were involved in property management for other non-residential building owners, 45.2 percent managed at least one building in Auckland. Over one-fifth (23.8 percent) managed at least one non-residential building in Wellington (Table 3).[2]

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[2] Note that because building owners and property managers can operate in multiple locations, the percentages presented here will exceed a total of 100 percent.

Table 3: Proportion of Owners and Property Managers with Buildings in Specified Location

Location	Building Owners		Property Managers (*n* = 42)	
	Building Owners	% Building Owners (*n*=78)	Property Managers	% Property Managers
Northland	2	2.6%	0	0.0%
Auckland	36	46.2%	19	45.2%
Waikato	10	12.8%	4	9.5%
Bay of Plenty	8	10.3%	4	9.5%
Gisborne	0	0.0%	0	0.0%
Hawke's Bay	4	5.1%	0	0.0%
Taranaki	3	3.8%	2	4.8%
Manawatu-Whanganui	2	2.6%	1	2.4%
Greater Wellington	13	16.7%	10	23.8%
Tasman	2	2.6%	0	0.0%
Nelson	2	2.6%	0	0.0%
Marlborough	0	0.0%	0	0.0%
West Coast	0	0.0%	0	0.0%
Canterbury	7	9.0%	3	7.1%
Otago	7	9.0%	4	9.5%
Southland	2	2.6%	0	0.0%

6.3 Building Use

The pattern of use to which buildings are put is a little more complex. Almost two-thirds (69.2 percent) of the building owners report owning at least one building used primarily for retail purposes while 80.8 percent have at least one non-residential building used primarily as offices (Table 4). However, of the total number of non-residential buildings owned by the respondents, 457 (about 42 percent) were reported as primarily used for retail purposes.

Table 4: Owned and Managed Building Portfolios – Use Patterns

Primary Building Function	Building Owners	% Building Owners (*n* = 78)	Property Managers	% Property Managers (*n* = 42)
Primarily retail	54	69.2%	26	33.3%
Primarily office	63	80.8%	27	34.6%
Primarily warehouse	33	42.3%	16	20.5%
Other	15	19.2%	7	9.0%

By way of contrast, only 30.7 percent of the owned stock accounted for by the owner respondents were used for offices. Clearly across their portfolios, many of these owners deal with retail businesses as well as office-based businesses. In a small number of cases, owners reported that they had buildings that were primarily used for storage and also buildings that had no primary use but were divided across multiple uses.

There are some differences in relation to the portfolio of property-managed buildings. Firstly, the spread of building uses is more evenly distributed over those that undertake property management (Table 4). Of the total number of non-residential buildings managed by respondents, 310 (about 38 percent) were reported as primarily used for retail purposes while 28 percent of the managed stock accounted for by the property manager respondents were used for offices. That is, they are likely to specialise in buildings that are primarily offices or primarily retail. This suggests that property managers tend to specialise in servicing particular building types.

The sophistication of these buildings no doubt varies considerably. In an attempt to get some indicator of this, respondents were asked whether and how many of their buildings had heating, ventilation and air conditioning (HVAC) systems. This largely failed because of the diversity of responses to that question and problems around the terminology of HVAC itself. It is clear that some respondents treated HVAC as any

method of cooling or heating while others restricted the terminology of HVAC to systems that heated, cooled and ventilated through centralised, building-wide systems. Others still saw HVAC as referring to individual heat pumps and/or air conditioning systems.

6.4   Building Ownership Goals and Priorities

There was much less diversity and much more consistency around owners' views about their building ownership goals. These had a clear resonance with the conclusions drawn from the in-depth interviews. Certainly the desire to meet specified rates of return, retaining tenants, maximising income and reducing operational outgoings were all evident. So too were goals which appear much more like the residential rental sector than goals associated with the non-residential sector. Those included an apparent reliance on capital gains and a desire for a steady and predictable income from non-residential building ownership. The latter was associated in part with owners reporting that they had purchased a non-residential building as a means of providing a retirement income. Finally, a minority of owners commented that non-residential buildings allowed them to, effectively, be their own boss.

Within these broad ownership goals, it would be expected that non-residential building owners would give a different level of priority to different aspects of building management and building provision. This was explored in relation to a specified set of both energy and water issues as well as some broader issues around workplace environments.

Table 5: High Priorities for Own Buildings – Views of Building Owners

Owner – High Priority	Building Owners	% Building Owners (*n* = 78)
Improving workplace environments	50	64.1%
Increasing energy efficiency	35	44.9%
Secure energy supply	32	41.0%
Reducing energy costs	29	37.2%
Reducing water costs	28	35.9%
Increasing water efficiency	26	33.3%
Reputation as energy conscious	25	32.1%
Secure water supply	22	28.2%
Reputation as water efficient	22	28.2%
Reducing energy-related emissions	17	21.8%
Reducing water-related emissions	16	20.5%

As Table 5 shows, a substantial, albeit minority, proportion of building owners gave high priority to managing energy, energy consumption and energy supply for the buildings they own. What is particularly telling, however, are the lower proportions of owners giving high priority to addressing water consumption. It is also notable that over half of the building owners see themselves as attempting to improve the workplace environments for tenants or staff using the buildings the respondents own. In contrast, building owners seem less concerned with having a reputation as an energy- or water-conscious business.

The relatively low interest in water is consistent with low awareness of water efficiency among building owners and consumers in both the residential and non-residential sectors (Saville-Smith, et al., 2010). It is a pattern which is evident in previous BEES surveying of premises in non-residential buildings (Isaacs, et al., 2010). While more than half of owners give high priority to improving workplace environments, it appears from findings presented later in this report, that resource efficiency actions are not coupled with this workplace environment imperative.

Finally, the relatively low proportions of owners that give high priority to resource-efficient buildings as a pathway to enhancing their business reputation are consistent with the European experience. These so-called "soft" benefits tend to be seen as ancillary to hard benefits such as reduced operating costs or higher investment returns rather than a primary benefit and of benefit in themselves (Rossall, et al., 2009).

In terms of factors that might drive building owners to actively pursue energy and water efficiency, the data from these surveys suggest that building owners do not feel pressure from their tenants.

The areas which building owners believe that substantial proportions of tenants give high priority to, such as reducing energy costs, are also areas to which many building owners and property managers are not exposed themselves in relation to costs. In the case of energy costs, building owners and property managers overwhelmingly report that energy billing tends to be through direct tenant-supplier relationships. Less than 7 percent report that energy costs are typically incorporated into the rent (Table 6).

