

EQS 2314

EQS 2314 (Project 06/101)

Using action plans to increase voluntary
actions that reduce Earthquake damage

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**USING ACTION PLANS TO INCREASE VOLUNTARY
ACTIONS THAT REDUCE EARTHQUAKE DAMAGE**

EQC Research Project 06-101

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TECHNICAL ABSTRACT

Despite the significant risk from earthquakes in New Zealand, many citizens and companies do not prepare for these hazards. Building regulations ensure that buildings meet the required standards, but most other steps including actions that mitigate damage in an earthquake require voluntary actions. Most interventions to encourage preparedness centre on information about the hazard. This strategy is known to have limited effectiveness. In other domains, using an action plan has been shown to be an effective method of increasing preventive actions. Action plans require specifying a deadline for the actions, a person responsible for the action, and where the action plan will be implemented. This project applied action plans to business preparation and tested whether information about the earthquake hazard accompanied by an action plan would lead to more companies taking two specified low-cost preparation actions than would mere information about the hazard. 200 Wellington companies were recruited and were given a six month time frame to complete two actions: a survival kit action (getting water supplies or alternative), and a damage mitigating action (obtaining and fitting computer restraints). Half of the companies received the action plan intervention. After six months, 39 of the 96 companies that replied had obtained water supplies but only three had fitted computer restraints. There was no difference between the action plan group and the information-only group. The companies gave attributions (reasons) for their actions or their failure to complete the actions. The follow-up study obtained structured ratings of participants' attributions for their failure to complete the target actions and obtained ratings of how much people thought about the immediate and long-term consequences of earthquakes for business survival and for life and injury. For both immediate and long-term consequences, companies reported thinking more about life and survival more than business continuity. This finding is consistent with companies' much higher adoption of survival actions than mitigation actions. The findings do not support the use of action plans with hazard preparedness.

INTRODUCTION

Research on attempts to enhance preparedness

Preparation for earthquakes comprises a mix of legislated actions, such as legally enforced building regulations, and voluntary actions, such as securing objects in the home and purchasing an emergency kit. In zones that are known to be vulnerable to earthquakes, it is obviously valuable for citizens and commercial enterprises to undertake these voluntary actions. In New Zealand, civic agencies such as CDEM and EQC use public information strategies to encourage this voluntary preparedness.

As in other domains where preventive actions are valuable, such as the health domain, many citizens do not undertake voluntary preparations (Lindell & Perry, 2000). A wide range of messages are designed to invoke fear or anxiety in citizens in the belief that this will lead them to take preventive action, but these have limited effectiveness (Lindell & Perry, 2000). Many of these strategies are based on civic agencies' well-intentioned understanding of what type of messages influence behaviour. These strategies, however, do not take into account research showing which factors lead to protective actions, and they do not take account of the fact that they are competing with many other messages for citizens' attention.

Business resilience

Previous research on business resilience and preparedness has shown that size of business is a predictor of preparedness, with larger companies being more prepared (Dahlhamer, & D'Souza, 1997). Previous disaster experience is also a predictor. Activities that are less complicated and inexpensive, such as purchasing first aid kits, are preferred over others. Businesses prefer measures that will impact on life saving in the short term rather than those aimed at business survival in the long term (Webb, Tierney & Dahlhamer, 2000).

Partly in response to this low level of uptake of mitigation measures, Yoshida and Deyle (2005) examined what factors influence small businesses adopting hazard mitigation measures. A distinctive aspect of this study is that it asked respondents what access they had to four different types of mitigation experts: insurance manager, structural engineer, businesses continuity specialist, and disaster recovery specialist. The most common type of expert use was access through consultants rather than employing specialists. Those businesses that had access to all four types of experts were larger and were more likely to view themselves as vulnerable. A regression analysis found that access to expertise was a significant predictor of businesses' decision to employ mitigation, as were perceived exposure to natural hazards and type of business. Businesses in education, social services, finance, insurance and real estate were more likely to have a business continuity plan (BCP) in place, and perceived exposure to hazards was positively related to structural mitigation and insurance purchase.

These studies provide useful information on correlates of business preparedness. However none of them have examined whether a strategy such as action plans that have been shown to be effective in changing individuals' behaviours in the health domain can be applied to business resilience in relation to hazards such as earthquakes (e.g., Leventhal, Cameron, Leventhal, & Ozakinci, 2005). The present project was designed to address this issue.

