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STUDY REPORT

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New Zealand Small Commercial Property Condition Survey (Pilot)

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Preface

This report details the results of on-site inspections of the physical condition of five small commercial properties in the Bay of Plenty area. It also includes the results of an interview with the property owners to determine maintenance information. The report follows on from BRANZ SR 91 *New Zealand House Condition Survey* (Clark, Page, Bennett & Bishop, 2000), which found that New Zealand homeowners need to spend a total of over $5.5 billion on major outstanding maintenance. This pilot condition survey of small commercial properties provides a starting point for comparing how this category of buildings is maintained.

Acknowledgments

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Note

This report is intended for building industry researchers (government and private sector), economists, commercial property owners and maintenance persons.

NEW ZEALAND SMALL COMMERCIAL PROPERTY CONDITION SURVEY (PILOT)

BRANZ Study Report SR 112 (2002)
Rachel Hargreaves

REFERENCE

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EXECUTIVE SUMMARY

In 1994 and again in 1999, a representative survey was carried out by BRANZ of the condition of New Zealand domestic houses. It was found that New Zealand homeowners need to spend a total of over $5.5 billion on major outstanding maintenance on a residential stock valued at more than $147 billion. Figures for the New Zealand commercial property stock stand at approximately 67,000 units with a cumulative capital value total of $42.6 billion. What can be said in terms of the condition of our commercial buildings? The aim of this pilot study was to provide a glimpse of the condition of small commercial properties in New Zealand, how they are maintained, and provide a starting point for discussions on what this means for commercial property management, financially, socially and environmentally.

The main conclusions and recommendations from the pilot study were as follows:

- Commercial properties are complex building systems, with multiple componentry and other differences due to the nature of the tenancy or use of the building. Future studies need to carefully assess the content and structure of the survey forms to capture this complexity in a useful manner.

- The condition of the commercial properties assessed in this survey ranged from poor to excellent. It was difficult to determine accurate trends as to the overall state of New Zealand's commercial property stock or whether it is a better or worse condition than New Zealand's domestic property stock. While houses appear to be in a marginally better condition overall, the incidence of serious and poor components in houses is higher.

- For the commercial properties surveyed, the building component in the worst condition was exterior doors, with the most common building component defects being topcoat deterioration of roofs and missing drain grates.

- The relationship between the actual condition of the property and the maintenance undertaken, and between the actual condition and the accuracy and currency of the building's WOF are two potential correlations that are worthy of investigation in future studies.

- Commercial property is a significant investment on the economy. The cost to raise the condition of the properties surveyed to 'as new' was averaged at $18,000. If extrapolated (and the extrapolation is tenuous) to New Zealand's entire commercial property stock, there is an outstanding maintenance bill of $1.2 billion. Although the small sample size attaches a high degree of uncertainty to these values, combined with the maintenance bill for New Zealand's domestic stock, the cost to the economy is around $6.7 billion. This result raises some concerns not only for the short-term future of these buildings, but also in terms of their suitability as long-term investments.

- The survey revealed how little is known about the inter-relationships in the commercial property sector and how this impacts on the maintenance and hence lifetime of commercial buildings. The relationship between tenants and owners, i.e. the nature of tenancy arrangements, the number of commercial properties that are owner-occupied versus those that are tenanted, plus the differences in building condition in relation to these parameters needs to be further explored.

- The research strategy, based on the methodology of the *House Condition Survey*, has met the objectives of this report. It has raised the understanding of commercial property management in New Zealand (even if it raises more questions), it has developed a strategy for assessment, has recommended changes for the future, and determined that it does have potential as a future research topic. This is not only desirable but essential as the study has demonstrated the absence of factual research data in this field.

- It is recommended that this pilot study be extended to a full-scale study.

Contents

Page

Tables

Page

1 INTRODUCTION

1.1 Commercial Property in New Zealand

The term 'commercial property' covers a wide range of building types and uses. It includes buildings such as warehouses, universities, schools, office buildings, churches, prisons and retail premises. Apartment complexes may also be included depending on their size and the systems incorporated into the building (Pringle, 1999).

In New Zealand there has been relatively little commercial property development over the past decade. In terms of building consent data for 1999 non-residential building trends (including institutional, commercial and industrial sectors) were fairly modest, with strongest activity in the health and education sectors (Page, 2000). This is in contrast to the building boom of the late 1980's in which office construction made up almost 60 % of the growth in the total real value of commercial construction (Gawaith, 1999; cited in Saville-Smith, 2000). The growth experienced in the 1980's combined with relatively low development through the 1990's has created a surplus capacity. Predictions for 2000 were that there was unlikely to be any large office development projects undertaken (Page, 2000).

Currently, figures for the New Zealand commercial property stock stand at approximately 67,000 units with a cumulative capital value total of $42.6 billion (Quotable Value, 2000). As many of these units were born of the commercial property boom of the 1980's or before, it can be said that New Zealand's commercial property stock is aging. It is important to understand what the condition of this commercial property stock means in environmental, social and economic terms, as concepts such as 'environmental life cycle analysis' and 'sustainable architecture, building and culture' are emerging as key determinants for the construction industry.

To achieve this, an assessment of how long a building is 'in use' (determined in part by material performance, financial considerations and other social factors) needs to be conducted to determine the building's overall impact throughout its life. While progress is being made in this area, there is a lack of publicly available research data or other specific information on the current condition and ongoing maintenance of commercial buildings in New Zealand.

With New Zealand's commercial property (all categories) having a cumulative capital value total of $42.6 billion, commercial buildings are a significant investment in the economy. Therefore, knowing about the condition of our commercial property has important economic implications. Domestically, results from the *New Zealand House Condition Survey* (Clark et al, 2000) found that New Zealand homeowners need to spend a total of over $5.5 billion on major outstanding maintenance. What can be said in terms of commercial buildings?

This pilot study provides a glimpse of the condition of small commercial properties in New Zealand and how they are maintained. It provides:

- Vital information to the Building Industry Authority (BIA), so that they can consider changes to the Building Code and Acceptable Solutions for consistently occurring building defects;
- The Government with specific data to assist with regulating energy and natural resources; and
- Data of commercial value to the building industry because it will identify opportunities for new and improved products and practices (Alexander, 2002).

In addition, it provides a backdrop for discussions on the implications that property condition has on commercial property management financially, socially and environmentally, and highlights the key issues to be considered in a wider survey.

1.2 Terms of Reference

The intent of this research project was to carry out a pilot survey of a sample of the New Zealand commercial building stock in order to answer the following questions:

- What is the condition of the commercial property stock in New Zealand?
- What is the building industry's current knowledge about the life cycle of commercial properties?
- What keeps small commercial properties 'alive', i.e. what are the drivers behind commercial property maintenance?
- How do these drivers differ in relation to the nature of occupancy of the building, i.e. owner-occupied versus tenanted?
- Are small commercial properties maintained differently to domestic properties?

1.3 Objectives

The objectives of this report are as follows:

- To develop a preliminary strategy for assessing the condition of small commercial properties;
- To begin to develop an understanding of small commercial property management in New Zealand;
- To evaluate the preliminary strategy based on this understanding; and
- To determine whether a future full-scale study is warranted.

1.4 Method

The preliminary strategy for assessing the condition of the participating properties was a survey designed in two parts:

- A physical inspection of each property; and
- A one-on-one interview with the property owners.

The interview involved questions relating to the maintenance of the property. The physical inspection involved checking the condition of various components, such as the roof, walls, foundations, floor, interior walls, the roof space, etc. As a result, two survey forms were developed, the details of which are discussed sections 1.4.1 and 1.4.2.

The assistance of the Bay of Plenty Branch of the New Zealand Property Council was elicited to select five owners of small commercial properties in Tauranga to participate in the survey. The sample selection, sample size and sample profile is discussed in more detail in sections 1.4.3 to 1.4.5.

Two articles were written for BUILD magazine while the survey was underway, with further articles anticipated at the conclusion of this study report.

As a pilot study, this largely iterative process formed the basis of the research strategy, and is assessed in sections 2.6 and 3.4 (under 'Usefulness of results') to ascertain its appropriateness for future research in this area.

1.4.1 Physical inspection survey

The physical inspection survey form used in the *House Condition Survey* (Clark et al, 2000) was used as a template for the physical inspections in this study. It was adjusted to reflect the different categories that are more likely to be present in a commercial property compared to domestic homes – restrooms instead of bathrooms, and catering facilities instead of kitchens, for example. In addition, new categories were added to reflect the more complex nature and different uses of a commercial property in recognition that a commercial property comprises of both the building and its surrounds (property 'footprint'). These included new sections on wastewater and site drainage, external areas (such as gardens and car parking), and a 'space use' category to document how floor area in the property is utilised. The order of categories was further adjusted so that related questions were grouped together on the forms, e.g. all questions relating to everything in the sub floor space. This made the survey easier to complete by eliminating the need to return to an area several times.

After this preliminary review was completed, each question was evaluated to ensure that all likely building materials were included and all relevant defects identified. This was achieved by utilising the reference 'Protecting Your Investment: A Guide to Maintaining Commercial Buildings' (Pringle, 1999), and in consultation with BRANZ staff. After much iteration a draft survey was ready for testing. The test of the draft survey was carried out on a cars sales building complex on the 20th December 2000. This commercial property site was chosen as it had three different buildings on it each of different ages, construction and design. This was ideal, as it meant that many building materials and related defects that had been omitted from the survey form were identified. Minor changes in formatting for ease of use were also identified. The finalised draft copy of the survey form was then sent to the BRANZ building inspector assigned for the pilot study for use. For a sample of the survey form see Appendix 1.

1.4.2 Interview survey

The interview survey to determine maintenance drivers originally developed by the Centre for Research, Evaluation and Social Assessment (CRESA) for use in the *House Condition Survey* (Clark et al, 2000) was utilised as a template for this section of the study. This survey was altered to reflect the emphasis on the drivers behind commercial property maintenance and included new sections on building safety and the cost and amount of utilities. It also included questions about the maintenance of the commercial property owner's house (if applicable) to enable comparisons to be made between the drivers behind the maintenance of commercial properties and houses. Kay Saville-Smith (CRESA) reviewed these initial alterations, and further changes were made to the wording of the questions to more accurately capture the decision-making processes involved in the management of property maintenance. The interview survey was then tested alongside the physical condition survey at the car sales complex. As a result of this testing process, minor alterations in the question order were made. The trialled and edited version of the survey was then sent again to Kay Saville-Smith for a final review. From this, more changes were made to minimise ambiguity and increase the likelihood of interpretable results. The survey was then completed and prepared for use. For a sample of the survey form see Appendix 2.

1.4.3 Sample selection

It is important to note at this stage of the study, that with a sample size of five the results cannot be considered representative of the New Zealand small commercial property sector. In addition, the choice of location is relevant as different geographical areas can have quite different investment dynamics, in turn impacting on the level of maintenance and subsequent condition of the property.

To assist the logistical process for the purposes of this pilot study, the five properties were selected with the help of the Bay of Plenty Branch of the New Zealand Property Council and were required to be:

- Less than approximately 5000 m² (and so less likely to be externally managed);
- Defined as a commercial property (see below);
- Preferably 'stand alone' properties, i.e. not part of a mall etc;
- The owner must manage the property; and
- The property must be able to be inspected during the week 26th Feb-2nd March 2001.

It is also noted that by only interviewing the owner of the property, a partial view of the building's use and maintenance was obtained. In further studies, it is recommended that both the owner and tenants of the property are interviewed.

The Commercial Property Category Code (Quotable Value, 2000) defines a commercial property as shown in Table 1. These categories were used to define a commercial property for this study.

Urban Category Definitions – Code C: Commercial	
A	Commercial accommodation such as motels and hotels
C	Commercial cinema, theatre and public hall type complexes
E	Homes for the elderly
L	Liquor outlets including taverns etc.
M	Commercial motor vehicle sales, service etc.
O	Commercial office type use
P	Commercial parking
R	Retailing use
S	Service stations, petrol stations etc.
T	Commercial tourism type attractions
V	Vacant land which when developed will have a commercial use
X	Numerous commercial uses on one site or where the use is not in any of the above categories

Table 1: Commercial property category code

Note: As a result of using Quotable Value's definition, industrial buildings were not included (this is a separate property code). If, however, alternative definitions of commercial property are used in any future studies e.g. town planning definitions, industrial properties may also be included.

1.4.4 Sample size

Of the eleven original respondents, five properties were selected for the survey. The selection of these was based on the criteria above, i.e. size, commercial property status, location, owner/manager status, and availability. All owners were also assured confidentiality in that no identifying information would be included in any published material.

1.4.5 Sample profile

The five commercial properties surveyed were labelled from A to E and comprised the following profiles:

Property A: 2 tenancies (1 retail / 1 office). Owner-occupied. ~760m²
Property B: 1 tenancy (retail). Tenanted (but vacant at the time of the survey). ~1000m²
Property C: 4 tenancies (2 retail / 2 office). Tenanted. ~780m²
Property D: 6 tenancies (5 retail, 1 office). Tenanted. ~880m²
Property E: 5 tenancies (2 retail / 3 office). Tenanted. ~930m²

1.5 Assumptions and Limitations

1.5.1 Assumptions

The use of inspectors for the physical condition assessment introduces a degree of subjectivity and inconsistency across the results. In this study only one inspector was used, which reduced this inconsistency somewhat. It was assumed therefore, that the results of the physical inspections accurately represented the condition of the properties surveyed. It was also assumed that the respondents were truthful when interviewed.

The survey forms were modified to reflect the nature of commercial properties. As they were based on templates used in the *House Condition Survey* (Clark et al, 2000) any assumptions (and limitations) from these have unwittingly been brought forward.

1.5.2 Limitations

The main limitation of this pilot study is the small number of respondents from one location, introducing sample bias and producing statistically insignificant results. Only general trends and observations could be postulated as a result. Additionally, commercial properties are complex building systems. This complexity, combined with broad study objectives and limited expertise of the author, is a limitation specifically in the design of the surveys and in the analysis of results. The defects identified by the inspector were limited to those that could be physically inspected. Therefore non-visual faults and the implications of these are excluded from the results.

2 PHYSICAL INSPECTION RESULTS

2.1 Survey Format

Overall information about each property, including an assessment of the condition of specific components making up the building, was collected by the BRANZ inspector using the survey form. Photographs of each property were taken, and any particular defect of unusual severity was also photographed where possible.

2.2 Rating Scales

The inspector identified the materials for a number of building components and assessed the overall condition of the component on a scale ranging from serious to excellent. Defects in the component were identified in terms of their presence and frequency (indicated as a percentage; 0-10%, 10-25%, 25-50%, and 50-100%). Equal weighting was given to each component, even though all components do not contribute equally to the overall physical condition of the property. This is consistent with the methodology in the *House Condition Survey* (Clark et al, 2000). The scales used are shown in Table 2.

Condition	Description	Rating
Serious	Health and safety implications, needs immediate attention	1
Poor	Needs attention shortly – within next three months	2
Moderate	Will need attention within the next two years	3
Good	Very few defects – near new condition	4
Excellent	No defects – as new condition	5
Frequency of defect: 0-10%, 10-25 %, 25-50%, and 50-100%		

Table 2: Rating scales

As well as this component assessment, other building characteristics were assessed or recorded e.g. space use category, dampness, shade, wind exposure, surrounding area, moisture readings, roof slope, insulation levels etc. These provide valuable background information about each property as a whole. The inspector also made an overall judgement on how well the property was being maintained using one of three subjective assessments: well maintained, reasonably maintained, or poorly maintained.