Table 6: Tenant Energy Payments Reported by Owners and Property Managers

Typical Tenant Payment Across Property Portfolio	Owners and Property Managers	% Owners and Property Managers
Energy included in rent	7	6.4%
Paid direct to supplier	80	73.4%
It varies in different buildings some directly, some included in rent	17	15.6%
It varies for different tenants some directly, some included in rent	5	4.6%
Total	*109*	*100%*

Building owners tend to see their tenants as giving high priority to both cost reduction and workplace environments for staff. Security of energy and water supply are perceived by building owners to be important for only substantial minorities of tenants. Reputational advantage is seen as less likely to be important. Building owners tend not to see tenants as giving high priority to issues around water use (Table 7).

Table 7: Owner Views on Tenant High Priorities

Owner Perceptions of Tenants' High Priority	Building Owners	% Building Owners (n = 78)
Reducing energy costs	45	57.7%
Improving workplace environments	45	57.7%
Secure energy supply	35	44.9%
Secure water supply	35	44.9%
Increasing energy efficiency	34	43.6%
Reputation as energy conscious	26	33.3%
Reducing water costs	23	29.5%
Increasing water efficiency	21	26.9%
Reputation as a water-conscious business	17	21.8%
Reducing energy-related emissions	14	17.9%
Reducing water-related emissions	13	16.7%

In some cases, owners are more likely to see their tenants as giving high priority to an issue than they are themselves. Bivariate analysis shows that this is the case with:

- Reducing energy and water costs;

- Reducing energy and water-related emissions;

- Ensuring secure energy and water supplies for the future;

- Reputation as an energy- or water-conscious business;

- Improving workplace environments; and

- Increasing energy and water efficiency.

Appendix C provides data tables and expected counts for building owner priorities and their perceptions of their tenants' priorities.

6.5 Property Manager Perceptions of Owner and Tenant Priorities

Those respondents undertaking property management for others were also asked about resource optimisation priorities in relation to the building owners with whom they work and the tenants located in the buildings they manage. Table 8 presents property managers' perceptions for each of those groups respectively.

Table 8: Property Managers' Views on Building Owners' and Tenants' High Priorities

Property Managers' Perceptions of High Priorities	Owners' High Priorities		Tenants' High Priorities	
	Property Managers	% Property Managers (n=42)	Property Managers	% Property Managers (n=42)
Improving workplace environments	12	28.6%	13	31.0%
Secure energy supply	9	21.4%	12	28.6%
Secure water supply	8	19.0%	12	28.6%
Increasing energy efficiency	7	16.7%	11	26.2%
Reducing water costs	7	16.7%	9	21.4%
Reducing energy costs	6	14.3%	7	16.7%
Reducing energy-related emissions	4	9.5%	5	11.9%
Reducing water-related emissions	4	9.5%	5	11.9%
Increasing water efficiency	4	9.5%	4	9.5%
Reputation as energy conscious	3	7.1%	3	7.1%
Reputation as a water-conscious business	3	7.1%	3	7.1%

6.6 Actions to Optimise Energy and Water Use

It is notable that property managers are much less likely to see building owners and tenants as giving resource optimisation high priority than building owners. Under those circumstances, it is unlikely that property managers will be driving a resource optimisation agenda.

Overall there appears to be little pressure to change or little desire to innovate. Certainly, there is limited evidence of active energy and water management practices either among building owners or among property managers. For instance, while 51.4 percent of building owners and property managers are aware of mechanisms such as green leases, none of the property managers use green leases in any of the buildings with which they are associated and only two building owners report using green leases.

Additionally, while 45.8 percent of building owners and property managers report that they at least monitor energy use in their buildings (Table 9), the majority make no active attempts to act on resource consumption in buildings. While 65.1 percent of property managers and building owners claim to undertake some sort of installation of water or energy saving devices such as installing energy-efficient lights bulbs, only between a quarter and a third undertake the broader array of activities used internationally to optimise resource use. Most take none of the internationally-recognised pathways to optimising resource use (Table 10).

Table 9: Monitoring Energy or Water Use or Costs

Monitoring Buildings' Resource Use or Costs	Building Owners and Property Managers	% Building Owners and Property Managers
Energy only	13	11.9
Water only	6	5.5
Both energy and water	37	33.9
No monitoring	52	47.7
Don't know	1	0.9
Total	*109*	*100.0*

Table 10: Property Managers and Building Owners Taking No Specified Actions

No Action To:	Building Owners and Property Managers	% Building Owners and Property Managers (*n* = 109)
Set targets for energy or water use reductions	83	76.1%
Provide information to staff or tenants	80	73.4%
Establish formal policy	89	81.7%
Have a person responsible for resource management	72	66.1%
Do formal resource audits	77	70.6%
Benchmark use	71	65.1%

As Table 10 shows, over three-quarters of building owners and property managers set no targets for energy or water use reductions with similar proportions providing no information to occupants, tenants or staff about ways to reduce energy or water consumption. About two-thirds of property managers and building owners report having no position with responsibility to optimise water or energy management or benchmarking use. A slightly larger proportion, 71.6 percent of property managers and building owners report they have not undertaken energy or water audits in their buildings.

Not surprisingly, given that they have failed to undertake any of the tasks necessary to establishing a formal policy on energy or water efficiency, the vast majority – almost 82 percent of property managers and building owners – report they have no formal energy or water management policy in the their buildings.

7. OWNER-OCCUPIERS

This pattern of limited action in relation to resource optimisation is also found among owner-occupiers. The latest data from the BEES aggregate surveying found 101 businesses in the BEES sampled buildings described themselves as owner-occupiers. Of those, 51 owner-occupiers participated in the telephone survey around resource optimisation.

This section provides a brief description of the buildings and businesses of these owner-occupiers and their tenants. It presents data on the way in which owner-occupiers relate to tenants. The discussion then focuses on the goals owner-occupiers have in relation to their buildings and considers the priorities and actions they report in relation to resource and building management.

7.1 The Buildings and their Characteristics

Among this set of owner-occupiers, 60.8 percent are sole occupants of their building. The remaining owner-occupiers report between one and seven tenants also located in the building (Table 11). Most of these buildings are relatively small with 31.8 percent being on one level and a further 37.3 percent in two-level buildings (Table 12). As a consequence, only 36 percent of these buildings had an elevator and about the same proportion had public areas.