Action plans

Research in psychology has shown how interventions to enhance risk-reducing behaviour may be made more effective. The most widely researched area of behaviour change is health behaviour, where there is extensive investigation into clarifying what factors help to get people to take protective actions such as immunisation, taking up healthy lifestyles, and getting health checks. This research has shown that one key factor that

increases people's uptake of protective behaviour is the use of action plans (Leventhal, Singer, & Jones, 1965; Leventhal et al., 2005). Action plans differ from many other strategies in that they ask the relevant party to decide on a plan of action, and require people to specify specific targets for action. Action plans also require people to clarify how their plan fits with the behavioural environment that they are in and then to specify a time frame and place for performing the action.

Research shows that action plans play a critical role in translating feelings of risk into relevant behaviour. It also shows that strategies that get people to form action plans for protective actions are more effective than messages that merely inform citizens about their risk and possible protective actions (Leventhal et al., 2005).

In a classic experiment demonstrating this effect, the action plan design consisted of providing students with a plan of action to obtain a tetanus shot (Leventhal, Singer, & Jones, 1965). The action plan included information that showed where to get the shots and precisely what to do in order to get a shot as well as timetable for inoculations. Participants were asked to review their timetable and indicate a time when they could go and get a shot. Participants were also provided with either high or low fear-inducing information regarding tetanus, or an action plan only control group and a no-intervention control group to establish a baseline for getting shots. Participants subject to fear-inducing conditions who were provided with action plans were significantly more likely to go and get shots (of the 9 participants who received shots, 8 were from the action plan groups) than those who had fear induction but no action plans. Importantly, the action plan-only control resulted in no participants getting shots. Sniehotta, Scholtz and Schwarzer (2005) obtained similar results in getting people to take up exercise, although in this case fear induction was not necessary for action plans to be effective.

Gollwitzer (1999) argued that the concept of action plans could be better construed in terms of implementation intentions, which refer to the when, why and how of goal

attainment. Implementation intentions have been shown to significantly increase the likelihood of people accomplishing their goals in a number of domains. However, the effectiveness of these intentions is dependent on strength of commitment to the given implementation intention. The present project retained the conceptual framework of action plans rather than implementation intentions because the action plan model is more firmly established.

Given the demonstrated effectiveness of action plans, there is a strong justification for applying the action plan strategy and theory to earthquake protective actions, and to apply this strategy in the first instance to actions that are both feasible and beneficial, in terms of personal survival and business survival in the event of a large earthquake. The current project applies action plans that are designed to enhance the intention to prepare and subsequent actual preparation. This project extends recent New Zealand research showing that the perception of earthquake threat leads to preparedness only where people generate the intention to prepare (Paton et al., 2001).

Applying action plans to earthquake preparedness

The proposed research uses the action plan model that has been applied successfully in other domains such as the health domain and applies it to earthquake preparedness. The proposed research moves beyond previous strategies that have been applied to earthquake preparedness and that have had modest outcomes. Previous strategies have focused on warnings and community notices.

Although action plans have been shown to be an effective strategy in a number of domains, no previous research has applied actions plans to earthquake preparedness. This project clarified whether the action plan method that has been effective in other prevention domains is effective in enhancing actions that mitigate earthquake outcomes. Previous

research has shown that other strategies such as written warnings and alarms have limited effectiveness in changing people's actions in response to low frequency hazards.

The research deliberately selected two specific actions in order to clarify and quantify outcomes (fitting computer constraints or an alternative form of computer security, and getting appropriate supplies of water). By focusing on specific targeted behaviours, the research provided clear measures of a change in levels of preparedness in response to a time-limited intervention. An additional reason for this targeting of specific outcomes is that there is a better chance of getting people to take action if a project proposes only a small number of actions, rather than a list of twenty or more actions, as many interventions do.

The two actions that the project targeted were deliberately selected for the following reasons. First, both are discrete specific actions and therefore readily measurable. This enables quantification of any changes in preparedness. Second, both are low cost strategies, for which there is a greater chance of achieving actions than with high cost strategies. If this action plan strategy is successful with these low cost strategies, it could then be tested with a broader range of actions to test the boundaries of the model. Third, both actions are significant in regard to business survival or personal survival. The target action of fitting computer constraints or equivalent security measures (e.g., back up in another location/city) was chosen as a target action because it is a cost-effective strategy; it is a low cost action and yet it can have a major effect on business survival after an earthquake. This point was demonstrated after the San Francisco (Loma Prieta) earthquake in 1989, where businesses that went bankrupt were mostly those that lost their data and records due to the lack of computer constraints or alternative security (Smith, 1993). The second target action, having a bottle or water, is again a low cost item that is relevant to personal survival in the event of a major earthquake.