2.3 Results

The following sections detail the results from the physical inspections carried out by the BRANZ inspector. For the building components assessed the type of building materials used, the defects, and the condition rating for each is described. A summary of the results can be found in section 2.4.

2.3.1 General

Questions in this section relate to the general nature of the properties surveyed, e.g. commercial property layout, use of space, dampness, shade, wind exposure, air tightness, the surrounding area and general condition.

Commercial property layout

Each property was sketched indicating its overall dimensions, the percentage glazing to each elevation, the number of tenanted spaces and internal layout, and the number of storeys. The inspector also indicated the compass direction each property faced. While providing an excellent overview of each property, this was a very complex job and the survey forms would warrant graph paper or similar for future studies.

The floor areas of the commercial properties surveyed ranged between approximately 760-1000m² and were a maximum of two storeys, easily meeting the selection criterion of being 5000m² or less. In general the percentage of glazing was high for the frontage of the properties (70-85%), while low at the rear (15% or less), and because most of the properties were attached to adjoining properties, there was little to no glazing on the side walls. Each property was assessed as one building regardless of the number of tenancies because the tenancies associated with one property owner were physically attached to one another, either horizontally or vertically.

Space use category

Knowing how space is utilised within properties can give an indication of, amongst other things, the likely types of building materials used, the likely types of defects found, and to some extent enables predictions to be made about how easy it would be to change its use. Assumptions based on these can change a building's life cycle assessment (LCA). For example, if a commercial building has a lot of 'generic' (i.e. non-specialised) space, it follows that the building has the potential to have many uses over its lifetime with minimal changes in building componentry. With a more specialised building, one would expect the converse of this. The degree of adaptability of a building can affect its impact on the environment over its life.

Table 3 illustrates the approximate floor area (m²) used for a particular function in each of the properties surveyed. This is also represented as a percentage of the total area. What can be seen is that the most widespread area used for a particular purpose was 'display areas'. This was not surprising as all of the properties had at least one tenancy classed as 'retailing' in which goods were being displayed for sale.

Space Use category	**Property A**		**Property B**		**Property C**		**Property D**		**Property E**	
	m²	**%**	**m²**	**%**	**m²**	**%**	**m²**	**%**	**m²**	**%**
Reception areas	72	11	7	0.6	13	1.7				
Waiting rooms	9	1.4			6	0.8	12	1.5		
Offices	241	37	186	13	127	17	15	1.9	21	4.7
Catering facilities	23	3.5	23	1.6	17	2.3	51	6.4	3	0.6
Restrooms	17	2.6	21	1.5	26	3.5	21	2.6	4	0.8
Resource rooms					15	2.1				
Storage areas			100	7	84	11.3	53	6.6	146	33.2
Meeting rooms										
Workshops							55	6.8		
Display areas	163	25	1090	76	292	39	586	73	219	49.8
Other	125	19.5	4	0.3	166	22.3	10	1.2	48	10.9
TOTAL	**650**	**100**	**1431**	**100**	**746**	**100**	**803**	**100**	**441**	**100**

Table 3: Space use category

The discrepancy, either above or below, between the total floor areas of the properties indicated in section 1.4.5 and the total space use areas in Table 2 could be attributed to a number of possible causes. These include a possible 'double counting' of spaces that are used communally, or areas that haven't been included, such as walkways, stairs, and 'dead spaces' (e.g. the area under stairs). The areas calculated were based on sketches of the properties (not to scale) with

varying floor area arrangements, such as mezzanines and ceiling or attic space use. As a result the areas recorded are, at best, estimates but provide a rough guide for how each property has been utilised for purpose.

To overcome these difficulties for future studies the following grading system could be used instead (Alexander, 2002):

Category 1: Building very open plan, few structural features interrupting interior space, construction allows relatively easy change of use at low cost.

Category 2: Building could adapt to many uses but inefficient design had introduced moderate costs to change.

Category 3: Building built for specific commercial use but could be changed with moderate cost.

Category 4: Building built for specific commercial use, structure provides many limitations to alteration. Building use can be changed but cost would be high.

Category 5: Building structure provides many limitations to use and cannot be changed without substantial demolition.

This system would markedly reduce the time taken to undertake such an assessment, and increase the usefulness of the results.

Subjective dampness feel

Dampness implies problems with building weather tightness. Properties A, C, D and E 'felt dry', mainly due to the presence of air conditioning systems. Property B was recorded as feeling 'slightly damp'. True dampness was difficult to assess in this subjective rating. To get a more accurate result for future studies (both commercial or domestic) the moisture content in the timber from the tops of doors could be measured if required.

Shade & wind exposure

The degree of shading[1] impacts upon building overheating or cooling and the extent of wind exposure impacts upon material durability. None of the properties surveyed were deemed to be shaded. In this study, shading was applicable to the front and rear of the properties only as the sidewalls were, for the most part, attached to the adjoining tenancy or building. Indeed, no shading is to be expected as the surrounding buildings were small (i.e. low rise) and well separated by streets, pedestrian malls etc. and were located in a flat area. All of the properties surveyed were described as sheltered from the wind, due to the built up nature of the surrounding area.

Subjective 'air tightness' feel

The degree of air tightness of a building is a combination of natural ventilation and draught resistance of joinery etc. This in turn impacts upon the performance of building heating and cooling systems and thus energy use. Properties B, D and E were assessed as being 'leaky' predominately associated with the presence of timber joinery and louvre windows (see section 2.3.5). Property C was classed as 'average' and Property A as 'airtight'. Similar to the dampness rating determining air tightness subjectively is largely intuitive, and for commercial properties even more difficult due to the presence of air-conditioning systems.

For more accurate results a 'blower door' test could be undertaken, although these tests are expensive to do for commercial properties with complex mechanical systems (Bassett, 2001). Alternatively a grading system could be adopted to increase objectiveness. One suggested rating system is provided as follows (Alexander, 2002):

[1] 'Shading' in this context means whether the property is shaded by other buildings or other separate physical features, such as hills, vegetation etc. It does include attached features such as verandas, sunshades, the presence of firewalls etc.

Category 1: Very airtight construction, no air conditioning, ventilation by windows and doors only.
Category 2: As 1 but with some extract fans.
Category 3: As 1 but air conditioned.
Category 4: Moderate airtight construction, no air conditioning, ventilation by windows and doors only.
Category 5: As 4 but with some extract fans.
Category 6: As 4 but air conditioned.
Category 7: Very air leaky construction, ventilation by louvres, windows, doors plus poor fitting windows and doors.
Category 8: As 7 but also with extract fans or permanently open vents.
Category 9: As 7 but also air conditioned.

Properties in the surrounding area

The predominant land use in the location of the properties surveyed was classed as commercial. This is to be expected as building areas are usually zoned and thus the same types of properties are grouped together. The external condition, based on the front of the buildings of the properties in the area, was assessed as being either moderate or good. The property age in the area was predominantly a mix of properties between 5-15 years and over 25 years. This is because the properties are located in an old area of Tauranga and some redevelopment has taken place.

General condition

The general condition of the commercial properties surveyed was assessed. It was observed that the front of the properties were in a better condition that the rear of the properties. However, two of the properties were considered to be well maintained (Properties A and C), two as reasonably maintained (Properties D and E), and one property as poorly maintained (Property B). Thus, the majority of the properties surveyed were either well or reasonably maintained. The poorly maintained property is waiting (at the time of the survey) for a tenant before upgrading. The proposed refurbishment plans for this property are displayed in the shop front window, and show significant improvements will be made.

2.3.2 Subfloor and floor

The components that were assessed in this section included the foundations and subfloor, fasteners, joists/bearers, vents, and floor. Issues for the subfloor included whether there was access to it or not, the presence of ground covering, floor insulation, and sub floor moisture.

Foundations and subfloor

Property D had concrete pile foundations with a continuous concrete perimeter wall. The remaining properties had concrete slab foundations. Table 4 lists the defects found and shows that most property's foundations were rated as either excellent or good.

Foundations	**A**	**B**	**C**	**D**	**E**
Type	Concrete slab.	Concrete slab.	Concrete slab.	Continuous concrete perimeter walls with concrete piles.	Concrete slab.
DEFECTS	None.	Rising damp.	None.	Inadequate bracing. Rising damp.	Cladding deteriorating near ground. Water ponding. Non-structural cracks.
CONDITION (rating)	Excellent (5)	Good (4)	Excellent (5)	Good (4)	Moderate (3)

Table 4: Foundations

Due to the nature of its foundations, Property D did have a sub floor, but in this case there was no access (i.e. no adequate crawl space) to it. However, the inspector managed to ascertain that there was no ground covering, no sub floor insulation and high sub floor moisture content (17-19%). This was consistent with evidence of water staining (see Table 5).

Sub Floor Fasteners

Only Property D, consistent with the presence of a sub floor and foundations, had fasteners. These were identified as being made of no.8 wire and staples in a good condition. White rust and some corrosion were present.

Joists/bearers

In terms of joists and bearers, Property D consisted of native timber and was rated 'good'. No defects were recorded. This question was not applicable for the other four properties.

Subfloor vents

For the properties with no sub floor there is no requirement for sub floor ventilation. Property D had a number of vents situated in the pavement at the front of the building. However, due to the high sub floor moisture content it is clear that the sub floor is not well ventilated and moisture is being trapped underneath (as indicated above). The vents were made of cast steel, with 980mm^2 clear area. No vegetation blocked the vents.

Floor

Table 5 shows that the majority of the properties surveyed had floors in a 'good' condition, with one property identified as having a floor in 'excellent' condition, and one property with a floor (upper level) in 'poor' condition. Common building materials included concrete and T&G, with floor squeaks as a common defect in the second storey. Property D, consistent with findings in the preceding subsections, showed water staining around nails in the floor.

Floor	**A**	**B**	**C**	**D**	**E**
Type	Concrete.	Lower level: concrete. Upper level: particleboard.	Concrete.	T&G.	Lower level: concrete. Upper level: T&G.
DEFECTS	None.	Floor squeaks.	Cracking.	Water staining around nails.	Floor squeaks.
CONDITION (rating)	Excellent (5)	Good (4)	Good (4)	Good (4)	Poor (upper level) (2)

Table 5: Floor

2.3.3 Water

The results from this section include plumbing wastes, water reticulation, drains (sewer and stormwater), spouting and drainpipes. It was observed that, in general, wastewater services were mostly concealed, either by the building itself i.e. internally located, or by the surrounding buildings i.e. blocked access, and in some cases the type of service was unable to be determined.

Plumbing wastes

Table 6 shows the common defects for the plumbing wastes of the properties surveyed were leaking pipes and inadequate slinging/support, giving rise to either a good or moderate condition rating. Common materials included copper and PVC.

Plumbing wastes	A	B	C	D	E
Type	PVC. Copper.	Copper. Cast iron.	Copper. PVC.	Copper. PVC. Lead. Cast iron.	PVC.
DEFECTS	None recorded.	Leaking pipes. Inadequate slinging/support.	Inadequate slinging/support.	Leaking pipes. Inadequate slinging/support.	None recorded.
CONDITION (rating)	Good (4)	Moderate (3)	Good (4)	Moderate to Good (3-4)	Good (4)

Table 6: Plumbing wastes

Water reticulation

The common defect for the water reticulation systems of the properties surveyed was inadequate slinging, achieving the same ratings as for the plumbing wastes i.e. good to moderate. Copper was the most common material used. The details can be seen in Table 7.

Water reticulation	A	B	C	D	E
Type	Copper. Polybutylene.	Copper.	Copper.	Copper. Galv steel.	Copper. Polybutylene.
DEFECTS	Inadequate slinging/support.	Inadequate slinging/support.	None recorded.	Inadequate slinging/ support.	None recorded.
CONDITION (rating)	Good (4)	Moderate (3)	Good (4)	Moderate to Good (3-4)	Good (4)

Table 7: Water reticulation

Drains

Of the four properties for which the sewers could be inspected, they comprised a mix of PVC, earthenware and cast iron. The common defects for these properties were missing grates and leaking gully traps. The majority condition rating of the sewers was moderate. Only three of the properties enabled inspection of the stormwater drains. The common type of drain was earthenware. Common defects included cracking, blockage and corrosion; overall the drains were assigned a moderate to good condition rating. See Table 8 for more details. For future studies it may be useful to also assess drainage areas and grease traps, and whether there is access to these for maintenance.

Drains (sewer)	A	B	C	D	E
Type	Unable to determine.	PVC. Earthenware. Cast Iron.	Earthenware.	PVC. Cast iron. Earthenware.	PVC. Earthenware.
DEFECTS	-	Missing grates. Leaking gully traps. Cracks.	Missing grates.	Missing grates. Overgrown.	Broken gully traps. Leaking gully traps.
CONDITION (rating)	-	Moderate (3)	Good (4)	Moderate (3)	Moderate (3)
Drains (stormwater)	**A**	**B**	**C**	**D**	**E**
Type	Unable to determine.	Earthenware.	Unable to determine.	PVC. Earthenware.	Earthenware. Cast iron.
DEFECTS	-	Blocked or overflowing drains. Cracks.	-		Cracks in drain. Corrosion.
CONDITION (rating)	-	Moderate (3)	-	Good (4)	Moderate (3)

Table 8: Drains (stormwater & sewer)

Spouting and drainpipes

Table 9 shows the common spouting and drainpipe materials found in the properties surveyed were PVC and galvanised steel. The common defect was an uneven fall. The condition rating achieved was from poor to good. For future studies, an assessment of internal gutters should be included in this section.

Spouting & drainpipes	A	B	C	D	E
Type	PVC. Copper.	PVC. Galv steel.	Unable to determine.	Galv steel. PVC.	PVC. Galv steel.
DEFECTS	Partially blocked.	None recorded.	-	Uneven fall.	Uneven fall. Missing supports. Corrosion of metal. Leaks.
CONDITION (rating)	Moderate (3)	Good (4)	-	Good (4)	Poor (2)

Table 9: Spouting & drainpipes

2.3.4 Exterior

The exterior features that were included in the survey were paths, paving and car parking areas, external steps and ramps, and retaining walls, planting, fences and/or gates.

Paths, paving and car parking

Table 10 shows that the condition of the exterior areas of the property, comprising of car parking, paths and paving, were largely divided between the extremes of excellent and poor. The areas that were fully tarsealed were excellent, compared to those that comprised a mixture of tarseal, dirt, gravel and grass. Common defects with these included uneven surfaces and potholes. Whether these defects were due to the composition of the tarseal or just lack of adequate maintenance was unable to be determined – a detail that may be of use in future studies.

Paths, paving & car parking	A	B	C	D	E
Type	Tarseal.	Mix of tarseal, dirt and gravel.	Tarseal.	Mix of tarseal, dirt, grass and gravel.	Tarseal.
DEFECTS	None.	Uneven surfaces. Pot holes.	None.	Uneven surfaces. Car parking line poorly visible. Pot holes. Subsidence. Overgrown.	None recorded.
CONDITION (rating)	Excellent (5)	Poor (2)	Excellent (5)	Poor (2)	Good (4)

Table 10: Paths, paving & car parking

External steps / ramps

Only Properties A and B had external steps or ramps. Property A consisted of concrete steps and a metal handrail with no defects, receiving an 'excellent' rating. Property B comprised of wood but was considered in a dangerous condition by the inspector thus receiving a 'poor' rating. For future studies an evaluation of internal steps and ramps may also be appropriate. In addition, consideration of stairs/ladders to services or roofs or for emergency egress for example, is warranted.