Table 11: Owner-Occupied Buildings and Tenants

Occupancy	Owner-Occupiers	% Owner-Occupiers
No tenants	31	60.8 %
1 tenant	7	13.7%
2 tenants	5	9.8%
3 tenants	2	3.9%
4 tenants	4	7.8%
6 tenants	1	2.0%
7 tenants	1	2.0%
Total	*51*	*100%*

Table 12: Owner-Occupied Buildings and Number of Levels

Number of Levels	Owner-Occupiers	% Owner-Occupiers
1 level	16	31.4
2 levels	19	37.3
3-6 levels	8	15.7
7 levels or more	8	15.7
Total	*51*	*100.1*

The buildings of owner-occupiers also tend to be smaller (Table 13). Over half of the buildings are less than 3,500 m^2.

Table 13: Owner-Occupied Buildings in Square Metres

Building Square Metres	Owner-Occupiers	% Owner-Occupiers
5-649 square metres	10	19.6
650-1499 square metres	8	15.7
1500-3499 square metres	11	21.6
3500-8999 square metres	8	15.7
9000 or more square metres	8	15.7
No estimate – multiple buildings on site	2	3.9
No estimate	4	7.8
Total	*51*	*100.0*

Participants were hesitant to provide information regarding the proportion of their building that tenants actually occupy, either because they were unsure or because of confidentiality with tenants. Five of the 20 owner-occupiers with tenants did so. In those five buildings, tenants in four of the buildings occupied spaces

of 120 m^2 or less, while in the remaining building tenants occupied almost 4,000 m^2. Owner-occupiers in the very largest buildings tended to occupy the whole building.

The owner-occupied buildings are not generally air-conditioned. Only 33.3 percent are reported as being so and 68.6 percent of owner-occupiers report the building has windows that can be opened and closed by the occupiers. Less than one-fifth (15.7 percent) of the buildings are double glazed.

7.2   Managing Tenants

In managing their tenants, owner-occupiers typically relate in ways the previous in-depth interviews revealed. That is, they were interested primarily in building ownership for either use value or as a form of self-employment. That is, they took a do-it-yourself approach to building management and were interested in reducing their own – not necessarily their tenants' – exposure to direct and indirect costs, having uncomplaining and undemanding tenants, and securing a steady but not necessarily maximised income stream.

These owner-occupiers reported little use of outside professionals in managing their building or their tenants. Only 10.5 percent of owner-occupiers with tenants used an agent, property or building manager to check rental payments and liaise with tenants. Even fewer (5.3 percent of these owner-occupiers) used them for tenant recruitment. Previous interview data suggests that owner-occupiers use real estate agents but also manage their own direct advertising. Most importantly, it should be noted that recruitment of new tenants is not a frequent event for many owner-occupiers.

In relation to charging for energy and water, it appears that public areas tend to be ignored in allocation of rent or charging processes. Just over half (52.6 percent) of the owner-occupiers expect their tenants to acquire their electricity through direct supply, while the others simply include energy costs in the lease arrangement. Among the latter, half do not itemise those costs. The situation regarding water is unclear with 26.3 percent indicating that water costs are included in the lease and 60 percent of those reporting that they do not separately itemise water costs within the rental charge.

The data presented above relates to the buildings in which owner-occupiers themselves are also located. However, about a third (31.4 percent) of these owner-occupiers own and rent out other non-residential buildings. When dealing with tenants in other buildings as well as the ones in which owner-occupiers are located, there is strong desire to retain existing tenants rather than maximise income. Tenant retention is cited more by these building owners than any other consideration.

7.3   Managing Building Performance, Priorities and Actions

Only 2 percent of owner-occupiers report using building or property managers to manage central systems such as heating systems, while 3.9 percent of owner-occupiers reported using a building manager for maintenance and repairs. There is considerable variation around what owner-occupiers give high priority to, but the proportions giving high priority to water optimisation tends to be very low (Table 14). This is consistent with the proportions among the building owners and property managers previously reported.

Table 14: Owner-Occupiers' High Priorities in their Occupied Building

High Priorities	Owner-Occupiers	% Owner-Occupiers (*n* = 51)
Improving workplace environments	30	58.8%
Secure energy supply	20	39.2%
Secure water supply	18	35.3%
Reputation as energy conscious	14	27.5%
Increasing energy efficiency	12	23.5%
Reputation as a water-conscious business	12	23.5%
Reducing energy costs	11	21.6%
Reducing energy-related emissions	10	19.6%
Increasing water efficiency	6	11.8%
Reducing water costs	5	9.8%
Reducing water-related emissions	5	9.8%

Two other tendencies emerge:

- A large majority of owner-occupiers take no action to improve the management of energy and water consumption (Table 15 and Table 16) with the exception of installation of a limited range of products such as energy-efficient light bulbs and monitoring energy use.

- Where owner-occupiers do institute actions to address energy and water use issues, those actions tend to involve implementing them within their own business rather than across the whole building (Table 17 and Table 18).

For instance, only 17.6 percent of owner-occupiers report monitoring the energy use in the building, although 33.3 percent of owner-occupiers report monitoring their own energy use.

Table 15: Owner-Occupiers Taking No Actions for Energy Management

No Action To:	Owner-Occupiers	% Owner-Occupiers (n = 51)
Monitor energy use	25	49.0%
Set targets for energy reductions	42	82.4%
Provide information to occupants on energy use	42	82.4%
Establish formal energy management policy	45	88.2%
Have a person responsible for energy management	41	80.4%
Do formal energy audits	44	86.3%
Benchmark energy use	48	94.1%
Dedicate a budget for energy management	46	90.2%
Install energy-saving technologies	27	52.9%

Table 16: Owner-Occupiers Taking No Actions for Water Management

No Action To:	Owner-Occupiers	% Owner-Occupiers (n = 51)
Monitor water use	36	70.6%
Set targets for water reductions	45	88.2%
Provide information to occupants on water use	47	92.2%
Establish formal water management policy	47	92.2%
Have a person responsible for water management	45	88.2%
Do formal water audits	48	94.1%
Benchmark water use	48	94.1%
Dedicate a budget for water management	47	92.2%
Install water-saving technologies	45	88.2%

Table 17: Owner-Occupiers' Actions on Building or Own Business for Energy

Action To:	Own Business	Whole Building
Monitor energy use	17	9
Set targets for energy reductions	6	2
Provide information to occupants on energy use	4	4
Establish formal energy management policy	3	2
Have a person responsible for energy management	5	4
Do formal energy audits	2	4
Benchmark energy use	0	2
Dedicate a budget for energy management	2	2
Install energy-saving technologies	11	12

Table 18: Owner-Occupier Actions on Building or Own Business for Water

Action To:	Own Business	Whole Building
Monitor water use	7	7
Set targets for water reductions	3	2
Provide information to occupants on water use	2	1
Establish formal water management policy	2	1
Have a person responsible for water management	2	3
Do formal water audits	1	1
Benchmark water use	0	2
Dedicate a budget for water management	1	2
Install water-saving technologies	1	4

Effectively, where owner-occupiers deal with the whole building fabric and systems, they are more likely – if they are going to at all – institute some resource optimisation actions. They are least likely to attempt to encourage their tenants to optimise resource despite often being the on-supplier of energy and water. Indeed, owner-occupiers seem largely unaware of alternative ways of encouraging tenants to optimise resource use. Only six of the 21 owner-occupiers with tenants had, for instance, heard of mechanisms such as green leases and none of those intended to institute them.