Those businesses participating in the project that had already performed one or both of these primary target actions were asked to select an alternative target action from a supplied schedule of earthquake preparedness actions.

PHASE 1 DATA COLLECTION

Ethics approval

The research proposal, including the goals of the study, the methodology and the questionnaires were submitted to the Victoria University of Wellington School of Psychology Human Ethics Committee for approval. The application was approved by the Committee on 26 April 2006 (No. 0578SEPT).

Business Selection

First, 400 businesses in Wellington were randomly selected by choosing the first company in the Wellington CBD district that appeared on every fourth page of the Wellington Yellow pages. As the Yellow pages directory has just over 1200 pages, this method ensured that 400 business were selected that were widely representative of different types of business.

When the 400 companies had been selected, the names were placed in alphabetical order and sent to E-Ideas, a company which maintains an electronic file of Businesses in Wellington, including their contact numbers, the number of employees, and the category of the business. E-ideas supplied this information for the 400 businesses and were paid for their service. A file was then created of the selected companies, specifying their addresses, their company names, telephone number, type of industry, number of employees and name of contact person and/or manager. The businesses were classified into the five following categories; the number in each category is in brackets:

1. Retail – includes real estate [90]

2. Trades (includes trade services e.g., video rental) [84]
3. Professional services – includes financial, lawyers, photography, education [127]
4. Manufacturers and wholesalers [26]
5. Other (including services) – hotels, restaurant [73]

Table 1. Number of employees in the 400 businesses

| Number of employees | Companies with this number of employees |
|---------------------|---|
| 1-4 | 209 |
| 5-20 | 140 |
| 21-50 | 28 |
| 51-100 | 4 |
| 100+ | 6 |
| Not available | 13 |

The 400 companies were divided into two matched samples of 200 each, with the two samples matched as closely as possible for the different types of business and the numbers of employees. This step was taken to ensure that any difference in the results across the two intervention conditions (information-only and action plan) would not be due to any differences in the nature or size of the companies selected for each of these conditions.

Phone call and mail out

Initial phone calls were made to each of the 400 businesses to tell them about the project and invite their participation. The calls were made in July and August 2006. The caller requested to speak to the manager of the company; in some cases this took up to eleven phone calls. The caller described the purpose of the project in relation to company earthquake preparedness, and spelt out that the project was examining only two simple low cost actions and would involve reading only a small amount of material. The respondents

were also told that if they so desired, they would be included in a list of participating businesses to provide good publicity, but that unless this was their wish they would remain anonymous and their data would be anonymous. The full set of communications used by the caller is listed in Appendix 1. Of the 400 companies initially approached, a total of 206 agreed to participate in the project.

Companies that agreed to participate were then sent letters enclosed with a survey and three information brochures. The letter spelt out the purpose of the project, noted that Wellington was an earthquake risk zone and that an earthquake could lead to businesses being closed for months or going bankrupt. It also affirmed that this risk could be greatly reduced by companies being prepared, a step that reduced harm to buildings, contents and employees.

The letter then stated that the project targeted two simple low cost actions: The first was fitting restraints to computers and servers. In relation to computer restraints, it noted the following: *"In the 1989 earthquake in San Francisco, the most important factor in business survival was the use of simple, cheap computer restraint. Many businesses lost all their records, data, and went bankrupt. Simple computer restraints (approximately \$18 each) could have made the difference to their business survival."* The second targeted action was obtaining a 3 litre supply of water per employee. In relation to water supplies, the letter noted the following: *"If employees are trapped in a building after an earthquake, a supply of water is vital for their survival"*.

The next passage stated that these two simple actions offered much potential benefit to the companies. If they had already undertaken either of these actions, the letter referred the reader to the attached Earthquake Readiness Scale, to choose an alternative target action. They were told that there would be a follow-up check at six months to see if they had undertaken either or both of the actions. The letter with the action plan group also asked them to complete the attached 'action plan' template, which for each of the two target

actions had four boxes to fill in; the time frame; the location of the action; who was responsible for the actions, and a task completion tick box.

Finally, the letter noted that further information could be found in three brochures that were enclosed: General Business Planning (especially p. 17-19); Computer Restraints, and Storing Water. The focus on a short section of the General Business Planning booklet was specified because the booklet is 64 pages long and it was thought that this length could de-motivate some participants. The General Business Planning booklet was supplied by The Wellington City Council Emergency Management Office; the computer restraints brochure was supplied by Seismic Restraints Limited; and the Storing Water brochures was supplied by Wellington City Council. The letter was designed to take up only one page to maximise the incentive for companies to participate. The letter to the information only group and the Earthquake Readiness Scale are presented in Appendix 2 and the letter to the 'action plan' group with the 'action plan' template is presented in Appendix 3.