Retaining walls, planting, fences or gates

The same two properties had retaining walls – Property A's were in an excellent condition, Property B's in a good condition. No defects were recorded. None of the properties surveyed had any planting, fences or gates. It was observed that other buildings were part of the exterior (such as transformer rooms) but were not included on the survey forms. An assessment of the condition of these, or at least their existence, should be noted and would be useful for future studies.

2.3.5 External cladding/doors/windows

The components assessed in this section included wall cladding, exterior doors, windows, and the roof.

Wall cladding

As can be seen in Table 11 the condition of the wall claddings of the properties surveyed included ratings of poor to moderate, good and excellent. The condition of the wall mounted items (where present) ranged from poor to excellent. Assessment of the wall cladding created some confusion in terms of delineating between the exterior wall surface and the whole building component fabric, for example, how to categorise curtain walling (cladding or windows?) or structural glazing.

The wall cladding at the front of the building was in a much better condition than that at the rear of the property. Common defects included cracks, staining, topcoat deterioration, paint deterioration and mould. The types of claddings used included a mix of materials such as concrete (including reinforced block and precast slab), brick (solid, cavity, or veneer), asbestos cement sheet, and roughcast (including stucco). For future work this table should differentiate the difference between the front, back and side walls.

Wall cladding	A	B	C	D	E
Type	Concrete. Roughcast. Asbestos cement sheet.	Concrete. Roughcast. Asbestos cement sheet. Galv. Steel.	Concrete. Brick. Asbestos cement sheet.	Roughcast. Concrete. Reinforced concrete post & beam.	Brick. Concrete. Asbestos cement sheet. Galv. Steel.
DEFECTS	None.	Topcoat deterioration. Mould. Leaking at joints. Staining.	None.	Cracks. Spalling. Paint deterioration. Mould. Topcoat deterioration.	Insecure cladding. Cracks. Impact damage. Corrosion of reinforcing. Paint deterioration. Topcoat deterioration. Mould. Staining.
CONDITION (rating)	Excellent (5)	Moderate (3)	Excellent (5)	Front – good (4); Rear – poor to moderate (2-3)	Poor to moderate (2-3)
Wall mounted items (condition)					
	Air-conditioning units (good). Sign (good).	Plumbing (moderate). Electrical wires (poor).	Signs (excellent). Sunblind (excellent).	None.	Plumbing (moderate). Air-conditioning units (good).

Table 11: Wall cladding

Exterior doors

The exterior doors of the properties surveyed included a wide range of materials such as glass, timber, aluminium and steel in a variety of forms e.g. sliding, solid, part glass, and French styles. Common defects included topcoat deterioration, poor hardware, paint deterioration, missing/inoperative hardware and door sticking. The condition ratings ranged from poor to good. More details about the exterior doors can be seen in Table 12.

Exterior doors	A	B	C	D	E
Type	Aluminium. Solid timber. Sliding aluminium.	Glass. Sliding aluminium. Aluminium.	Solid timber. Timber/part glass.	Timber/part glass. French. Solid timber. Sliding aluminium.	Solid timber. Aluminium. Glass. Sliding galv. steel.
DEFECTS	Topcoat deterioration.	Loose rubbers.	Poor hardware. Paint deterioration. Topcoat deterioration.	Topcoat deterioration. Sticking. Poor hardware. Paint deterioration. Missing or inoperative hardware.	Missing or inoperative hardware. Poor hardware. Paint deterioration. Topcoat deterioration. Sticking door. Guide track damage.
CONDITION (rating)	Good (4)	Moderate to good (3-4)	Moderate (3)	Front – moderate to good (3-4); Rear – poor to moderate (2-3)	Timber and sliding door – poor (2); aluminium – moderate (3); glass – good (4).

Table 12: Exterior doors

Windows

The windows of the properties surveyed also comprised of a range of materials including timber, steel, aluminium and louvres, with condition ratings ranging from excellent to poor. Timber and louvre style windows were the most common. Window defects included lack of cleanliness, air leakage, paint deterioration, stressed joints, putty cracks, checking in timber and metal corrosion. These results can be seen in Table 13. As the majority of the glazing was at the front of the properties it may be prudent to separate the shop front as a separate building element, including features such as the percentage of fixed glazing, presence of safety glass etc, for future work.

Windows	A	B	C	D	E
Type	Aluminium. Steel. Timber.	Timber. Louvres.	Timber. Aluminium. Steel. Louvres.	Timber. Steel. Louvres.	Timber. Aluminium. Louvres.
DEFECTS	Scratched glass. Minor coating failures.	Broken/cracked panes. Dislodged/missing putty. Stressed joints. Paint deterioration. Glazing mouldings in poor condition. Putty cracks. Lack of cleanliness. Air leakage.	None recorded.	Lack of cleanliness. Air leakage. Nail rust staining. Paint deterioration. Metal corrosion. Checking in timber.	Metal corrosion. Paint deterioration. Checking in timber. Putty cracks. Stressed joints. Joint cracks.
CONDITION (rating)	Good (4)	Moderate (3)	Excellent/ Good (4-5)	Front – good (4) Rear – poor (2)	Poor to good (2-4)

Table 13: Windows

Roof

As shown in Table 14, the common roof materials for the properties surveyed included profiled metal tile and galvanised steel, with the majority having a condition rating of 'moderate'. Common defects of the commercial properties included rust and corrosion of base metal, internal gutter leaks, moss growth, nail lifting, dirt and debris build up, areas of ponding, chalking of applied finishes and deterioration of fixings and of the topcoat. All of the roof-mounted items received a 'good' condition rating.

Roof	**A**	**B**	**C**	**D**	**E**
Type	Profiled metal tile. Bitumen membrane.	Galv. steel. Profiled translucent sheet. Plastic panels.	Galv. steel.	Profiled metal tile. Galv. steel.	Galv. steel.
DEFECTS	Corrosion of base metal. Buckling. Rust. Moss growth. Dirt & debris build up. Areas of ponding. Chalking of applied finishes. Topcoat deterioration.	Corrosion of base metal. Nail lifting. Deterioration of fixings. Topcoat deterioration.	Rust. Paint flaking/ blisters or bubbles. Areas of ponding. Internal gutters leaking. Moss growth. Sagging. Chalking of applied finishes. Topcoat deterioration.	Buckling.	Rust. Internal gutters leaking. Nail lifting. Leaks. Dirt & debris build up. Areas of ponding. Deterioration of fixings. Holes/cracks/dents. Corrosion of base metal. Paint flaking/ blisters or bubbles.
CONDITION (rating)	Moderate (3)	Moderate (3)	Moderate (3)	Excellent (5)	Poor (2)
Roof mounted items (condition)					
	TV aerial. Skylights. Plastic vents. (good to mod)	TV aerial. Skylights. (good)	Air-conditioning units (good)	Vents (good)	Skylights. Vents. Pipes. (good)

Table 14: Roof

It is recommended that future studies include parapets and verandas as part of the roof assessment, as well as providing for other roof features such as mechanical plant, vents etc.

2.3.6 Roof space

The componentry assessed in this section includes the roof space and the rafters, purlins, ceiling joists and trusses, where appropriate. In terms of the roof space, whether there was access, types of sarking or truss, skillion roof percentage, degree of roof slope, type of wiring, presence of insulation or roof space moisture, were all documented.

Table 15 shows that the majority of properties had roof slopes of 0-15 degrees, and all had tough plastic sheath wiring present. Only two of the five properties had ceiling insulation, and only one of these to any great degree. The roof space moisture of the properties was 12% or less. One property had a skillion roof, and two properties had roof space trusses.

Roof Space	A	B	C	D	E
Roof slope	0-15°	0-15°	0-15°	0-15° 16-30° at clerestory windows.	0-30°
Wiring Type	Tough plastic sheath.	Tough plastic sheath.	Tough plastic sheath.	Tough plastic sheath.	Tough plastic sheath.
Ceiling insulation	100% fibreglass 50 mm thick.	None.	Foil under battens.	None.	None.
Roof space moisture (timber)	10%	12%	11%	=12%	11%
Skillion roof %		90%			
Truss, roof sarking, ceiling sarking		Steel truss.		Timber truss.	

Table 15: Roof space

Rafters, Purlins, Ceiling Joists and Trusses

The majority of the rafters, purlins, ceiling joists and trusses were made of treated radiata and metal. Table 16 shows that very few defects were recorded, with an overall condition rating of 'good' achieved.

Rafters, Purlins, Ceiling Joists & Trusses	A	B	C	D	E
Type	Treated radiata. Steel. Concrete.	Treated radiata.	Treated radiata. Metal. Douglas fir.	Native. Douglas Fir.	Treated radiata. Metal.
DEFECTS	None recorded.	None recorded.	None.	None recorded.	Timber decay.
CONDITION (rating)	Good (4)	Good (4)	Excellent (5)	Good (4)	Moderate to good (3-4)

Table 16: Rafters, purlins, ceiling joists & trusses

2.3.7 Interior features

The interior features of the properties assessed included the restrooms, catering facilities, interior linings, internal doors, hardware and furnishings where present. Due to the inconsistency of these features across the tenancies, a range of componentry was identified, as were a range of defects. The results can be seen in the following tables.

Restrooms

The restrooms received the greatest divergence of ratings of all the component ratings – ranging from serious to excellent. All of the internal features (restrooms, catering facilities, interior linings etc.) of the properties showed the greatest variability, as they had multiple numbers of each feature with often different characteristics. Common defects found in the restrooms were staining of surfaces, water stains and chipped or peeling paint. All had toilets and hand basins, but only two were recorded as having some form of hand-drying facilities. None of the property's restrooms had any mould. There was a mix of linings used, with plasterboard being most common for the walls, and vinyl as the majority for floor coverings. See Table 17 for more details.

Restrooms	**A**	**B**	**C**	**D**	**E**
Number	3	4	2	7	4
No. with disabled access	2	2	Nil	Nil	Nil
When last refurbished	In the past 5 years.	10-25 years.	Not recorded by inspector.	More than 25 years.	In the past 5 years.
Linings	Ceiling: Mineral fibre tile. Walls: Plasterboard. Floor: Vinyl.	Ceiling/walls Hardboard. Plasterboard or none. Floor: Carpet. Vinyl.	Ceiling: Concrete. Walls: Plasterboard. Melamine faced hardboard. Floor: Vinyl.	Ceiling: Softboard. Plasterboard. Walls: Plasterboard. Concrete block. Hardboard. Floor: None. Vinyl.	Ceiling: Plasterboard. Particleboard. Walls: Plasterboard. Floor: Vinyl. None.
Fittings	Toilets. Hand basins. Cloth towel / paper towels.	Toilets. Hand basins.	Toilets. Hand basins.	Toilets. Hand basins.	Toilets. Hand basins. Cloth towels.
Mechanical ventilation	To outside.	None.	To outside.	Some none. Some to outside.	None.
DEFECTS	None.	Staining of surfaces. Leaking outlets. Water stains. Cisterns suffering UV degradation.	Vinyl cracked at joints.	Staining of surfaces. Water stains. Chipped/ peeling paint. Poor aesthetics.	Water stains. Chipped paint.
Mould level	None.	None.	None.	None.	None.
CONDITION (rating)	Excellent (5)	Serious to poor (1-2)	Good (4)	Moderate to good (3-4)	Moderate to good (3-4)

Table 17: Restrooms

Access for maintenance, the supply of hot water, source of hot water, age of cylinder, plus the overall condition of the hot water facility, were features that were omitted in the inspection, as were heating and cooling plant. It is recommended that these are included in any future studies, for both the restrooms and catering facilities.

Catering facilities

Of the catering facilities for the properties surveyed, the most common linings for the ceiling were softboard and plasterboard, plasterboard for the walls, and vinyl or carpet for the floors. The joinery/bench was either formica or stainless steel, and the majority of properties had electric appliances e.g. jugs, toasters, stove tops. In properties with multiple facilities, the method of ventilation was not necessarily consistent across them. Common defects included holes in the linings and the floor, worn joinery edges, rough surfaces, water stains, discoloured or chipped/peeling paint/paper, and dirtiness. The condition ratings varied from poor to

excellent, although the tendency was for 'moderate to good' overall. See Table 18 for more details.

Catering facilities	A	B	C	D	E
Last refurbished	In the past 5 years.	10-25 years.	In the past 5 years.	5-25+ years.	5-10 years.
Linings	Ceiling: Mineral fibre tile. Plasterboard. Walls: Plasterboard. Floor: Vinyl.	Ceiling: Softboard. Walls: Softboard. Solid plaster. Floor: Carpet.	Ceiling: Softboard. Concrete. Walls: Plasterboard. Concrete block. Floor: Vinyl. Concrete.	Ceiling: Softboard. Plasterboard. Walls: Plasterboard. Concrete block. Hardboard. Floor: Timber strip. Carpet. Vinyl.	Ceiling: Plasterboard. Walls: Plasterboard. Floor: Vinyl. None.
Joinery/bench	Formica.	Formica.	Formica.	Formica. Stainless Steel.	Formica. Stainless steel.
Appliances	Electric.	None.	Electric.	Electric.	Electric.
Ventilation	Some to another room. Some to outside.	To outside.	Some had none. Some to another room.	Some had none. Some to outside. And some to another room.	Some to outside. Some had none.
DEFECTS	Rough surfaces.	Discoloured paint/paper. Holes in linings. Holes in floor. Unsafe floor cover Chipped/peeling paint/paper. Dented bench surfaces. Worn joinery edges. Cracks. Water stains. Fire risk.	Worn formica. Holes in linings. Worn joinery edges. Cracks Rough surfaces. Dirty.	Damaged wiring/outlet/switches. Poor seals at bench top. Unsafe floor cover. Tap deterioration. Holes in linings. Holes in floor. Paint deterioration to bare timber. Chipped/peeling paint/paper. Worn joinery edges. Water stains. Discoloured paper/paint. Rough surfaces. Dented bench surfaces.	Worn joinery edges. Water stains. Discoloured paint. Dirty.
Mould	None	None	None	None	None
CONDITION (rating)	Excellent (5)	Poor (2)	Moderate to good (3-4)	Poor to good (2-4)	Moderate to good (3-4)

Table 18: Catering facilities

Interior linings

Table 19 shows the interior linings consisted of mainly plasterboard and softboard for the ceilings, plasterboard and concrete block for the walls, and carpet for the floors. None of the properties had wall insulation, and where applicable the common surface treatment was

painting. Only one property had MDF reveals and they were in a poor condition. No mould was present on the interior linings of any of the properties. Common defects included holes in linings, impact damage, minor blemishes, water stains, cracks, worn timber edges and unsafe floor coverings. Each property had a different condition rating for this component ranging from poor to excellent. Commercial finishes need to be added to the survey forms, plus provision for suspended ceilings, in future studies.

Interior linings	**A**	**B**	**C**	**D**	**E**
Linings	Ceiling: Mineral tile. Plasterboard. Walls: Plasterboard. Floor: Carpet.	Ceiling: Softboard. Walls: Softboard. Floor: (Not recorded by inspector)	Ceiling: Softboard. Concrete. Walls: Plasterboard. Concrete block. Floor: Carpet.	Ceiling: Softboard. Plasterboard. Fibrous plaster. Walls: Plasterboard. Concrete block. Hardboard. Floor: Timber strip. Vinyl. Carpet.	Ceiling: Plasterboard. Walls: Plasterboard. Concrete. Floor: Carpet.
Wall insulation	None.	None.	None.	None.	None.
Surface treatment	Painted.	Painted.	Painted.	Painted.	Painted.
MDF reveals	None.	None.	None.	None.	Swollen/Split.
DEFECTS	None.	Impact damage. Holes in linings. Holes in floor. Damaged wiring/outlet/ switches. Minor coating/lining blemishes. Water stains. Cracks. Worn timber edges. Unsafe floor covering. Cracking in wall and ceiling lining. Ceiling damage.	Impact damage. Holes in linings. Minor coating/lining blemishes.	Impact damage. Discoloured or peeling paint/ paper. Coating/lining blemishes. Water stains. Cracks. Areas of dirt accumulation. Worn timber edges. Unsafe floor covering. Peaking.	Carpet needs stitching. Minor coating/lining blemishes. Water stains. Cracks. Areas of dirt accumulation. Worn timber edges.
Mould	None	None	None	None	None
CONDITION (rating)	Excellent (5)	Poor (2)	Good (4)	Moderate to good (3-4)	Poor to good (2-4)

Table 19: Interior linings

Internal doors

Table 20 shows that all properties had a combination of hollowcore and timber/part glass (glazed timber) internal doors. Common defects included minor cracks/wear, and worn hardware, with an average rating of moderate to good. Provision for smoke and fire protection and the 'condition of' the doors for such purposes, could be an issue to consider in the future.