At the heart of this issue appears to be a view among owner-occupiers that the business of resource management in their buildings is quite separate from the business of tenants and that they should not be managing tenants closely in this regard. Certainly, it is not because owner-occupiers believe that tenants give a high priority to energy or water optimisation as Table 19 shows.

Table 19: Owner-Occupiers' Perception of Tenants' High Priorities

High Priorities for Tenants	Owner-Occupiers with Tenants (*n* = 20)	% Owner-Occupiers with Tenants
Improving workplace environments	5	25.0%
Secure energy supply	3	15.0%
Secure water supply	3	15.0%
Reputation as energy conscious	2	10.0%
Increasing energy efficiency	3	15.0%
Reputation as a water-conscious business	2	10.0%
Reducing energy costs	4	20.0%
Reducing energy-related emissions	3	15.0%
Increasing water efficiency	2	10.0%
Reducing water costs	3	15.0%
Reducing water-related emissions	2	10.0%

8. THE PROBLEM OF CHANGE

The data emerging from these surveys reinforces a persistent sense of under-awareness and significant inertia on the part of building owners, owner-occupiers and property managers in relation to active management of energy and water use. This would suggest that improvements in resource consumption are most effectively achieved through building resource-efficient, non-residential stock. This presents a profound challenge to the building industry. How can resource efficiency be achieved while restraining the cost margins of designing and building resource-efficient, non-residential buildings?

Associated with that problem is ensuring resource efficiency can be built into the numerous units of stock which are delivered into the smaller end of the market and are likely to be acquired and managed by owners with relatively few stock units. The problem with a focus on new builds in the non-residential stock is of course its limited transformational impact. The small proportion of new builds added to the existing non-residential stock on an annual basis is low.

This suggests that:

- Technical solutions need to be devised to provide both cost-effective new builds and cost-effective retrofit.

- Cost-effective and easily-managed operational systems need to be developed and promoted.

- Considerable thought needs to be directed at prompting take-up for technologies, designs and materials, as well as operational systems. In this context, transformation is going to require awareness-building among building owners, property managers and tenants.

- Awareness-building and take-up will need to be supported by credible and tailored value cases that take into account the different imperatives that these stakeholders bring.

In short, ensuring that New Zealand's non-residential buildings neither burn an energy or water hole in businesses' pockets or consume more resource than New Zealand can sustain, means recognising that not only are buildings different – neither tenants nor building owners can be treated as homogenous groups. Not all tenants are the same nor do they have the same preoccupations. Building owners are also a diverse set of organisations and individuals.

Under those circumstances, a strong evidence base is clearly important in developing strategic policy responses and value cases. So too is a multi-dimensional approach to initiatives designed to promote take-up and discourage the over-consumption of resources. This has already been recognised internationally.

Although debate around the relative merits of each of various instruments has been dominated by theoretical economics with little reference to empirical evaluation or, indeed, experience (Jaffe & Stavins, 1994), there is now emerging a body of empirical evaluation which compares these tools directly.

The 2007 United Nations Environment Programme (UNEP) undertook a comprehensive review (Koeppel & Urge-Vorsatz, 2007) of instruments directed to optimising building energy performance. The findings are summarised in Table 20. UNEP concluded that combinations of instruments are more effective than the use of single instruments; regulatory and control instruments can be necessary; economic instruments, subsidies and informational levers as single items have variable results but are important to a mutually-reinforcing package (Circo, 2007; McCormick & Neij, 2009); and these packages need to be tailored specifically to prevailing institutional, cultural and market conditions (Birner & Martinot, 2003).

The findings reported here on the perceptions, attitudes, actions and preoccupations of New Zealand non-residential building owner-occupiers, building owners and property managers can contribute to the development of those packages for this country.

Table 20: Policy Instrument Efficacy – Buildings and Greenhouse Gas Emissions

Policy Instrument	Effectiveness	Cost-Effectiveness	Success Contingencies
Regulatory and government control			
Mandatory standards	High	High	Agreed and updated standards maintained by an independent body supported by information, communication and education.
Building codes	High	Medium	Dependent on enforcement.
Mandatory audits	Variable	Medium/high	Effective standards, tools and reporting processes required. Suitable for some stakeholders only.
Mandatory labelling, certification or disclosure	High	High	Depends on ability of end-user to assess and continuous end-user engagement.
Procurement regulation	High	High/medium	Ambitious targets needed if to provide demonstration to the market, clear standards required and tools to measure compliance against standards.
Economic and market-based Instruments			
Co-operative procurement	Medium/high	High/medium	Establishes economies of scale.
Fiscal instruments			
Taxation	Low/medium	Low	Dependent on price elasticity.
Tax or fee exemptions or reductions	High	High	Need to be properly structured and monitored.
Capital subsidies, grants, loans	High/medium	Variable	Can be cost-effective when properly targeted to households confronting price barriers.
Information, leadership and voluntary action			
Public leadership	Medium/high	High/medium	Useful to demonstrate new technologies and practices.
Voluntary compliance with standards	Medium/high	High/medium	Effective if combined with fiscal incentives and possibility of regulation.
Voluntary labelling, certification or disclosure	Medium	Medium	Clear standards and comparative tools needed.
Promotional information and campaigns	Low/medium	Medium/high	Potential is limited unless supported by other instruments. Clear and properly targeted messages needed.

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A: PROPERTY MANAGER AND OWNER SURVEY INSTRUMENT

LANDLORDS AND BUILDING MANAGERS OF COMMERCIAL BUILDINGS

Research New Zealand #4398

JULY 2012

Good morning/afternoon/evening, could I please talk to **^2**?

My name is **^1** from Research New Zealand and I understand that you may be a landlord and/or building manager of a non-residential building(s). Is that correct?

Over the past two years BRANZ and CRESA have been conducting surveys with businesses about their energy consumption. However, they are also interested in the perceptions of the owners and managers of the buildings these businesses are in.

The survey would take around five-seven minutes to complete and you will receive a $25 petrol voucher for your time. Would you be interested in taking part?

When would suit, or is now a good time?

If person not available, ask:

When would be a good time for me to call back to speak to him/her?

Make appointment

> **Background information only if needed:**
>
> This is genuine research. I'm not selling anything.
>
> We obtained your telephone number from the Property Council Directory.
>
> If you would like more information about this study then we can email you a brochure or you can contact Ruth Fraser on (04) 384 5921.
>
> CRESA (the Centre for Research Evaluation and Social Assessment) is a private research company whose research focuses on encouraging community development and sustainable communities.
>
> BRANZ (the Building Research Advisory Council) is an independent and impartial research, testing, consulting and information company providing resources for the building industry.
>
> The only people who will have access to the data from this survey are the research team from Research New Zealand, CRESA and BRANZ. Information provided is confidential. Results reported are about groups, individuals will not be identified.
>
> Non-residential buildings – exclude private homes, buildings that are solely apartments (if there is a mix of apartments with office or retail space they can be counted), retirement villages and rest homes, hotels, theatres and stadiums, university and hospitals.

Just so you know, this call may be recorded for quality control and training purposes.

Screening Questions

QA. How many non-residential buildings do you/your company <u>OWN</u> in New Zealand?

1   Buildings owned **specify number**
2   None

QB. How many non-residential buildings in New Zealand do you or your company <u>MANAGE</u> on behalf of someone else?

1   Managed on behalf of another owner **specify number**
2   None

If both QA=2 and QB=2, terminate.

Buildings Owned

Q1. **If QA=2 go to** 0 Thinking about the buildings you own. What regions are the majority of these buildings located in?

1   Northland
2   Auckland
3   Waikato
4   Bay of Plenty
5   Gisborne
6   Hawke's Bay
7   Taranaki
8   Manawatu-Whanganui
9   Wellington-Wairarapa
10   Tasman
11   Nelson
12   Marlborough
13   West Coast
14   Canterbury
15   Otago
16   Southland

Q2. How many of your buildings would you describe as: **Read. Code many**

1   Primarily retail **specify number**
2   Primarily office **specify number**
3   Primarily warehouse **specify number**
96   Other **specify type and number of "other" buildings **Do not read****

Q3 How many of your buildings have HVAC systems?

1	Answer **specify number**
97	None
98	Don't know

Q4. What are your goals as an owner of commercial building(s)? **Code many. Probe for clear answer**

1	Maximising annual income
2	Ensuring steady, not necessarily maximised income
3	Meeting specified investment return
4	Reducing operational costs to the owner of the building
5	Reducing operational costs of the building to the tenants
6	Recruiting premium paying tenants
7	Maintaining existing tenants
96	Other **specify goals**

Buildings Managed on Behalf of Others

Q5 **If QB=2 go to** 0 What regions are the majority of buildings you <u>manage</u>, located in? **Code many**

1	Northland
2	Auckland
3	Waikato
4	Bay of Plenty
5	Gisborne
6	Hawke's Bay
7	Taranaki
8	Manawatu-Whanganui
9	Wellington-Wairarapa
10	Tasman
11	Nelson
12	Marlborough
13	West Coast
14	Canterbury
15	Otago
16	Southland

Q6. How many of these buildings would you describe as: **Read. Code many**

1	Primarily retail **specify number**
2	Primarily office **specify number**
3	Primarily warehouse **specify number**
96	Other **specify type and number of "other" buildings**
98	Don't know

Q7. And how many of these buildings have HVAC systems?

1	Answer **specify number**
97	None
98	Don't know

Q8. **If QA=2 go to** 0 As a building owner what priority do you give to any of the following for the buildings you own? **Read**

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
a. Reducing energy cost	1	2	3	4	98
b. Reducing energy emissions	1	2	3	4	98
c. Increasing energy efficiency	1	2	3	4	98
d. Ensuring a secure energy supply for the future	1	2	3	4	98
e. Having a reputation as an energy-conscious business	1	2	3	4	98
f. Improving the workplace environment for tenants or staff	1	2	3	4	98
g. Reducing water cost	1	2	3	4	98
h. Reducing water emissions	1	2	3	4	98
i. Increasing water efficiency	1	2	3	4	98
j. Ensuring a secure water supply for the future	1	2	3	4	98
k. Having a reputation as a water-conscious business	1	2	3	4	98

Q9. And, as a building owner, in general, what priority do you think the tenants in your buildings give to: **Read**

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
a. Reducing energy cost	1	2	3	4	98
b. Reducing energy emissions	1	2	3	4	98
c. Increasing energy efficiency	1	2	3	4	98
d. Ensuring a secure energy supply for the future	1	2	3	4	98
e. Having a reputation as an energy-conscious business	1	2	3	4	98
f. Improving the workplace environment for staff	1	2	3	4	98
g. Reducing water cost	1	2	3	4	98
h. Reducing water emissions	1	2	3	4	98
i. Increasing water efficiency	1	2	3	4	98
j. Ensuring a secure water supply for the future	1	2	3	4	98
k. Having a reputation as a water-conscious business	1	2	3	4	98

Q10. Have you heard of Green Leases?

1   Yes
2   No
98   Don't know

Q11. **If** 0**=2 or 98 go to** 0 Do you use Green Leases?

1   Yes in some or all of the buildings we <u>MANAGE</u>
2   Yes in some or all of the buildings we <u>OWN</u>
3   No

97   Not applicable – have not heard of it

Q12. Do leases in buildings you own or manage typically include energy in rent or do tenants pay those directly to a supplier?

1   Energy included in rent
2   Paid direct to supplier
3   It varies in different buildings some directly, some included in rent
4   It varies for different tenants some directly, some included in rent
5   Don't know

Q13. Do leases in buildings you own or manage typically include water in rent or do tenants pay those directly to the supplier?