Internal doors	**A**	**B**	**C**	**D**	**E**
Type	Hollowcore. Timber/glass.	Hollowcore. Timber/glass.	Hollowcore. Timber/glass.	Hollowcore. Timber/glass.	Hollowcore. Timber/glass.
DEFECTS	None.	Impact damage. Missing or broken hardware. Minor cracks/ wear. Worn hardware.	Minor cracks/ wear. Worn hardware.	Worn hardware.	None recorded.
CONDITION (rating)	Excellent (5)	Poor (2)	Good (4)	Moderate to good (3-4)	Moderate to good (3-4)

Table 20: Internal doors

Furnishings

Furnishings included blinds, sun filters and curtains. Of the properties that contained furnishings (A, B, and E), their condition ranged from poor to good, moderate to good, to excellent. The only defects recorded were fading, tears and rips. These details can be seen in Table 21.

Furnishings	**A**	**B**	**C**	**D**	**E**
Type	Blinds.	Sun filters. Curtains. Blinds.	Nil	Nil	Curtains. Blinds.
DEFECTS	None.	Fading. Tears or rips.	N/a	N/a	None recorded.
CONDITION (rating)	Excellent (5)	Poor to good (2-4)	N/a	N/a	Moderate to good (3-4)

Table 21: Furnishings

2.3.8 General comments (by Inspector)

Property A:

This property had a major upgrade four years ago. It is in good/excellent condition except where roof water needs clearing from the rain head and the roof needs painting.

Property B:

This building has seen no significant maintenance for many years. The owner is advertising for a tenant and major upgrading will be carried out thereafter. In the meantime it must be considered to be in a poor state of repair for a commercial building in a main commercial area.

Property C:

This building is in good condition on the whole, and is well maintained.

Property D:

There is a marked difference between the tenancies of this property. As an overview some are quite good, others only moderate. This building is typical of construction techniques in the early

1950's. The high volume of roof space is not utilised. The sub floor ventilation is keeping the sub floor timber just below danger level for fungus; the use of heart rimu and matai lift the threshold to some extent over materials now in common usage.

Property E:
This building has had a number of industrialised uses before the transformation to retail. Both shops are in a good condition aesthetically and convenience wise. The quality of the upper level tenancy is bordering on poor due to its low ceiling height and lack of ventilation, although there is a main extraction unit for the area. The presence of water staining also suggests the roof is leaking (the condition of the roof leaves little doubt). The storage areas are solely ground floor level, rough and no frills and the doors in the rear wall are poor. It seems that the building is now at its best before (if or when) the site is re-developed. A new roof will be needed before then.

2.4 Results Summary

2.4.1 Physical inspection results

- The properties floor areas ranged from approximately 760m² to 1000m², and were no more than 2 storeys high. Percentage glazing was generally high for the front of the properties, low at the rear and very low, or non-existent on the sidewalls. The majority of space was utilised for display purposes;
- Most properties felt dry, all were never shaded (by surrounding landscape or other buildings), all were sheltered, but three felt leaky. The surrounding area of the properties surveyed was classified as commercial in a moderate to good external condition, ranging from 5 to 25+ years old;
- Two of the surveyed properties were rated well maintained, two reasonably maintained, and one poorly maintained;
- The sub floor, foundations, fasteners, joists/bearers, vents (where applicable) and floors of the properties surveyed were generally in a good to excellent condition;
- The plumbing wastes and water reticulation systems were in a moderate to good condition, with the sewers and stormwater drains generally in a moderate condition. The spouting and drainpipes were in a poor to good condition. Overall, maintenance access for water reticulation and drainage systems needs more consideration;
- The external areas comprising the car parking, paths, paving, and external steps and ramps were split between the extremes of excellent and poor. The retaining walls (where present) reached a rating of good to excellent. Moderate attention was given to maintaining the areas of the property not covered by the building, e.g. back entrances, rubbish and weed control;
- The external building materials, such as the cladding, doors and windows, comprised of a wide range of materials and styles. Similarly, there was a range of condition ratings for these components, from poor through to excellent. In general, the condition of the front of the properties was better than the rear of the properties. The roofs of the properties surveyed were in a moderate condition overall;
- The roof spaces of the properties were generally in a good condition, although poorly insulated. None of the walls were insulated;
- The number, style and condition of staff facilities such as restrooms and catering facilities varied widely. Many were generally in a poor to moderate condition. The interior linings, internal doors and furnishings were mostly in a moderate to good condition; and
- There was no interior mould present in any of the properties surveyed.

2.4.2 Component rating summary

The scale used to assess component condition was shown in Table 2. These ratings have been averaged for each component and each property, the results for which are shown in Table 22.

Component	Prop. A	Prop. B	Prop. C	Prop. D	Prop. E	Average Rating
Foundations	5	4	5	4	3	**4.2**
Fasteners	N/a	N/a	N/a	4	N/a	**-**
Joists/bearers	N/a	N/a	N/a	4	N/a	**-**
Floor	5	4	4	4	2	**3.4**
Plumbing wastes	4	3	4	3-4	4	**3.6-3.8**
Water reticulation	4	3	4	3-4	4	**3.6-3.8**
Drains (sewer)	?	3	4	3	3	**3.3**
Drains (storm)	?	3	?	4	3	**3.3**
Spouting &drainpipes	3	4	?	4	2	**3.3**
Paths, paving & car parking	5	2	5	2	4	**3.6**
Steps and ramps	5	2	N/a	N/a	N/a	**3.5**
Retaining walls	5	4	N/a	N/a	N/a	**4.5**
Wall cladding	5	3	5	2-4	2-3	**3.4-4**
Exterior doors	4	3-4	3	2-4	2-4	**2.8-3.8**
Windows	4	3	4-5	2-4	2-4	**3-4**
Roof	3	3	3	5	2	**3.2**
Rafters, purlins, ceiling joists & trusses	4	4	5	4	3-4	**4-4.2**
EXTERIOR CONDITION	**56/65**	**42-43/75**	**46-47/55**	**50-58/75**	**36-42/65**	**-**
EXTERIOR RATING	**4.3 Good**	**2.8-2.9 Poor-Moderate**	**4.2-4.3 Good**	**3.3-3.9 Moderate-Good**	**2.8-3.2 Moderate**	**3.5-3.7 Moderate**
Restrooms	5	1-2	4	3-4	3-4	**3.2-3.8**
Catering facilities	5	2	3-4	2-4	3-4	**3-3.8**
Interior linings	5	2	4	3-4	2-4	**3.2-3.8**
Internal doors	5	2	4	3-4	3-4	**3.4-3.8**
Furnishings	5	2-4	N/a	N/a	3-4	**3.3-4.3**
INTERIOR CONDITION	**25/25**	**9-12/25**	**15-16/20**	**11-16/20**	**14-20/25**	**-**
INTERIOR RATING	**5 Excellent**	**1.8-2.4 Serious-Poor**	**3.8-4 Moderate-Good**	**2.75-4 Poor/Moderate-Good**	**2.8-4 Poor/Moderate-Good**	**3.2-3.9 Moderate-Good**
OVERALL CONDITION	**81/90**	**51-55/100**	**61-63/75**	**61-74/95**	**50-62/90**	**-**
OVERALL RATING	**4.5 Good-Excellent**	**2.6-2.8 Poor**	**4-4.2 Good**	**3.2-3.9 Moderate-Good**	**2.8-3.4 Poor-Moderate**	**3.4-3.7 Moderate**

Table 22: Component rating summary

In section 2.3.1, the inspector rated properties A and C as being well maintained, properties D and E as being reasonably maintained and property B as being poorly maintained. These subjective ratings correspond reasonably well with the final component condition ratings for each respective property, with the exception of property E which fared relatively badly in the component ratings but received a 'reasonably maintained' rating by the inspector.
This corresponds with the findings of the *House Condition Survey* in that the overall assessment by the inspector did not necessarily equate with the resultant component condition ratings. The comparison is useful though as it indicates the opinion of an experienced assessor based on the perceived importance of areas in a poor condition over others, i.e. a property with a roof in poor condition may be rated lower than a property with the furnishings in a poor condition, all other things considered equal, based on the perception that having a roof in good condition is more important than the furnishings.

In general, the results show that the interiors (overall) of the commercial properties surveyed were in a marginally better condition than the exterior. However, due to the averaging process and the multiplicity of components, the 'true' nature of some of the components has perhaps not been accurately represented in the summary tables. It may be more beneficial for future surveys to treat each tenancy as a separate building, although problems will still be encountered with the presence of multiple facilities having differing components and conditions. With careful planning of the survey the inspector will be able to use the rating system provided with accuracy, e.g. not rate something 3 to 4; it is either 3 or 4, not both.

Note: As explained earlier, all components are given equal weighting in these calculations and this should also be taken into account when comparing results.

2.4.3 Defects summary

Table 23 lists the problem areas i.e. components with defects, in order of decreasing severity, combined with the number of times, and at what frequency (across all properties) that defect had been recorded. The component rating for each building element is listed. For comparative purposes, the ratings recorded in the *House Condition Survey* (HCS) for the relevant components have also been included.

The defect categories on the survey forms for the restrooms, catering facilities, interior linings, internal doors/hardware and furnishings (i.e. all interior components) did not allow the frequency to be indicated. In other words, only the presence of a defect could be noted. This list of defects has been shown or indicated in section 2.3.7.

DEFECT *Shown in order of decreasing severity*	**0-10%**	**10-25%**	**25-50%**	**50-100%**	**Condition Rating**	**Rating HCS**
Exterior doors:					2.8-3.8	3.7
Topcoat deterioration	1		1	2		
Loose rubbers		1				
Poor hardware	2		1			
Paint deterioration	1		1	1		
Sticking	1	1				
Missing/inoperative hardware	1	1				
Guide track damage	1					
Roof:					3.2	3.7
Corrosion of base metal	2	1				
Buckling	1					
Rust	1	1				
Moss growth	2					
Dirt and debris build up	2					
Areas of ponding	2	1				
Chalking of applied finishes				2		
Topcoat deterioration				3		
Nail lifting	2					
Deterioration of fixings		2				
Paint flaking/blisters/or bubbles		1	1			
Internal gutters leaking	2					
Sagging	1					
Leaks	1					
Holes/cracks/dents		1				
Spouting and drainpipes:					3.3	3.6
Partially blocked				1		
Uneven fall	2					
Missing supports	1					
Corrosion of metal	1					
Leaks	1					
Drains (storm):					3.3	N/a
Blocked or overflowing	1					
Cracks	1					
Corrosion	1					
Drains (sewer):					3.3	N/a
Missing grates				3		
Leaking gully traps				2		
Cracks				1		
Overgrown				1		
Broken gully traps				1		
Floor:					3.4	-
Floor squeaks	1		1			
Cracking	1					
Water staining				1		
Windows:					3.0-4.0	3.5
Scratched glass				1		
Minor coating failures				1		
Broken/cracked panes	1					
Dislodged/missing putty	1					
Stressed joints	1	1				
Paint deterioration	2			1		

Glazing moulding in poor condition		1 1	1			
Putty cracks				2		
Lack of cleanliness				2		
Air leakage	1					
Nail rust staining	2					
Metal corrosion	2					
Checking in timber		1				
Joint cracks						
Wall cladding:					3.4-4.0	3.7
Topcoat deterioration	2	1				
Mould	3					
Leaking at joints	1					
Staining	2					
Cracks	1		1			
Spalling	1					
Paint deterioration	2					
Insecure cladding	1					
Impact damage	1					
Corrosion of reinforcing	1					
External steps / ramps:					3.5	3.7
Dangerous				1		
Paths, paving and car parking:					3.6	[Carports 3.5]
Uneven surfaces	1		1			
Pot holes	1	1				
Car parking line poorly visible				1		
Subsidence	1					
Overgrown	1					
Water reticulation:					3.6-3.8	N/a
Inadequate slinging	3					
Plumbing wastes:					3.6-3.8	N/a
Leaking pipes	2					
Inadequate slinging	3					
Rafters, purlins, ceiling joists & trusses:	1				4.0-4.2	2.8
Timber decay						
Foundations:					4.2	3.9
Rising damp				2		
Inadequate bracing				1		
Cladding deterioration near ground	1					
Water ponding	1					
Non-structural cracks		1				
Fasteners:					-	3.6
White rust				1		
Some corrosion				1		

Table 23: Defects summary

The table shows that the exterior doors, roofs, spouting and drainpipes and external ramps were in a worse condition for commercial properties than for houses, with the remainder of the exterior features (where applicable) in a better condition. Larger sample sizes are required before any further reliable comparisons to be made.

By looking at the defects that occurred in three or more properties, topcoat deterioration of roofs, missing grates over drains, mould on exterior wall claddings and inadequate

slinging/support of plumbing wastes were most prevalent. Arguably, a defect that is present for a particular component at a frequency of 50-100% is more serious than one that occurs between 0-10%. So, by taking the most common defects and looking for a frequency of 50-100%, it can be seen that missing grates and roof topcoat deterioration are the most common and serious across the properties surveyed. Being able to identify certain common defects in this way can provide useful information to building industry professionals to potentially change the Building Code or Acceptable Solutions to bring about a certain remedy (Alexander, 2002).

2.5 Costs

A convenient measure of the condition of a property is the estimated cost of putting it into good order. As mentioned previously, the components were weighted equally when rated, whereas defects in some components cost a great deal more to fix than others. To accommodate this, the costs to bring the commercial buildings in poor to moderate condition to a near new condition (with average quality finishes and facilities) have been calculated as:

- Exterior surfaces (walls and roof): $12/sqm of surface area assuming painted surfaces, otherwise about $5/sqm;
- Interior surfaces (walls and ceilings): $7/sqm of surface area; and
- Washrooms and kitchens (allows for some fittings replacement): $80/sqm floor area.

This gives a rough approximation of costs across the properties surveyed. Components that had a 4 or 5 rating in the survey were allocated no costs. For ease of calculation, floor to ceiling clearance was assumed to be 2.6m, and the ceiling area was taken to be the same as the roof area (i.e. all roofs taken as flat). The results of the calculations are shown in Table 24.