1   Water included in rent
2   Paid direct to supplier
3   It varies in different buildings some directly, some included in rent
4   It varies for different tenants some directly, some included in rent
5   Don't pay for water
6   Don't know

Q14. In relation to energy and water use, are any of the following typically used in buildings you own or manage? **Read. Probe for clear answer**

	Yes, Energy Only	Yes, Water Only	Yes, Both Energy and Water	None	Don't Know
a. Monitor energy or water use or cost in the building	1	2	3	4	98
b. Set targets for the reduction of energy or water use	1	2	3	4	98
c. Give information to staff or tenants about how energy or water use can be reduced	1	2	3	4	98
d. Have a formal energy or water management policy	1	2	3	4	98
e. Have a person in charge of energy or water management for this building	1	2	3	4	98
f. Have formal energy or water audits	1	2	3	4	98
g. Benchmark energy or water use	1	2	3	4	98
h. Have a dedicated budget to support energy or water management	1	2	3	4	98
i. Install or upgrade energy or water saving techniques (for example energy-efficient light bulbs)	1	2	3	4	98

Q15. **If QA=1 go to** 0 What priority do you think the building owner(s) you work for give to: **Read**

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
a. Reducing energy cost	1	2	3	4	98
b. Reducing energy emissions	1	2	3	4	98

c. Increasing energy efficiency	1	2	3	4	98
d. Ensuring a secure energy supply for the future	1	2	3	4	98
e. Having a reputation as an energy-conscious business	1	2	3	4	98
f. Improving the workplace environment for staff or tenants	1	2	3	4	98
g. Reducing water cost	1	2	3	4	98
h. Reducing water emissions	1	2	3	4	98
i. Increasing water efficiency	1	2	3	4	98
j. Ensuring a secure water supply for the future	1	2	3	4	98
k. Having a reputation as a water-conscious business	1	2	3	4	98

Q16. In general, what priority do you think the tenants in the buildings you manage give to: **Read**

	Not a priority	Low priority	Medium priority	High priority	Don't Know
a. Reducing energy cost	1	2	3	4	98
b. Reducing energy emissions	1	2	3	4	98
c. Increasing energy efficiency	1	2	3	4	98
d. Ensuring a secure energy supply for the future	1	2	3	4	98
e. Having a reputation as an energy-conscious business	1	2	3	4	98
f. Improving the workplace environment for staff	1	2	3	4	98
g. Reducing water cost	1	2	3	4	98
h. Reducing water emissions	1	2	3	4	98
i. Increasing water efficiency	1	2	3	4	98
j. Ensuring a secure water supply for the future	1	2	3	4	98
k. Having a reputation as a water-conscious business	1	2	3	4	98

Q17 Those are all the questions I have. Thank you for your time. Before you go, can I just check what address we should send the $25 petrol voucher to?

1.   Answer **specify address**
97.   Don't know

Q99VER interviewer comment

B: OWNER-OCCUPIER SURVEY INSTRUMENT

OWNER-OCCUPIERS

ID Number

DATE

Sometime ago you participated in a survey on energy use in your building which is being undertaken by BRANZ and CRESA. We understood from that survey that your company is the owner-occupier of the building you operate from. Because of that we would like to quickly follow-up with some questions about what that means for the way you manage the building.

These will take only a few minutes and if you would like to participate we would like to thank you with a $25 petrol voucher.

The only people who will have access to the data from this survey are the research team from Research New Zealand, CRESA and BRANZ. All data being collected will be used for research purposes only. At the reporting stage, all the data will be aggregated so that no individual, building or building occupant details will be identified in reports or research summaries.

Get consent – interview now or make time for call back – make sure you have the name and number to call back to.

Get the address of the building –

We would like to follow up briefly.

In the building the company/you own(s) and occupy:

1.   How many other businesses are your tenants? _____

2.   How many floors or storeys does this building have?

❑₁ One floor/storey

If more than one state number of floors _____

3.   What size is the building in square metres?   Approximately is fine.

_____ sq m

4.   What is the area tenanted by other businesses? **(Only if tenanted)**

❏₁ Not applicable- no other businesses

Size tenanted _____ sq m

5.   What area does your business occupy in this building?

_____ sq m

6.   Does the building have centralised air conditioning?

❏₁ Yes
❏₂ No

7.   Can people open and close windows?

❏₁ Yes
❏₂ No

8.   Are the windows double glazed?

❏₁ Yes
❏₂ No

9.   Is there a lift?

❏₁ No – single storey
❏₂ No – other
❏₃ Yes

10.   Is there a public area such as a foyer/toilets etc?

❏₁ Yes
❏₂ No

10a.   If yes, what size?

_____ sq m

11.   Do your tenants source their energy directly from a supplier or through you as part of the lease?
(Only if tenanted)

❑₁ Directly from a supplier
❑₂ From me as part of the lease (Go to Q12a)
❑₃ Some directly, some as part of the lease (Go to Q12a)

11a.   Are the energy costs itemised separately in the tenants' rent? **(Only if tenanted)**

❑₁ Yes
❑₂ No

12.   Do your tenants source their water directly from a supplier or through you as part of the lease?
(Only if tenanted)

❑₁ Directly from a supplier
❑₂ From me as part of the lease (Go to Q12a)
❑₃ Some directly, some as part of the lease (Go to Q12a)

12a.   Are the water costs itemized separately in the tenant's rent? **(Only if tenanted)**
❑₁ Yes
❑₂ No

13.   How do you apportion energy costs for public areas? **(Only if tenanted)**

❑₁ Not applicable- no public areas

Write explanation

_____
_____
_____

14.   Do you use an agent or building manager in any of the following roles?

❑₁ Property manager to check rents and liaise with tenants **(Only if tenanted)**
❑₂ Property manager to advertise and recruit tenants **(Only if tenanted)**
❑₃ Building manager for maintenance and repairs
❑₄ Building manager to manage central facilities such as central heating
❑₅ Other

If other, please specify:

_____

15.   What other tasks do you undertake in relation to your tenants? **(Only if tenanted)**

❑₁ Liaise with tenants
❑₂ Minor repairs and maintenance
❑₃ Recruiting tenants
❑₄ Other

If other, please specify:

_____

16.   In relation to energy, do you:

	Yes, but Only for My Business	Yes, for Whole Building Including Tenants	No	N/A
Monitor energy use or cost in the building	1	2	3	9
Set targets for the reduction of energy use	1	2	3	9
Give information to staff or tenants about how energy use can be reduced	1	2	3	9
Have a formal energy management policy	1	2	3	9
Have a person in charge of energy management for this building	1	2	3	9
Have formal energy audits	1	2	3	9
Benchmark energy use	1	2	3	9
Have a dedicated budget for energy management	1	2	3	9
Install or upgrade energy saving techniques (for example energy-efficient light bulbs)	1	2	3	9

Other, please specify:
_____

17.   In relation to water, do you:

	Yes, but Only for My Business	Yes, for Whole Building Including Tenants	No	N/A
Monitor water use or cost in the building	1	2	3	9
Set targets for the reduction of water use	1	2	3	9
Give information to staff or tenants about how water use can be reduced	1	2	3	9
Have a formal water management policy	1	2	3	9
Have a person in charge of water management for this building	1	2	3	9
Have formal water audits	1	2	3	9
Benchmark energy use	1	2	3	9
Have a dedicated budget for water management	1	2	3	9
Install or upgrade water saving techniques	1	2	3	9

Other, please specify:
_____

18.   What priority do you give to any of the following for the building you occupy?

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
Reducing energy cost	1	2	3	4	5
Reducing energy emissions	1	2	3	4	5
Increasing energy efficiency	1	2	3	4	5
Ensuring a secure energy supply for the future	1	2	3	4	5
Having a reputation as an energy-conscious business	1	2	3	4	5
Improving the workplace environment for staff	1	2	3	4	5

What priority do you give to any of the following for the building you occupy?

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
Reducing water cost	1	2	3	4	5
Reducing water emissions	1	2	3	4	5
Increasing water efficiency	1	2	3	4	5
Ensuring a secure water supply for the future	1	2	3	4	5
Having a reputation as a water-conscious business	1	2	3	4	5
Improving the workplace environment for staff	1	2	3	4	5

19.   What priority do you think your tenants give to any of those goals? **(Only if tenanted)**

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
Reducing energy cost	1	2	3	4	5
Reducing energy emissions	1	2	3	4	5
Increasing energy efficiency	1	2	3	4	5
Ensuring a secure energy supply for the future	1	2	3	4	5
Having a reputation as an energy-conscious business	1	2	3	4	5
Improving the workplace environment for staff	1	2	3	4	5

20.	What priority do you think your tenants give to any of these water management goals? **(Only if tenanted)**

	Not a Priority	Low Priority	Medium Priority	High Priority	Don't Know
Reducing water cost	1	2	3	4	5
Reducing water emissions	1	2	3	4	5
Increasing water efficiency	1	2	3	4	5
Ensuring a secure water supply for the future	1	2	3	4	5
Having a reputation as a water-conscious business	1	2	3	4	5
Improving the workplace environment for staff	1	2	3	4	5

21.   Have you heard of Green Leases? **(Only if tenanted)**

❑₁ Yes
❑₂ No

21a.   If yes do you envisage using these in the near future?

❑₁ Yes
❑₂ No

22.   Do you own and rent out:

a. Other commercial buildings?

❑₁ Yes
❑₂ No

If yes how many? _____

What category of building are they?

A_____number

B_____number

C_____number

Where are the majority of your buildings?
_____

b. Other residential buildings?

❑₁ Yes
❑₂ No

If yes how many? _____

Where are the majority of your rental dwellings? _____

23.   When managing your tenants what are your most important considerations?

❑₁ Reducing direct and indirect costs related to the tenancy
❑₂ Retaining existing tenants
❑₃ Maximising the income stream from tenants
❑₄ Securing a steady, not necessarily "maximised" income stream from tenants
❑₅ Being able to be my own boss

That's it for the survey questions

Thank you for your time ☺

Can I just check what type of voucher you would prefer and the address we should send that to. (if address varies from one on file then record below)

Voucher type: Select ONE only. Comments in italics are just for info if they ask, do not need to read.

❑$_1$ MTA voucher – *can be used for petrol or other purchases at petrol stations around New Zealand*

❑$_2$ Book token – *can be redeemed at any member store nationwide, covers big stores and lots of local ones too*

❑$_3$ Warehouse voucher *(The Warehouse)*

❑$_4$ Gardening voucher – *can be used at most major garden centres, Mitre 10 stores and many local garden stores*

C: OWNER PRIORITIES AND PERCEPTIONS OF TENANT PRIORITIES CROSS-TABULATIONS

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8A. Reducing energy cost * Q9A. Reducing energy cost	78	92.9%	6	7.1%	84	100.0%

Q8A. Reducing Energy Cost * Q9A. Reducing Energy Cost Cross-tabulation

			Q9A. Reducing energy cost				
			Not a priority	Low priority	Medium priority	High priority	Total
Q8A. Reducing energy cost	Not a priority	Count	0	2	4	3	9
		Expected count	0.2	1.2	2.4	5.2	9.0
	Low priority	Count	1	2	7	6	16
		Expected count	0.4	2.1	4.3	9.2	16.0
	Medium priority	Count	1	3	6	16	26
		Expected count	0.7	3.3	7.0	15.0	26.0
	High priority	Count	0	3	4	20	27
		Expected count	0.7	3.5	7.3	15.6	27.0
Total		Count	2	10	21	45	78
		Expected count	2.0	10.0	21.0	45.0	78.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8B. Reducing energy emissions * Q9B. Reducing energy emissions	66	78.6%	18	21.4%	84	100.0%

Q8B. Reducing Energy Emissions * Q9B. Reducing Energy Emissions Cross-tabulation

			Q9B. Reducing energy emissions				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8B. Reducing energy emissions	Not a priority	Count	3	4	1	1	9
		Expected count	1.0	3.7	2.6	1.8	9.0
	Low priority	Count	3	13	5	1	22
		Expected count	2.3	9.0	6.3	4.3	22.0
	Medium priority	Count	0	7	9	4	20
		Expected count	2.1	8.2	5.8	3.9	20.0
	High priority	Count	1	3	4	7	15
		Expected count	1.6	6.1	4.3	3.0	15.0
Total		Count	7	27	19	13	66
		Expected count	7.0	27.0	19.0	13.0	66.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8C. Increasing energy efficiency * Q9C. Increasing energy efficiency	76	90.5%	8	9.5%	84	100.0%

Q8C. Increasing Energy Efficiency * Q9C. Increasing Energy Efficiency Cross-tabulation

			Q9C. Increasing energy efficiency				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8C. Increasing energy efficiency	Not a priority	Count	1	2	4	1	8
		Expected count	0.3	1.2	2.9	3.6	8.0
	Low priority	Count	1	1	5	2	9
		Expected count	0.4	1.3	3.3	4.0	9.0
	Medium priority	Count	0	5	14	10	29
		Expected count	1.1	4.2	10.7	13.0	29.0
	High priority	Count	1	3	5	21	30
		Expected count	1.2	4.3	11.1	13.4	30.0
Total		Count	3	11	28	34	76
		Expected count	3.0	11.0	28.0	34.0	76.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8D. Ensuring a secure energy supply for the future * Q9D. Ensuring a secure energy supply for the future	69	82.1%	15	17.9%	84	100.0%

Q8D. Ensuring a Secure Energy Supply for the Future * Q9D. Ensuring a Secure Energy Supply for the Future Cross-tabulation

			Q9D. Ensuring a secure energy supply for the future				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8D. Ensuring a secure energy supply for the future	Not a priority	Count	0	3	3	0	6
		Expected count	0.3	1.2	1.5	3.0	6.0
	Low priority	Count	0	3	1	4	8
		Expected count	0.5	1.6	2.0	3.9	8.0
	Medium priority	Count	1	5	10	8	24
		Expected count	1.4	4.9	5.9	11.8	24.0
	High priority	Count	3	3	3	22	31
		Expected count	1.8	6.3	7.6	15.3	31.0
Total		Count	4	14	17	34	69
		Expected count	4.0	14.0	17.0	34.0	69.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8E. Having a reputation as an energy-conscious business * Q9E. Having a reputation as an energy-conscious business	75	89.3%	9	10.7%	84	100.0%