Component	**A**		**B**		**C**		**D**		**E**	
	Area	**Cost**	**Area**	**Cost**	**Area**	**Cost**	**Area**	**Cost**	**Area**	**Cost**
Wall cladding	131m²	0	188m²	$2,256	149m²	0	115m²	$1,380	238m²	$2,856
Roof	381m²	$4,572	977m²	$4,885	782m²	$9,384	874m²	0	465m²	$5,556
Interior walls	431m²	0	441m²	$3,087	451m²	0	466m²	$3,262	306m²	$2,142
Ceilings	762m²	0	977m²	$6,839	391m²	0	1748m²	$12,236	927m²	$6,489
Kitchens and catering facilities	37m²	0	115m²	$9,200	78m²	$6,240	80m²	$6,400	50m²	$4,000
TOTAL	**$4,572**		**$26,267**		**$15,624**		**$23,278**		**$21,043**	
Total $/total floor area m²	**$6/m²**		**$26/m²**		**$20/m²**		**$26/m²**		**$23/m²**	

Table 24: Outstanding maintenance costs

From these results, the commercial properties surveyed require an average amount of $18,000 to bring them to an 'as new' condition. By adjusting for total floor area, the average amount that would need to be spent is $20/m².

Bearing in mind that the above cost calculation is not covering all items requiring maintenance, the result is in contrast to the *House Condition Survey* which showed that the average house required approximately $6,900, or about $50/m², to bring to 'as new' condition[2]. While the figures for the commercial properties are statistically insignificant[3], if the average found here (using the former total) was applied across all 66,960 commercial properties in New Zealand

[2] Based on average house sizes at the time of the *Survey* of 138m²

[3] The sample is not large enough to draw statistically significant conclusions

there would be an outstanding maintenance bill of $1.2 billion. If combined with the maintenance bill for New Zealand houses of $5.5 billion (Clark et al, 2000), it can be seen that New Zealand's built environment[4] potentially has a large maintenance problem.

For more accurate comparisons it is recommended in any future surveys a more diverse range of maintenance items are accounted for, e.g. the price to unblock a drain or clear overgrown vegetation. These seemingly small items can add up to a very large sum, adding to the cost of bringing just the major components to an as new condition.

2.6 Discussion and Conclusions (inspections)

The following discussion points and conclusions have been raised from this section of the study.

2.6.1 Survey design

While the forms were modified from the *House Condition Survey* to more accurately represent commercial buildings, a number of issues arose as the inspections were conducted. As indicated throughout this study report, some of these include:

- Review the method for recording 'space use', including confirming a common set of measuring practices to produce consistency;
- The componentry selection needs to be more commercially oriented;
- Recording of WOF inspections;
- Adequacy of access and egress or fire separation, e.g. firewalls, between tenancies;
- Determine whether services, especially wastewater, are accessible for maintenance;
- Assess internal drainage systems;
- Inclusion of air conditioning and other general ventilation issues to replace the 'subjective air tightness' assessment;
- Inclusion of hot water systems;
- Issues of placement, layout and passive solar design;
- Shop front versus the rest of the building;
- More detail required about building fabric, especially window and wall systems;
- Include verandas, internal stairs, lifts/elevators, accessory buildings, grease traps etc;
- Floor coverings in the foyer / entrance need separate consideration;
- Estimate the degree of 'movability' of each tenancy;
- Formatting changes, e.g. include graph paper to draw the building dimensions, use of a table to record percentage glazing, separate forms for each tenancy; and
- Identify more clearly certain common defects, in conjunction with inspector training to obtain consistent results.

This survey has highlighted that commercial properties are highly complex. Building material use is not consistent across a whole property, or even across components, and this is difficult to capture on the survey forms as written. Attention needs to be paid to both the structure and content of the survey forms for future studies. It is recommended that a small knowledgeable

[4] It is recognised that the New Zealand's built environment comprises of more than residential and commercial property stock; adding in figures (if they were available) for the remaining property category codes would increase this figure even more.

team design and manage the survey, combined with a full briefing session with the inspectors to get a consistent approach.

2.6.2 Comparisons with the *House Condition Survey*

The condition of houses in the *House Condition Survey* ranged from averaged ratings of 3.2-4.5, with an average condition of 3.6 (of the 465 houses surveyed). The results from this study show the average condition of the five commercial properties surveyed to be 3.5 with a range of 2.6-4.5. From this it would appear that the overall condition of New Zealand houses is very slightly better than for the commercial buildings surveyed. Whether or not this trend would be sustained with comparable survey sizes is unable to be determined at this stage.

Arguably, a more important aspect than the overall condition is the incidence of defect by component. Problem areas for houses, defined as component ratings of less than 3 ('poor' or 'serious' condition), included inadequate subfloor ventilation, inadequate clearance from the ground level to wall cladding, and hot water cylinders inadequately restrained. Only one building component was considered a problem area, i.e. with a rating of less than 3, for the commercial properties surveyed. This was 'exterior doors' which obtained an average rating that ranged from 2.8-3.8 (so only just crosses the threshold into 'poor'). Therefore, in terms of the prevalence of poor building componentry in this study, the commercial properties surveyed fared better than for houses.

However, as shown in Table 23, the exterior doors, roofs, spouting and drainpipes and external ramps were in a worse condition for these commercial properties than for houses, with the remainder of the exterior features in a better condition. Again, due to the incomparable survey sizes, and the fact that the problem areas for houses were not applicable for the majority of commercial properties, no direct comparisons or basic trends can be accurately determined.

The costs of bringing the surveyed commercial properties to an 'as new' condition was averaged at $18,000, with the owners intending to spend $11,200 on average over the next 12 months. In comparison, the *House Condition Survey* showed the estimated cost of repairs for 'poor' and 'serious' defects (not to bring to 'as new') was about $4000, with homeowners in the *Survey* reportedly only spending about $1500 on these problems. These figures lend weight to assertions that New Zealand's housing and commercial property stock is not being adequately maintained.

2.6.3 Usefulness of results

The results have described the general nature of the properties surveyed, the type of building materials used, the type of defects occurring, the overall condition of each component and the rating for each property surveyed. In terms of usefulness, how do these things help us understand a building's impact over its life? How much longer could these buildings last? Are they being maintained to maximise their physical or financial lives? How can these results be manipulated to answer these questions?

It could be argued that a physical inspection alone cannot determine these things; a building assessed as 'poor' today may go to 'live' longer than a building rated 'good'. It depends on other variables such as social and economic factors, some of which are assessed in section 3 of this report. What these results do confirm is that more thought needs to go into the precise purpose of such a study and the analytical means required to produce the answers sought. In other words, what exactly are we trying to find out by assessing the physical condition of commercial properties using the methodology utilised in this report?

For future studies, the researchers need to decide whether it is maintenance needs, building component market sizes, energy and water use, building life cycle etc. to ensure that the appropriate and relevant aspects of a building are assessed. For example, how easy is it to adapt

a building to an alternate use and hence prolong its time to demolition? A potential research topic could be to develop a measure to record this (Page, 2001).

3 INTERVIEW RESULTS

3.1 Survey Forms

General information about each commercial property (e.g. age) and their owners (e.g. length of ownership) was collected. In addition, information about the motivational factors and drivers behind commercial property maintenance, including information about the owners' knowledge about safety features and utility use, were recorded on the forms provided. The results from these questions, detailed below, provide a starting point for social research into commercial property management.

3.2 Interview Results

The following sections detail the results for each question on the interview survey form for each of the properties surveyed. As with the physical inspection results, each property has been labelled from A to E where appropriate. A summary of the results can be found in section 3.3.

3.2.1 General

Questions in this section relate to the age of the properties, owner status, current and prior use, and owner perception of the property's condition.

Property Built	Age of property (years)	Number of years as owner	Number of previous owners
A - 1966	35	1-4 years	One
B - 1960	41	7+ years	Two
C - 1968	33	7+ years	None
D - 1950	51	1-4 years	Four
E - 1961	40	7+ years	Two

Table 25: General property characteristics

As can be seen in Table 25, four out of the five commercial properties surveyed were built in the 1960's, giving an average age for the properties of approximately 40 years. While this is comparable to the *House Condition Survey* in which the majority of homes surveyed were built in the 1960s, it does not reflect the commercial property building boom of the late 1980s.

The owners of Properties A and D had owned their properties for 1-4 years, with the owners of the remaining properties having owned their properties for more than 7 years. In other words there was a roughly even split of relatively new owners to relatively old owners. Two of the latter were part of well-established family trusts, hence the extended length of ownership. Comparatively, the *House Condition Sur*vey showed that the majority (60%) of the homes surveyed had been owned for more than 7 years.

Does the number of previous owners bear any relationship to the life of the commercial property, building adaptability, maintenance level etc? It would appear from the results of this pilot study that the number of previous owners is irrelevant to the life cycle of the building. It would seem that the number of previous tenants/tenant turnover is more likely to affect the length of the building's life.

Table 26 shows that of all the commercial property categories (Quotable Value, 2000), the five commercial properties surveyed were categorised as either of commercial office type or retailing use, and had a total of 18 tenancies (ranging from one to six tenancies per owner). For a large-scale study it would be interesting to include properties from all of the categories to determine trends between and across types of building use.

Category of use	**Tenancy number (Property)**
Commercial accommodation such as motels and hotels	None
Commercial cinema, theatre and public hall type complexes	None
Homes for the elderly	None
Liquor outlets including taverns etc	None
Commercial motor vehicle sales, service etc	None
Commercial office type use	**7 (A, C, D, E)**
Commercial parking	None
Retailing use	**11 (A, B, C, D, E)**
Service stations, petrol stations etc	None
Commercial tourism type attractions	None

Table 26: Commercial property's current use

Of the commercial properties that had undergone a change of use (see Table 27), the responses showed that none had undergone a radically different change, like for example, had changed from a service station into a home for the elderly. The majority of changes stated reflect relatively minor variations within the office and retailing categories. There is probably only likely to be a major change of use with a change of owner (tenant demand is highly unlikely).

Property	**Current Use**	**Prior Use**	**Intention to sell**
A	Retail / office	Bank	No
B	Retail	Car showroom / auction rooms	No
C	Retail / office	Dentist / restaurant	Maybe
D	Retail / dentist	(Unsure)	No
E	Retail / storage / office	Warehouse	No

Table 27: Building change of use & intention to sell

In terms of owners intending to sell their property in the next 12 months four of the five owners stated that they would not, with the remaining property owner being unsure. Reasons for not selling included the fact that the property was part of a family trust, and that the return on investment was favourable.

Property	**Acquired condition (owner perception)**	**Current condition (owner perception)**	**Assessed condition (inspector)**
A	Very poor	Excellent	Good/Excellent
B	Average	Good	Poor
C	Excellent	Good	Good
D	Average	Good	Moderate/Good
E	Good	Average	Poor/Moderate

Table 28: Assessment of condition (owner versus inspector)

Table 28 shows that four out of the five owners thought their property was in an average condition or above when purchased. This corresponds with the *House Condition Survey* in that most people thought their house was in an average, good, or excellent condition when first

acquired. Only one commercial property owner thought their property was in a poor condition when bought.

The responses also show that since purchase, the condition of the commercial properties has perceived to have improved. The *House Condition Survey* showed similar results in that the percentage of homeowners perceiving their property as having risen from 'average' to 'good' had increased, but this was not necessarily in line with the inspection results. However, from the commercial property condition ratings (section 2.4.2) it can be seen that the owners' perceptions of their property's current condition is quite close to the assessed condition.

3.2.2 Maintenance

All of the property owners stated that the responsibility for maintenance decisions lay with them, not any external management agency. All owners stated that they had undertaken some maintenance on their commercial property in the last 12 months. This contrasts with the *House Condition Survey* in which only approximately half of the respondents had undertaken maintenance over the same time period. The table below shows the type of maintenance undertaken (painting, repairing, replacing or remodelling) and the number of properties it was carried out on.

Component	Paint	Repair	Replacements	Remodelling
Roof		2		
External walls	2			
Windows		1		
Guttering/downpipes		2	2	
External doors	1			
Drains			2	
Paths, paving, car parking, fencing			1	
Interior walls, floors or ceilings	2	1		
Restrooms	1		1	
Appliances/plant		2		

Table 29: Maintenance undertaken in last 12 months

As can be seen in Table 29, maintenance work was carried out on the roof, external walls, windows, guttering and downpipes, external doors, drains, car parking, interior walls, restrooms, appliances and plant. Clearly, the majority of work was done on the exterior features (13) compared to the interior features (7). From this it comes as no surprise that the owners stated that they are predominately responsible for the exterior of the property; the tenants are generally responsible for the interior. But as indicated by some of the individual component ratings (section 2.4.2), it would appear that while the tenants may be responsible of the maintenance of the interior they have little responsibility or incentive to improve the condition it is in.

The main type of maintenance carried out was 'repairs' followed by 'painting' and 'replacements'. No remodelling was undertaken. All of the maintenance work was carried out by paid tradespeople and the average amount spent per building was $5,100 (ranging from $500 to $13,000).

The reasons given by the owners for the maintenance included:

- To upgrade appearance at tenants request;
- Leaks;
- Damage;
- Failed equipment;
- Pooling of water;

- Dangerous (wobbly toilet / cracked floor); and
- Pitted asphalt.

In comparison, the results from the *House Condition Survey* showed that when maintenance was undertaken the common areas included the roof, walls, windows, bathrooms and bedrooms. The main type of maintenance was painting, followed by replacement then repairs. The maintenance work was evenly split between DIY and paid tradespeople, and most homeowners spent between $1-650 and over $2,600 (in other words spent only a little bit, or a lot – nothing in between).

In terms of deferred maintenance, the interview results revealed that two of the five respondents had deferred maintenance on their commercial property in the last 12 months (Properties C and D). The items for which maintenance was deferred and the reasons for deferral included:

- Replacing the cladding under veranda. Deferred for 6 months. Waiting for a particular builder to do it when he can schedule it in; and
- Remove and replace tiles, painting and plastering to do. Deferred for 1 year. Not perceived as critical at this time.

Just under half of the respondents from the *House Condition Survey* stated that they had deferred maintenance on their homes; the main reason for deferral was expense.

All owners stated that they intended to do some maintenance over the next 12 months. The intended maintenance and the reasons for the maintenance (in brackets) included the following:

- Replace cladding under veranda (to upgrade the exterior). Check downpipes (leaking). Paint roof (time to repaint);
- Replace roof flashing (leaking);
- Major frontage upgrade (to modernise). Possible instalment of air-conditioning unit, goods lift, and subject to tenancy, remove the mezzanine floor and put in a suspended ceiling (due to tenant demand);
- Seal car parking at rear of building (adding value to the property – charge for parking space); and
- Improve mezzanine and veranda area. Exterior painting (tenant demand).

Once again, these responses show that the majority of the intended work over the next 12 months is to the exterior of the commercial property in line with earlier responses of owner versus tenant responsibilities. The average intended expenditure was $11,200 and ranged from $3,000 to $30,000. In comparison, the majority of homeowners in the *House Condition Survey* stated that their intended expenditure in the next 12 months would be between $1 and $650. This could be interpreted in two ways – it may mean that commercial property componentry is generally more expensive than domestic materials, or because of the greater surface/floor areas involved, or a combination of the two.

3.2.3 Other building issues

The questions asked in this section of the survey included details about security, fire safety, general safety features, and the cost and amount of utilities.

Where known, the most common security feature was a burglar alarm followed by security lights (to all entry points), safety catches on the windows, and other measures (see Table 30). The property owners stated that the presence or absence (as well the maintenance thereof) of any security features was the responsibility of the tenant; hence the lack of knowledge if a particular feature was even present from some owners. This was despite the fact that to install any feature required permission from the owner first. The high proportion of louvre windows

(easy to remove and thus largely insecure) within the properties surveyed, combined with a relatively low use of security features, would tend to indicate a poor level of security for most tenancies. A recommendation for future studies would be to get the inspector to verify the presence of the stated security features.