Q8E. Having a Reputation as an Energy-Conscious Business * Q9E. Having a Reputation as an Energy-Conscious Business Cross-tabulation

			Q9E. Having a reputation as an energy-conscious business				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8E. Having a reputation as an energy-conscious business	Not a priority	Count	4	2	2	1	9
		Expected count	0.7	2.0	3.1	3.1	9.0
	Low priority	Count	1	8	5	2	16
		Expected count	1.3	3.6	5.5	5.5	16.0
	Medium priority	Count	1	5	13	8	27
		Expected count	2.2	6.1	9.4	9.4	27.0
	High priority	Count	0	2	6	15	23
		Expected count	1.8	5.2	8.0	8.0	23.0
Total		Count	6	17	26	26	75
		Expected count	6.0	17.0	26.0	26.0	75.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8F. Improving the workplace environment for tenants or staff * Q9F. Improving the workplace environment for staff	75	89.3%	9	10.7%	84	100.0%

Q8F. Improving the Workplace Environment for Tenants or Staff * Q9F. Improving the Workplace Environment for Staff Cross-tabulation

			Q9F. Improving the workplace environment for staff				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8F. Improving the workplace environment for tenants or staff	Not a priority	Count	1	0	0	1	2
		Expected count	0.1	0.1	0.7	1.2	2.0
	Low priority	Count	1	1	1	0	3
		Expected count	0.1	0.1	1.0	1.8	3.0
	Medium priority	Count	0	1	14	10	25
		Expected count	1.0	1.0	8.3	14.7	25.0
	High priority	Count	1	1	10	33	45
		Expected count	1.8	1.8	15.0	26.4	45.0
Total		Count	3	3	25	44	75
		Expected count	3.0	3.0	25.0	44.0	75.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8G. Reducing water cost * Q9G. Reducing water cost	72	85.7%	12	14.3%	84	100.0%

Q8G. Reducing Water Cost * Q9G. Reducing Water Cost Cross-tabulation

			Q9G. Reducing water cost				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8G. Reducing water cost	Not a priority	Count	0	2	1	2	5
		Expected count	0.3	1.5	1.8	1.5	5.0
	Low priority	Count	3	9	7	1	20
		Expected count	1.1	5.8	7.2	5.8	20.0
	Medium priority	Count	0	6	12	4	22
		Expected count	1.2	6.4	7.9	6.4	22.0
	High priority	Count	1	4	6	14	25
		Expected count	1.4	7.3	9.0	7.3	25.0
Total		Count	4	21	26	21	72
		Expected count	4.0	21.0	26.0	21.0	72.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8H. Reducing water emissions * Q9H. Reducing water emissions	63	75.0%	21	25.0%	84	100.0%

Q8H. Reducing Water Emissions * Q9H. Reducing Water Emissions Cross-tabulation

			Q9H. Reducing water emissions				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8H. Reducing water emissions	Not a priority	Count	2	1	1	0	4
		Expected count	0.2	1.6	1.5	0.8	4.0
	Low priority	Count	1	14	7	2	24
		Expected count	1.1	9.5	8.8	4.6	24.0
	Medium priority	Count	0	7	11	3	21
		Expected count	1.0	8.3	7.7	4.0	21.0
	High priority	Count	0	3	4	7	14
		Expected count	0.7	5.6	5.1	2.7	14.0
Total		Count	3	25	23	12	63
		Expected count	3.0	25.0	23.0	12.0	63.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8I. Increasing water efficiency * Q9I. Increasing water efficiency	72	85.7%	12	14.3%	84	100.0%

Q8I. Increasing Water Efficiency * Q9I. Increasing Water Efficiency Cross-tabulation

			Q9I. Increasing water efficiency				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8I. Increasing water efficiency	Not a priority	Count	4	3	1	0	8
		Expected count	0.7	2.6	2.4	2.3	8.0
	Low priority	Count	1	9	5	3	18
		Expected count	1.5	5.8	5.5	5.3	18.0
	Medium priority	Count	1	7	10	4	22
		Expected count	1.8	7.0	6.7	6.4	22.0
	High priority	Count	0	4	6	14	24
		Expected count	2.0	7.7	7.3	7.0	24.0
Total		Count	6	23	22	21	72
		Expected count	6.0	23.0	22.0	21.0	72.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8J. Ensuring a secure water supply for the future * Q9J. Ensuring a secure water supply for the future	68	81.0%	16	19.0%	84	100.0%

Q8J. Ensuring a Secure Water Supply for the Future * Q9J. Ensuring a Secure Water Supply for the Future Cross-tabulation

			Q9J. Ensuring a secure water supply for the future				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8J. Ensuring a secure water supply for the future	Not a priority	Count	3	1	0	1	5
		Expected count	0.3	1.3	0.8	2.6	5.0
	Low priority	Count	0	10	0	1	11
		Expected count	0.6	2.9	1.8	5.7	11.0
	Medium priority	Count	0	5	9	4	18
		Expected count	1.1	4.8	2.9	9.3	18.0
	High priority	Count	1	2	2	29	34
		Expected count	2.0	9.0	5.5	17.5	34.0
Total		Count	4	18	11	35	68
		Expected count	4.0	18.0	11.0	35.0	68.0

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Q8K. Having a reputation as a water-conscious business * Q9K. Having a reputation as a water-conscious business	70	83.3%	14	16.7%	84	100.0%

Q8K. Having a Reputation as a Water-Conscious Business * Q9K. Having a Reputation as a Water-Conscious Business Cross-tabulation

			Q9K. Having a reputation as a water-conscious business				Total
			Not a priority	Low priority	Medium priority	High priority	
Q8K. Having a reputation as a water-conscious business	Not a priority	Count	3	4	3	0	10
		Expected count	1.0	3.4	3.1	2.4	10.0
	Low priority	Count	3	12	2	2	19
		Expected count	1.9	6.5	6.0	4.6	19.0
	Medium priority	Count	1	5	13	3	22
		Expected count	2.2	7.5	6.9	5.3	22.0
	High priority	Count	0	3	4	12	19
		Expected count	1.9	6.5	6.0	4.6	19.0
Total		Count	7	24	22	17	70
		Expected count	7.0	24.0	22.0	17.0	70.0