Security features	Number of respondents
Burglar alarm	3
Security lights to all entry points	2
Security lights to most entry points	1
Safety catches on all vulnerable windows	2
Uses a security firm service	1
Swipe card/pin pad access	1
Other (e.g. bars across windows)	2

Table 30: Security features

In comparison, the *House Condition Survey* showed a high use of at least some special measures to increase security, in particular, burglar alarms and security lights to most doors. This shows an increasing trend towards concern with both personal and property protection by homeowners (Clark et al, 2000).

Where known, the most common fire safety features were fire extinguishers, hose reels, and fire alarms (see Table 31). The lack of smoke alarms, sprinkler systems, and fire escapes in the properties surveyed gives some cause for concern. Some owners stated that the maintenance of these features is the responsibility of the tenants, so they didn't know if any maintenance records were kept. However, these features are part of the building WOF and should be known. It is recommended that a check of WOF certificates be included in future studies.

Fire safety features	Number of respondents
Smoke alarms	1
Fire extinguishers	3
Hose reels	3
Fire blankets	
Automatic sprinkler system	
Automatic fire doors	
Smoke control doors	2
Automatic or manual fire alarms	3
Fire Service riser mains	
Exit signs	1
Fire escapes	1
Other	

Table 31: Fire safety features

Once more, there was a low level of owner knowledge about the general safety features of the commercial properties surveyed. What was present is shown in Table 32. The owners stated that the presence and maintenance of these features were the responsibility of the tenant.

General safety features	Number of respondents
First aid kits	1
Emergency showers	
Emergency phone / communication systems	2
Emergency lighting systems	
Safety barriers	1
Other	

Table 32: General safety features

From the above points it is clear that future studies need to assess not only security, fire safety and general safety features more closely, but also check the building WOF for additional features, such as access for people with disabilities, backflow preventers, escalators, lifts, mechanical ventilation and signs, etc (as required by Section 44 of the NZ Building Act 1991). It would be interesting to relate the condition of the property with the accuracy and currency of the building's WOF. It is also noted, however, that not all buildings have WOF requirements and so any future surveys should separate those buildings needing a compliance schedule and those that do not.

All of the properties surveyed used electricity as their energy source. Only one owner knew how much electricity was used and at what cost (Property A). The owners who did not know the answer to this question stated that this information was available only from the tenants, as it was their cost. There is therefore no direct incentive for the owners to install energy saving measures in their properties.

None of the owners knew how much (i.e. quantity of) water was used per year for their property. Four respondents stated that water is free for them at present (although covered to some extent as part of their general rates). One respondent (Property A) did state a cost for water use as $945 per year. This lack of knowledge is understandable as only some commercial properties in Tauranga are metered for water, depending on their location. According to the local council, all properties will be metered over time (Tauranga District Council, 2001). There is no incentive for owners or tenants with unmetered properties to practice water conservation.

3.2.4 Tenancy arrangements

As indicated in the sample profile, the five commercial properties surveyed had a total of 18 tenancies. Sixteen of these were tenanted at the time of the survey. Only Property A was occupied by its owner. As a result, the owner of Property A was able to answer the questions relating to energy and water use (as indicated above), and this property was in the best condition both overall and for the majority of building componentry. This would indicate that tenants have little control over the condition of the properties they rent, and raises a whole range of questions about the relationship between owner or tenant occupancy and building condition.

Despite this, all of the owners surveyed said that their tenants did have maintenance responsibilities. While the tenants were not surveyed in this pilot study, it would appear that while the owners think it is the responsibility of the tenant to keep the interior of the properties in good condition (see below), the tenants have no incentive to do this of their own volition.

According to the owners, the tenant's responsibilities are:

- To repaint interior at conclusion of tenancy;
- To take care of internal maintenance;
- To undertake any retrofits;
- To pay for utility use;
- To provide and maintain any safety features;
- To replace carpets and other interior furnishings where necessary; and
- To care for the security, fire safety and general safety features of the building.

Clearly it would be interesting to gain tenants views of these responsibilities in future work.

3.2.5 Comparisons with home maintenance

All of the commercial property owners surveyed also owned their own homes. Four of the five (Properties A, C, D and E) stated that they didn't maintain their homes any differently from their commercial properties. The reasons given included:

- Money restraints restrict maintenance on both their home and commercial property. But the owner would probably first spend money on the commercial property to keep the tenants happy; and
- Both the home and commercial property are maintained on the same 'ad hoc' basis. However, the owner was more concerned with external painting of the commercial property and more concerned with the gardens at home.

Owner of Property B stated that their house was maintained differently for the following reason:

- The commercial property is perceived to be more urgent than their domestic property, and undertakes maintenance on demand. Also, less maintenance is undertaken at home as it is already in a good condition.

3.3 Results Summary (interviews)

- The average age of the properties surveyed was 40 years;
- In terms of the respondents, there were a mix of relatively recent owners (1-4 years) and owners who have owned the property for more than 7 years, with the number of previous owners varying between none and four. Three of the properties surveyed had changed use within the lifetime of the building. These changes were relatively minor, i.e. changed from office to retail or vice versa;
- Of the 18 tenancies surveyed within the five properties, the commercial property categories were spilt between retail (7) and office (11) use. Of these tenancies, two were owner-occupied;
- Four of the owners surveyed had no intention to sell their property in the next 12 months;
- When the properties were first acquired, their overall condition rating was perceived as 'average'. Presently, the overall condition was perceived by the respondents to have improved to a 'good' rating;
- All respondents stated that any major maintenance decisions were the responsibility of the owners (not the tenants);
- All had undertaken maintenance in the last 12 months, with maintenance to the exterior features of the property predominating. Paid tradespeople were employed to undertake this maintenance, and the average amount spent was $5,100;
- Two owners stated that they had deferred maintenance in the last 12 months. Reasons included lack of availability of a particular tradesperson, and a perception that the maintenance required was not critical;
- All respondents stated that they have maintenance scheduled for the next 12 months. The majority of this work is to be carried out on the exterior features of the property with the intended expenditure averaging $11,200;
- For security, fire safety and general safety features, there was a general lack of knowledge about what features were present in the property and whether or not maintenance records were kept. The owners generally felt that these features were the responsibility of the tenant;
- Similarly for the energy and water usage, only one owner (sole owner-occupier) knew how much water and energy was used and the cost of these utilities. Knowledge of and payment for energy and water use is the responsibility of the tenant;
- All owners stated that the tenants have minor maintenance responsibilities in regard to the interior of the property and for other internal items (i.e. safety and utilities) related to the running of their business; and

- All respondents also owned their own homes. Only one owner stated that they maintained their home any differently from their commercial property. In this case, the commercial property was given precedence over their home as the maintenance was perceived to be more urgent.

3.4 Discussion & Conclusions (interviews)

The following discussion points and conclusions have been raised for this section of the study.

3.4.1 Nature of occupancy and maintenance drivers

Commercial property management is much more complex than for houses. Throughout the course of this survey it has become clear that little is known about the proportion of owner-occupiers to tenants that exist within the commercial property market. In addition to the differences between these two groups, many perturbations probably exist within tenanted properties alone, as tenancy lease agreements are highly variable.

As a result, for future studies it would be useful to further explore the drivers for maintenance of owner-occupied properties and how they differ from tenanted properties. For example:

- Is maintenance more likely to be undertaken to comply with legal issues in one group over the other?
- Are there aesthetic concerns, e.g. image, flexibility and adaptability of space, and do they differ according to tenure?
- Are owner-occupied properties in a worse condition overall compared with tenanted properties (or vice versa)?
- Are tenanted properties more likely to be concerned about energy usage?
- How do lease arrangements impact upon maintenance responsibilities overall?

Another issue is the amount of money the owners said they were prepared to pay for future maintenance. How this would vary with a larger sample size, differing commercial property category, regional variations etc, would be of interest for future work. Also of interest could be a comparison of how much they would be willing to spend on their homes versus their commercial property in the next 12 months, and the reasons for that. This may better indicate where owner's maintenance priorities lie and why.

3.4.2 Usefulness of results

An interesting point to note is that there is a general lack of knowledge by the owners about security and safety features required of commercial buildings and the maintenance thereof. There was also a lack of owner knowledge about the energy and water use of their property. These issues raise concerns about building safety in general and identify gaps in the knowledge of commercial property utility use, as well as highlighting management priorities.

Also of interest is that all property owners stated their intention to undertake maintenance in the next 12 months, but it is not clear from the results whether the use of maintenance contractors is ad hoc or scheduled, or whether the use of other service people is pro-active or reactive. In addition, it was not clear what impact the dynamics between owners and tenants had in this process.

In total, the results have been useful because they have highlighted (amongst other things) that little is really known about the intricacies of management of small commercial properties, and that maintenance decisions appear to be largely dependent on tenure or lease arrangements and

the distribution of 'power' between owners and tenants in terms of decision making processes. For future studies it would be interesting to gain the tenants views on maintenance. This would be particularly useful to compare owners versus tenants perception of condition and the maintenance carried out (Bennett, 2001).

4 CONCLUSIONS

The purpose of this pilot study was to ascertain preliminary thoughts and ideas about commercial property condition and maintenance in New Zealand in comparison to domestic dwellings, and to see whether a full-scale project is warranted for the future. While it is acknowledged that this is difficult to determine with a sample size of five, the primary conclusions of this report are as follows.

- Commercial properties are complex building systems, with multiple componentry and other differences due to the nature of the tenancy or use of the building. Future studies need to carefully assess the content and structure of the survey forms to capture this complexity in a useful manner.
- The condition of the commercial properties assessed in this survey ranged from poor to excellent. It is difficult to determine accurate trends as to the overall state of New Zealand's commercial property stock or whether it is a better or worse condition than New Zealand's domestic property stock. While houses appear to be in a marginally better condition overall, the incidence of serious and poor components in houses is higher.
- For the commercial properties surveyed, the building component in the worst condition was exterior doors, with the most common building component defects being topcoat deterioration of roofs and missing drain grates.
- The relationship between the actual condition of the property and the maintenance undertaken, in terms of the accuracy and currency of the building's WOF, are two potential correlations that are worthy of investigation in future studies.
- Commercial property is a significant investment to the economy. The cost to raise the condition of the properties surveyed to 'as new' was averaged at $18,000 (per property). If extrapolated to New Zealand's entire commercial property stock, there is an outstanding maintenance bill of $1.2 billion. Although the small sample size attaches a high degree of uncertainty to these values, combined with the maintenance bill for New Zealand's domestic stock, the cost to the economy is around $6.7 billion. This result raises some concerns not only for the short-term future of these buildings, but also in terms of their suitability as long-term investments.
- The survey has revealed how little is known about inter-relationships in the commercial property sector, and how this impacts on the maintenance and hence lifetime of commercial buildings. The relationship between tenants and owners, i.e. the nature of tenancy arrangements, the number of commercial properties that are owner-occupied versus those that are tenanted, plus the differences in building condition in relation to these parameters needs to be further explored.
- The research strategy, based on the methodology of the *House Condition Survey*, has met the objectives of this report. It has raised the understanding of commercial property management in New Zealand (even if it raises more questions), it has developed a strategy for assessment, has recommended changes for the future and determined that it does have potential as a future research topic. This is not only desirable but essential as the study has demonstrated the absence of factual research data in this field.

5 RECOMMENDATION

- It is recommended that this pilot study be extended to a full-scale study.

6 REFERENCES

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7 APPENDICES

7.1 Appendix 1: Physical inspection survey form

Property ID: ..... UR 0326

Surveyor: _____

Date: _____ Start time: _____ Finish time: _____

SECTION A: GENERAL

1. Commercial property layout

draw plan of property

indicate overall dimensions
indicate percentage glazing to each elevation
indicate location of tenanted spaces
indicate number of storeys _____

Photos taken:

_____
_____
_____

Property ID: .....

UR0326

2. Space Use Category

	No.#	Area (approx)
Reception Areas		
Waiting Rooms		
Offices/Partitioned Spaces		
Catering Facilities, e.g., tearoom/kitchenette/bar		
Restrooms		
Resource Rooms / Spaces		
Storage Areas		
Meeting Rooms		
Workshops		
Display Areas (of merchandise)		
Others _____		
_____		
_____		

3. Subjective 'dampness' feel

- ☐ Feels very damp, smells musty
- ☐ Feels slightly damp
- ☐ Feels dry

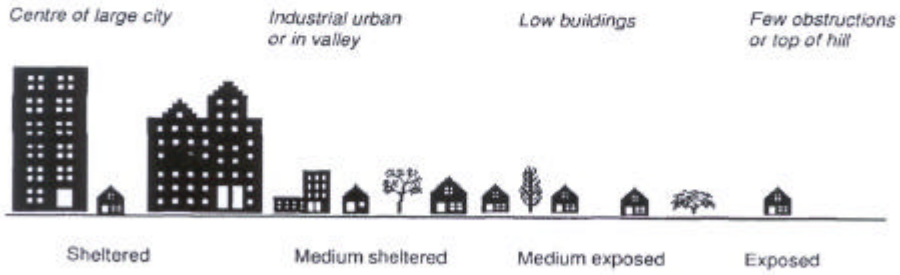
4. Shade

- ☐ Property always in shade
- ☐ Property in shade throughout winter
- ☐ Property loses sun in: late afternoon / early morning (delete one)
- ☐ Property never shaded

5. Wind exposure

Circle the wind exposure class of the commercial property:

Wind Exposure Classes



6. Subjective 'air tightness' feel

- ☐ airtight
- ☐ average
- ☐ leaky
- ☐ draughty

Property ID: UR0326

7. Surrounding area

Predominant land use in area
- ☐ residential
- ☐ non residential e.g.,hotels, hospitals, educational
- ☐ factories and industrial
- ☐ commercial
- ☐ rural

External condition of properties in area
- ☐ serious external condition
- ☐ poor external condition
- ☐ moderate external condition
- ☐ good external condition
- ☐ excellent external condition

Predominant property age in area
- ☐ less than 5 years
- ☐ between 5 and 15 years
- ☐ between 15 and 25 years
- ☐ greater than 25 years

8. Generally the commercial property was

- ☐ Well maintained
- ☐ Reasonably maintained
- ☐ Poorly maintained
- ☐ Under construction

SECTION B: SUBFLOOR AND FLOOR

9. Subfloor

- ☐ No subfloor
- ☐ No access to subfloor

Ground covering
- ☐ plastic
- ☐ other

% covered ☐

Floor insulation
- ☐ none
- ☐ foil
- ☐ other

% insulated ☐

Sub floor moisture

readings on 2 joists (5m apart) _____ _____

2 readings from floor (5m apart) _____ _____

10. Foundations

- [ ] Concrete slab — perimeter insulation [ ] / underslab insulation [ ] / no insulation [ ]
- [ ] Continuous concrete perimeter walls
- [ ] Corner concrete perimeter walls
- [ ] Concrete pile
- [ ] Concrete block
- [ ] Brick
- [ ] Treated timber piles
- [ ] Untreated timber piles
- [ ] Jack stud

Ground clearance

Min. clearance to cladding: _____ mm

Min. clearance to bearers: _____ mm

Unprotected ground? **yes / no**

Cladd deteriorating near ground? **yes / no**

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
[ ]	subsidence				
[ ]	water ponding under property				
[ ]	non vertical piles				
[ ]	missing pile(s)				
[ ]	unsafe excavation				
[ ]	timber decay				
[ ]	two tooth borer				
[ ]	common borer				
[ ]	structural cracks				
[ ]	non structural cracks				
[ ]	deep spalling or holes				
[ ]	broken blocks				

	Frequency	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
[ ]	missing mortar				
[ ]	rising damp				
[ ]	dpm missing				
[ ]	insufficient footing depth				
[ ]	inadequate bracing				
[ ]	missing/rotten baseboards				
[ ]	exterior plaster spalling				
[ ]	missing/insecure ties to bearers				
[ ]	nail plates/fasteners deformed				
[ ]	poor fixing				
[ ]	minor blemishes				
[ ]	other _____				

Overall condition rating - Foundations *(circle)*

Serious	Poor	Moderate	Good	Excellent

11. Fasteners

- [ ] No. 8 Wire & Staples
- [ ] Wire dogs
- [ ] Galv nail plates
- [ ] Galv bolts
- [ ] Galv strip
- [ ] Non galv rod
- [ ] None
- [ ] Other _____

Defects

	Frequency	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
[ ]	base mat. >50% corroded thru				
[ ]	failure of coating				
[ ]	white rust				

	Frequency	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
[ ]	some corrosion				
[ ]	incorrect fixing of fasteners				
[ ]	other _____				

Overall condition rating - Fasteners *(circle)*

Serious	Poor	Moderate	Good	Excellent

12. Joists/Bearers

- ☐ Treated radiata
- ☐ Untreated radiata
- ☐ Native
- ☐ Other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency					Frequency				
	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %		0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ timber decay					☐ structural cracks				
☐ two toothed borer					☐ minor cracks/checking				
☐ common borer					☐ insulation decaying				
☐ insufficient joists/bearers					☐ other _____				

Overall condition rating - Joists / Bearers *(circle)*

Serious	Poor	Moderate	Good	Excellent

13. Vents (sub floor)

- ☐ **No subfloor ventilation**

Type

- ☐ Baseboards
- ☐ Continuous 20 mm ventilation gap
- ☐ Concrete
- ☐ Pressed metal
- ☐ Wire
- ☐ Other

Number of vents: _____
Clear area of a typical vent: _____
Floor area of property: _____

Spacing

- ☐ vents are not on all sides
- ☐ vents are not within 0.75m of corner
- ☐ vents are greater than 1.8m spacing

Vegetation

- ☐ vegetation is blocking all vents
- ☐ vegetation is blocking some vents
- ☐ no vegetation is blocking vents

14. Floor

- ☐ T&G
- ☐ Particle board
- ☐ Concrete
- ☐ Other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency					Frequency				
	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %		0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ timber decay					☐ holes				
☐ two toothed borer					☐ minor gaps bet. partbd sheets				
☐ common borer					☐ surface deterioration				
☐ cupped boards					☐ cracking				
☐ floor squeeks					☐ slippery surface				

Overall condition rating - Floor *(circle)*

Serious	Poor	Moderate	Good	Excellent

SECTION C: WASTEWATER

15. Plumbing Wastes

- ☐ copper
- ☐ pvc
- ☐ lead
- ☐ galvanised pipe

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency					Frequency				
	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %		0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ some corrosion	☐	☐	☐	☐	☐ inadequate slinging	☐	☐	☐	☐
☐ disconnected pipes	☐	☐	☐	☐	☐ rust	☐	☐	☐	☐
☐ leaking pipes	☐	☐	☐	☐	☐ impact damage	☐	☐	☐	☐

Overall condition rating - Plumbing and Water Reticulation *(circle)*

Serious	Poor	Moderate	Good	Excellent

16. Water Reticulation

- ☐ copper
- ☐ polybutylene
- ☐ galvanised steel
- ☐ pvc

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency					Frequency				
	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %		0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ some corrosion	☐	☐	☐	☐	☐ inadequate slinging	☐	☐	☐	☐
☐ disconnected pipes	☐	☐	☐	☐	☐ rust	☐	☐	☐	☐
☐ leaking pipes	☐	☐	☐	☐	☐ impact damage	☐	☐	☐	☐

17. Drains (Sewer)

- ☐ pvc
- ☐ earthenware
- ☐ concrete
- ☐ cast iron

Defects *tick appropriate defect boxes*

- ☐ broken gully traps
- ☐ broken drain
- ☐ missing grates
- ☐ leaking gully traps
- ☐ leaking drain
- ☐ other _____

Overall condition rating - Drains (sewer) *(circle)*

Serious	Poor	Moderate	Good	Excellent

18. Drains (stormwater)

- ☐ pvc
- ☐ earthenware
- ☐ concrete
- ☐ cast iron

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency					Frequency				
	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %		0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ cracks in drain	☐	☐	☐	☐	☐ broken pipes	☐	☐	☐	☐
☐ blocked or overflowing drains	☐	☐	☐	☐	☐ other _____	☐	☐	☐	☐

Overall condition rating - Drains (stormwater) *(circle)*

Serious	Poor	Moderate	Good	Excellent

19. Spouting and downpipes

- ☐ PVC
- ☐ Galv Steel
- ☐ Copper
- ☐ Other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ missing spouting/downpipes				
☐ uneven fall				
☐ missing supports				
☐ buckling				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ corrosion of metal				
☐ ponding				
☐ leaks				
☐ other _____				

Overall condition rating - Spouting and downpipes *(circle)*

Serious	Poor	Moderate	Good	Excellent

SECTION D: EXTERIOR

20. Paths, paving and car parking

☐ paths	**Surface** ☐	asphalt / tarseal / concrete / dirt / grass / gravel	*Circle*
☐ paving	☐	concrete / clay	*Circle*
☐ car parking	☐	asphalt / tarseal / concrete / dirt / grass / gravel	*Circle*

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ uneven surfaces				
☐ pot holes				
☐ car parking line poorly visible				
☐ cracks				
☐ subsidence				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ kerbing damage				
☐ tree root bulging				
☐ missing pavers				
☐ other _____				
☐ _____				

Overall condition rating - Paths, paving and car parking *(circle)*

Serious	Poor	Moderate	Good	Excellent

21. Steps/Ramps

- ☐ none
- ☐ steps
- ☐ ramps

Surface and structure ☐ timber ☐ concrete ☐ metal

Handrail ☐ timber ☐ metal

Defects *tick appropriate defect boxes*

- ☐ missing treads
- ☐ rotting timber
- ☐ uneven risers
- ☐ damaged surfaces
- ☐ unsafe surface
- ☐ unsafe structure
- ☐ broken handrail
- ☐ other _____

Overall condition rating - Steps and Ramps *(circle)*

Serious	Poor	Moderate	Good	Excellent

Property ID: UR0326

22. Retaining walls

- ☐ None
- ☐ Timber interlocking
- ☐ Embedded poles and stretchers
- ☐ Driven railway iron and stretchers
- ☐ In situ concrete
- ☐ Tilt up slab
- ☐ Concrete block
- ☐ Natural stone
- ☐ Stacked manufactured stone
- ☐ Concrete interlocking

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ cracks in wall				
☐ leaning				
☐ bulging				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ reinforcing spalling				
☐ poor drainage				
☐ other _____				

Overall condition rating - Retaining walls *(circle)*

Serious	Poor	Moderate	Good	Excellent

23. Planting

- ☐ no planting

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ vegetation affecting property				
☐ damage to planting				
☐ rubbish				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ overgrown				
☐ other _____				
_____				

Overall condition rating - Planting *(circle)*

Serious	Poor	Moderate	Good	Excellent

24. Fences / Gates

- ☐ fences (timber / brick / metal / other) *circle*
- ☐ gates (timber / metal / other) *circle* Number _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ gates difficult to operate				
☐ gate damage				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ fence damage				
☐ other _____				

Overall condition rating - Fences / Gates *(circle)*

Serious	Poor	Moderate	Good	Excellent

Property ID: .....

UR0326

SECTION E: EXTERNAL CLADDINGS / DOORS / WINDOWS

25. Wall Cladding

	Painted
Wood - in all forms	
Brick - solid / cavity / veneer	
Concrete - reinforced block / precast slab	
Stone	
Roughcast, including stucco	
Fibrolite - asbestos / durock sidings / perlite	
Malthoid	
Plastic	

	Painted
Iron - steel / corrugated long run / decramastic tiles	
Aluminium	
Glass	
Tiles - concrete / clay / slate	
Mixture of materials	
Other _____	

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
missing cladding				
dislodged boards				
broken blocks/sheets				
missing bricks				
missing plaster				
missing mortar				
efflorescence				
insecure cladding				
cracks				
decay				
graffiti				
spalling				
impact damage				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
corrosion of reinforcing				
drummy reinforcing				
corrosion of metal components				
loose fibres				
paint deterioration				
top coat deterioration				
mould/fungi growth				
plant growth				
leaking at joints				
two toothed borer				
common borer				
staining				
settlement				

Overall condition rating - Wall Cladding *(circle)*

Serious	Poor	Moderate	Good	Excellent

List wall mounted items:

_____

_____

_____

Condition rating (serious, poor, moderate, good, excellent):

26. Exterior Doors

Number of:

- Solid timber
- Timber/Part glass
- French
- Sliding aluminium
- Aluminium
- Composite

Surface treatment

- painted
- anodised
- powder-coated
- polyeurethane/stain
- none
- other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
missing/inoperative hardware				
poor hardware				
paint deterioration				
top coat deterioration				
impact damage / holes				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
cracks				
sticking door				
missing glass				
cracked / broken glass				
guide track damage				

Overall condition rating - Exterior Doors *(circle)*

Serious	Poor	Moderate	Good	Excellent

27. Windows

%

- ☐ Timber
- ☐ Anodised aluminium
- ☐ Powder coated aluminium
- ☐ Stainless steel
- ☐ PVC
- ☐ Other _____

- ☐ Percentage of thermally broken windows?
- ☐ What percentage are double glazed windows?

Which directions do the double glazed windows face?
(ie. N, NE, E, SE, S, SW, W, NW)

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency	0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐	decay				
☐	leaking flashing				
☐	no flashings				
☐	significant pitting				
☐	broken hinges				
☐	broken/cracked panes				
☐	glazing mouldings in poor cond				
☐	loose rubber				
☐	missing rubber				
☐	lack of cleanliness				
☐	air leakage around window				
☐	glass corrosion/scratching				
☐	putty cracks				
☐	dislodged /missing putty				
☐	metal corrosion				
☐	nail rust staining				
☐	stressed joints				
☐	joint cracks				
☐	paint deterioration to bare timber				
☐	minor coating/anodising failures				
☐	drain holes plugged up				
☐	checking in timber				
☐	fogging on insulating glass unit				
☐	staining of glass				
☐	other				

Overall condition rating - Windows *(circle)*

Serious	Poor	Moderate	Good	Excellent

28. Roof

Inspect 2 sides of roof where possible from ladder

	Painted
Profiled Metal tile	
Galvanised Steel	
Coil Coated Steel	
Concrete Tile	
Clay Tiles	
Profiled translucent sheet	
Asbestos cement	
Membrane	
Glass	
Timber - all forms	

Roof Type

- Gable
- Hip
- Dutch Gable
- Flat
- Mansard
- Lean to
- Other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
missing sheets/tiles				
cracked/dislodged tiles				
corrosion of base metal				
holes/cracks/dents/buckling				
rust in internal gutters				
internal gutters leaking				
chip coat missing				
nail lifting				
leaks				
metal flashing damage				
chalking of applied finishes				
dislodged pointing				
deterioration of fixings				
missing/loose fixings				
insufficient fixings				
top coat deterioration				
paint flaking, blisters or bubbles				
moss growth				
dirt and debris build up				
areas of ponding				
surface staining/discolouration				
sagging				
other				

Overall condition rating - Roof *(circle)*

Serious	Poor	Moderate	Good	Excellent

List roof mounted items:

_____

_____

_____

Condition rating (serious, poor, moderate, good, excellent):

SECTION F: ROOF SPACE

29. Roof space

☐ No access to roof space

☐ Skillion roof (percentage)

☐ Truss
☐ Roof Sarking
☐ Ceiling Sarking

Roof Slope

☐ 0-15 degrees
☐ 16 - 30 degrees
☐ > 30 degrees

Ceiling Insulation

% cover	%
Fibreglass	
Macerated paper	
Rocwool	
Other (State)	
None	

Thickness	tick
50 mm	
75	
100	
150	

Wiring

☐ Tough Plastic Sheath
☐ Tough Rubber Sheath
☐ Vulcanised Indian Rubber

Roof space moisture

reading from one ceiling joist _____

30. Rafters, Purlins, Ceiling joists & Trusses

☐ Treated radiata
☐ Untreated radiata
☐ Native
☐ Metal
☐ Other _____

Defects *tick appropriate defect boxes, indicate frequency of each defect*

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ timber decay				
☐ insufficient joists				
☐ insufficient purlins				
☐ minor splitting				

	Frequency 0 - 10 %	10 - 25 %	25 - 50 %	50 - 100 %
☐ two tooth borer				
☐ common borer				
☐ corrosion				
☐ other _____				

Condition rating - Rafters, Purlins and Ceiling Joists *(circle)*

Serious	Poor	Moderate	Good	Excellent

31. Header Tank/Ties/Underlay

☐ none
☐ internal header tank
☐ external header tank

Defects *tick appropriate defect boxes*

☐ header tank unrestrained
☐ no tray
☐ leaking
☐ no lid
☐ insufficient ties to concrete tiles

☐ no underlay
☐ underlay deterioration
☐ exposed roofing
☐ hazards in tank
☐ other _____

Condition rating *(serious, poor, moderate, good, excellent):*

Header tank	
Roofing ties	
Underlay	

SECTION G: INTERIOR FEATURES

32. Restrooms

Number of restrooms Male _____ Female _____ Unisex _____
Number with disabled access Male _____ Female _____ Unisex _____

When were the restrooms last refurbished:

- ☐ in the last 5 years
- ☐ between 5 - 10 years ago
- ☐ between 10 - 25 years ago
- ☐ more than 25 years

Linings	Main Ceiling	Main Walls	Main Floor cover	Secondary Ceiling	Secondary Walls	Secondary Floor cover
Plasterboard	☐	☐	☐	☐	☐	☐
Hardboard	☐	☐	☐	☐	☐	☐
Softboard	☐	☐	☐	☐	☐	☐
Particleboard	☐	☐	☐	☐	☐	☐
Seratone/Riotone	☐	☐	☐	☐	☐	☐
Hardiglaze	☐	☐	☐	☐	☐	☐
Carpet	☐	☐	☐	☐	☐	☐
Ceramic tiles	☐	☐	☐	☐	☐	☐
Concrete block	☐	☐	☐	☐	☐	☐
Vinyl	☐	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐	☐

Fittings	Main	Secondary
Toilets	☐	☐
Shower	☐	☐
Hand basins	☐	☐
Soap dispensers	☐	☐
Hand dryers	☐	☐
Paper towels	☐	☐
Cloth towel	☐	☐

Mechanical ventilation	Main	Secondary
none	☐	☐
to outside	☐	☐
to roof space	☐	☐
to another room	☐	☐

Defects *tick appropriate defect boxes*

- ☐ cracked/chipped enamel
- ☐ rotten shower linings
- ☐ staining of surfaces
- ☐ shower tray pitted
- ☐ decay
- ☐ chipped/peeling paint/paper
- ☐ broken seat/s or cistern
- ☐ leaking outlets
- ☐ two tooth borer
- ☐ common borer
- ☐ water stains
- ☐ reveals/sills cracked

Mould level	Main	Secondary
extensively blackened areas, damaged linings	☐	☐
extensive mould	☐	☐
large patches of mould	☐	☐
very little mould visible	☐	☐
no mould	☐	☐

Overall condition rating - Restrooms *(circle)*

Main	Serious	Poor	Moderate	Good	Excellent
Seconda	Serious	Poor	Moderate	Good	Excellent

33. Catering Facilities, e.g., Tearoom/s, Kitchenette/s, Bar/s

When were these facilities last refurbished:

- ☐ in the last 5 years
- ☐ between 5 - 10 years ago
- ☐ between 10 - 25 years ago
- ☐ more than 25 years

Linings

	Main			Secondary		
	Ceiling	Walls	Floor cover	Ceiling	Walls	Floor cover
Plasterboard	☐	☐	☐	☐	☐	☐
Hardboard	☐	☐	☐	☐	☐	☐
Softboard	☐	☐	☐	☐	☐	☐
Particleboard	☐	☐	☐	☐	☐	☐
Timber strip	☐	☐	☐	☐	☐	☐
Formica	☐	☐	☐	☐	☐	☐
Vinyl	☐	☐	☐	☐	☐	☐
Ceramic tiles	☐	☐	☐	☐	☐	☐
Carpet	☐	☐	☐	☐	☐	☐
Concrete block	☐	☐	☐	☐	☐	☐
Cork tiles	☐	☐	☐	☐	☐	☐
None	☐	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐	☐

Joinery/Bench

	Main	Secondary
Stainless Steel	☐	☐
Formica	☐	☐
Timber	☐	☐
Other _____	☐	☐

Appliances

	Main	Secondary
Electric	☐	☐
Gas	☐	☐
Coal/Wood	☐	☐

Ventilation

	Main	Secondary
None	☐	☐
venting to outside	☐	☐
venting to roof space	☐	☐
venting to another room	☐	☐

Defects

tick appropriate defect boxes

- ☐ holes in linings
- ☐ holes in floor
- ☐ unsafe floor cover
- ☐ paint deterioration to bare timber
- ☐ chipped/peeling of paint/paper
- ☐ damaged wiring/outlet/switches
- ☐ dented bench surfaces
- ☐ poor seals at bench top
- ☐ worn joinery edges
- ☐ damaged appliances
- ☐ cracks
- ☐ fat build up in rangehood/fans
- ☐ decay
- ☐ water stains
- ☐ discoloured paint/paper
- ☐ leaking outlets
- ☐ taps deterioration
- ☐ fire risk
- ☐ rough surfaces
- ☐ other _____

33. Catering Facilities, e.g., Tearoom/s, Kitchenette/s, Bar/s - Continued

Mould level

Main

- ☐ extensively blackened areas, damaged linings
- ☐ extensive mould
- ☐ large patches of mould
- ☐ very little mould visible
- ☐ no mould

Secondary

- ☐ extensively blackened areas, damaged linings
- ☐ extensive mould
- ☐ large patches of mould
- ☐ very little mould visible
- ☐ no mould

Overall condition rating - Catering Facilities *(circle)*

Main	Serious	Poor	Moderate	Good	Excellent
Secondary	Serious	Poor	Moderate	Good	Excellent

34. Interior Linings (excluding restrooms and catering facilities)

Linings

	Ceiling	Walls	Floor cover
Plasterboard	☐	☐	☐
Hardboard	☐	☐	☐
Particleboard	☐	☐	☐
Fibrous plaster	☐	☐	☐
Softboard	☐	☐	☐
Timber strip	☐	☐	☐
Formica	☐	☐	☐
Vinyl	☐	☐	☐
Ceramic tiles	☐	☐	☐
Carpet	☐	☐	☐
Cork tiles	☐	☐	☐
Concrete block	☐	☐	☐
Other _____	☐	☐	☐

Wall Insulation

- ☐ Fibreglass
- ☐ Macerated Paper
- ☐ RocWool
- ☐ Foil
- ☐ None

Surface treatment

Painted/Stained	☐	☐	☐
Papered	☐	☐	☐
Polyeurethane	☐	☐	☐
None	☐	☐	☐

MDF Reveals yes / no

Condition rating: _____

Defects *tick appropriate defect boxes*

- ☐ impact damage / holes in linings
- ☐ impact damage / holes in floor
- ☐ damaged wiring/outlet/switches
- ☐ discoloured/peeling paint/paper
- ☐ minor coating / lining blemishes
- ☐ water stains
- ☐ borer in sills/mouldings
- ☐ cracks
- ☐ areas of dirt accumulation
- ☐ worn timber edges
- ☐ unsafe floor covering
- ☐ reveals/sills cracked
- ☐ minor cracking in wall and ceiling lining
- ☐ nail popping
- ☐ peaking
- ☐ ceiling tile damage
- ☐ other _____

Mould level

- ☐ extensively blackened areas, damaged linings
- ☐ extensive mould
- ☐ large patches of mould
- ☐ very little mould visible
- ☐ no mould

Overall condition rating - Interior Linings *(circle)*

Serious	Poor	Moderate	Good	Excellent

35. Internal doors / Hardware

- ☐ Hollowcore
- ☐ Solid timber
- ☐ Timber & glass
- ☐ Metal
- ☐ Vents

Defects *tick appropriate defect boxes*

- ☐ impact damage /holes
- ☐ missing/broken hardware
- ☐ minor cracks/wear
- ☐ damaged vents
- ☐ borer
- ☐ worn hardware
- ☐ broken / cracked glass
- ☐

Overall condition rating - Internal doors / Hardware *(circle)*

Serious	Poor	Moderate	Good	Excellent

36. Furnishings

- ☐ blinds
- ☐ sunfilters
- ☐ curtains
- ☐ other _____

Defects *tick appropriate defect boxes*

- ☐ dirtiness
- ☐ stains
- ☐ fading
- ☐ fabric deterioration
- ☐ mould growth
- ☐ difficult operation
- ☐ tears or rips
- ☐ other _____

Overall condition rating - Furnishings *(circle)*

Serious	Poor	Moderate	Good	Excellent

COMMENTS AND RECOMMENDATIONS

7.2 Appendix 2: Interview survey form

BRANZ ©2001

Property ID:..... UR0326

Surveyor: _____

Date: _____ Start time: _____ Finish time: _____

SECTION A: INTRODUCTION

1. In what year was the property built? _____

2. How long have you been the owner and manager of this property?

1 less than one year
2 1-4 years
3 5-7 years
4 more than 7 years

3. How many previous owners have there been? _____

4. What is the property's current use/s? _____

_____

5. Has it had any other uses prior to its current one?

1 Yes (please state) _____
2 No
3 Don't know

6. Do you intend to sell this property within the next twelve months?

1 Yes **Why?** _____
2 No **Why?** _____
3 Unsure

7. When you first bought this property, how would describe its overall condition, both inside and out?

1 Excellent - no immediate repair and maintenance needed
2 Good - minor maintenance needed
3 Average - some repair and maintenance needed
4 Poor - immediate repair and maintenance needed, or
5 Very poor - Extensive and immediate repair and maintenance needed

8. How would describe the current condition of your property?

1 Excellent - no immediate repair and maintenance needed
2 Good - minor maintenance needed
3 Average - some repair and maintenance needed
4 Poor - immediate repair and maintenance needed, or
5 Very poor - Extensive and immediate repair and maintenance needed

SECTION B: MAINTENANCE

9. Who is responsible for making decisions in regard to the maintenance of this property?

_____

_____

10. During the last 12 months, has any maintenance, e.g., painting, repairs, replacements, or remodelling been carried out to any parts of your property?

1 Yes
2 No Go to question 14

11. To which parts of the property was this carried out?

Starting with the external parts		**Type of maintenance**	**Reason for maintenance**
a	Roof		
b	External walls		
c	Windows		
d	Guttering / downpipes		
e	External doors		
f	Foundations		
g	Drains		
h	Retaining walls		
i	Steps / Ramps		
j	Paths, paving, carparking, fencing		
k	Other (specify) _____		

And the internal parts?

		Type of maintenance	Reason for maintenance
l	Interior walls, floors or ceilings		
m	Restrooms		
n	Catering facilities		
o	Interior doors		
p	Furnishings		
q	Appliances / plant		
r	Safety equipment		
s	Other (specify) _____		

12. Who did the maintenance on your property as mentioned above?

1 Yourself
2 Other staff members
3 Paid tradespeople
4 Other paid people _____ (specify)
5 Other unpaid people _____ (specify)

13. How much did you spend on this maintenance (is this including or excluding GST)?

_____
_____

14. Did you decide to delay or defer any maintenance in the last 12 months?

1 Yes
2 No Go to question 16

15. For what items have you delayed or defered maintenance?

	How long for?	Reason?

16. Do you plan for future maintenance, i.e, have a maintenance schedule?

1 Yes
2 No

17. Do you intend to carry out any maintenance in the next 12 months?

1 Yes

Item	Type of Maintenance	Reason

2 No
Why?

_____
_____
_____
_____

Go to question 19

18. How much do you intend to spend on this maintenance (i.e., in the next 12 months)? (including or excluding GST?)

_____
_____

19. Do you keep continuous records of past maintenance (i.e., on a year by year basis)?

1 Yes
2 No

SECTION C: GENERAL BUILDING ISSUES

20. What security features does the commercial property have?

		Are maintenance records kept for these features? (circle)
1	Burglar alarm	Yes / No
2	Security lights to all entry points	Yes / No
3	Security lights to most entry points	Yes / No
4	Safety catches on all vulnerable windows	Yes / No
5	Uses a security firm service	Yes / No
6	Swipe card / pin pad access	Yes / No
7	Other (please specify) _____	Yes / No

21. What fire safety features does the commercial property have?

		Are maintenance records kept for these features? (circle)
1	Smoke alarms	Yes / No
2	Fire extinguishers	Yes / No
3	Hose reels	Yes / No
4	Fire blankets	Yes / No
5	Automatic sprinkler system	Yes / No
6	Automatic fire doors	Yes / No
7	Smoke control doors	Yes / No
8	Automatic or manual fire alarms	Yes / No
9	Fire Service riser mains	Yes / No
10	Exit signs	Yes / No
11	Fire escapes	Yes / No
12	Other (please specify) _____	Yes / No

22. What general safety features does the building have?

		Are maintenance records kept for these features? (circle)
1	First aid kits	Yes / No
2	Emergency showers	Yes / No
3	Emergency phone / communication systems	Yes / No
4	Emergency lighting systems	Yes / No
5	Safety barriers	Yes / No
6	Other (please specify) _____	Yes / No

23. What kind of energy does the commercial property use?
And, if available, how much is used at what cost per annum?

		Amount used (kWh/yr)	Cost ($/yr) (Inc.GST?
1	Electric	_____	_____
2	Mains gas	_____	_____
3	Portable gas	_____	_____
4	Solid fuel	_____	_____
5	Liquid fuel	_____	_____
6	Geothermal	_____	_____
7	Other (please specify) _____	_____	_____

24. Where does the water the commercial property uses come from?
And , if available, how much is used and at what cost per annum?

		Amount used (m3/yr)	Cost ($/yr) (Inc.GST?
1	Mains	_____	_____
2	Bore	_____	_____
3	Tank	_____	_____
4	Other (please specify) _____	_____	_____

SECTION D: TENANCY ARRANGEMENTS

25. Is the commercial property tenanted?

1 Yes
2 No (go to Section E)

26. How many tenants do you currently have? _____

27. Does the tenant have any property maintenance responsibilites?

1 Yes
2 No (go to question 29)

28. What are the tenant's maintenance responsibilites?

_____
_____
_____
_____
_____
_____
_____

SECTION E: COMPARISONS WITH HOME MAINTENANCE

29. Do you own your own home?

1 Yes
2 No FINISH

30. Do you maintain your house differently to your commercial property?

1 Yes
2 No

If yes, in what way and why?
If no, why not?

_____
_____
_____
_____
_____
_____
_____
_____
_____

FINISH
THANK YOU

7.3 Appendix 3: Photos of defects

The following photos illustrate some of defects found in the properties surveyed. For a full list of defects, refer to .. in the main body of this report.

Figure 1

Figure 3

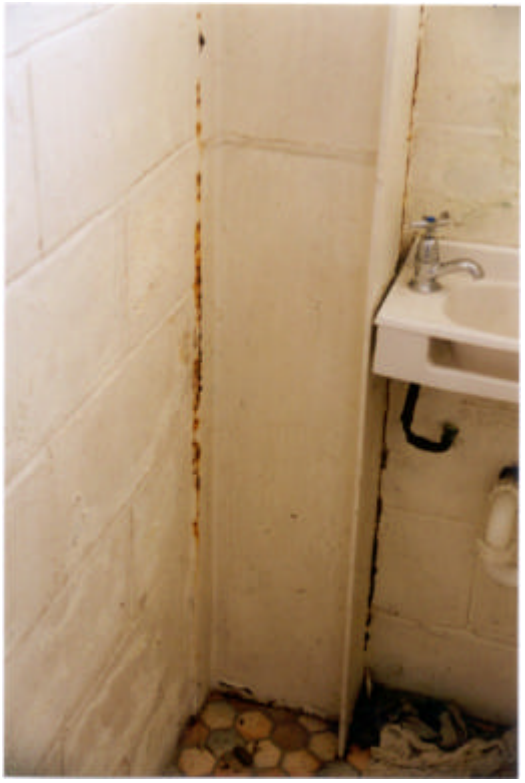


Figure 2

Figures 1, 2 and 3: Coating/lining blemishes

Moisture ingress has caused rusting of the steel work and formation of efflorescence behind the interior paint work.

Figure 4

Figure 4: Water Stains

Water leakage has caused damage to the column paint carpet.

Figure 5

Figure 5: Water Stains

This photo shows the extent of carpet damage caused by the leak as shown in Figure 4.

Figure 6

Figures 6 and 7: Fixing deterioration

This property had inadequate subfloor ventilation. The subfloor timbers were wet causing deterioration in the fixings.

Figure 7

Figure 8

Figure 8: Inadequate closure and missing grates

The grease trap lid was not sealed and was emitting odour. Also, there was no protective grate over the fully trap.

Figure 9

Figure 9: Corrosion of metal

This down pipe shows significant corrosion.

Figure 10

Figure 11

Figures 10 and 11: Missing drain

Stormwater discharge to car parking area; although there is a channel, there is no water outfall.

Figure 12

Figure 12: Missing cladding

Penetrations through claddings must be sealed off.

Figure 13

Figure 13: Leaks

Drains need to be maintained to avoid water discharge adjacent to foundations.

Figure 14

Figure 14: Rubbish accumulation

A common maintenance problem is rubbish and vegetation accumulation in drainage areas.

Figure 15

Figure 15: Internal gutter overflow

Although this rain head has an overflow it must be inspected regularly to ensure there are no obstructions. This rain head overflows on a regular basis, as indicated by the water staining.

NB: It could be due to inadequate design.

Figure 16

Figure 16: Corrosion and mould growth

Intermittent spouting overflow causes deterioration in timber, fixings and paint.

Figure 17

Figure 17: Safety risk

This transformer room is below ground level and is at risk of flooding.

Figure 18

Figure 18: Insecure cabling

Exterior services need durable fixings and regular inspection.

Figure 19

Figure 20

Figures 19 and 20: Uneven surfaces

These photos show neglected surfaces in parking areas.

Figure 21

Figure 21: Damaged exterior cladding

Damaged door flashing.

Figure 22

Figure 22: Damaged exterior

Damaged cover boards have exposed the ends of cladding to storm water penetration.

Figure 23

Figure 23: Cladding deterioration

Early signs of membrane deterioration.

Figure 24

Figure 25

Figure 26

Figures 24, 25 and 26: Mould

Lichen and moss developing on external surfaces. It needs to be removed periodically to minimise the risk of damage to the host material.

Figure 27

Figure 27: Window damage

Peeling paint, corroding flashings and corroding louvres.

Figure 28

Figure 29

Figures 28 and 29: Inadequate subfloor ventilation

These photos show an attempt to provide subfloor ventilation by an unacceptable and ineffective method of ducting.