The package including the letter and brochures were mailed to those companies that agreed to participate.

Six month follow-up

In February 2007, six months following the mail-out, participating companies were contacted, initially by mail, to see if they had carried out either of the two target preparations. They were sent a letter reminding of the purpose of the study and its design, accompanied by a brief one page checklist for them to fill in, with a stamped addressed envelope. The letter emphasized that as the project was for research purposes, we wanted participants to give accurate and honest replies, rather than report what seemed to be desirable responses. (The letter is in Appendix 4).

The checklist asked: First, if they had selected two target preparedness actions to do within six months (circle Yes or no); Second, if they did not select two target actions six months ago, could they tell us why. Two lines were given for them to write an explanation.

It then asked for those who did select two target actions, whether the actions were the two actions we proposed to them as the default action (i.e., fitting computer restraints, and purchasing bottled water) or an alternative action, which they were asked to specify. For each of these two actions, a question asked: 'Did you carry out this action?' (Yes, No). The next question elicited their attributions for their actions. It stated: 'If you did this action in the six months since we contacted you, please say why you did this in the space below. If you did not do it, please say why you think this didn't happen.' Following the questions were two lines where respondents could write their answer.

The reply sheet also asked for their views on the usefulness of the three brochures they had been sent (EM [Emergency Management] Business Emergency Planning Guide, Computer Restraints, Storing Water). The questions asked 'Were the brochures a help in motivating you to take actions, or were they unhelpful or unmotivating?' For each brochure the first set of reply options was 'Helpful, unhelpful' (circle one); the second set of reply options was 'Too much information, Right amount of information, Not enough information' (circle one), followed by a line where they could comment or explain their response. The final questions asked for 'Any other comments?' and for the Company name if they did not wish to remain anonymous. The letters were sent with a stamped addressed envelope.

After 3 weeks, to increase the return rate, the researcher telephoned all the companies with the exception of those that had identified themselves in the return letter. The callers asked if they had received the letter and encouraged them to return the questionnaire. Companies were also given the option of completing the questionnaire over the phone, with the researcher filling in the questionnaires. This increased the rate of returns. Sixteen of the 209 companies could not be contacted either because they had moved outside the region or had shut down.

Phase 1 Findings and data analysis

Numbers selecting and completing actions

Of the two hundred companies that initially agreed to participate, 96 filled out the reply survey at the six months follow-up (see Table 2). Of these 45 were in the 'Information-only' condition and 51 in the 'Action plan' condition. Statistically, there is no difference in this return rate for the two groups.

Table 2. Responses to Phase 1 survey at 6 months

| | Information group | Action plan group | Total |
|--|-------------------|-------------------|-------|
| Total number of surveys returned | 45 | 51 | 96 |
| <u>Computer restraints</u> | | | |
| Companies who chose to fit computer restraints | 17 | 16 | 33 |
| Companies who actually fitted computer restraints | 1 | 2 | 3 |
| Companies who chose an alternative action and completed it | 8 | 4 | 12 |
| <u>Bottled Water</u> | | | |
| Companies who chose to obtain bottled water | 24 | 24 | 48 |
| Companies who actually obtained bottled water | 19 | 20 | 39 |
| Companies who chose an alternative action and completed it | 3 | 4 | 7 |

As can be seen in Table 2, 33 companies chose to fit computer restraints (and 12 chose an alternative action from the Earthquake Readiness Scale (ERS), whereas 48 chose to obtain bottled water (and 7 chose an alternative action from the ERS). A Chi Square statistic confirmed that the number planning to obtain bottled water was significantly higher

than the number planning to fit computer restraints, $\chi^2(48) = 6.75, p < .01$ (i.e. the probability that this is due to chance is less than 1%). At the six months follow-up, just 3 companies had fitted computer restraints, whereas 39 companies (13 times as many) had obtained bottled water. A Chi Square statistic confirmed that the number obtaining bottled water was significantly higher than the number fitting computer restraints, $\chi^2(39) = 27.92, p < .001$. There was no statistical difference between the numbers completing the two target actions in the 'Information-only' condition and the 'Action plan' condition. The very low reported completion rate for fitting computer restraints suggests that the participants' responses were not affected by a bias to give social desirable responses, because only 3 of the 33 participants who planned to carry out this action at the initial start point reported that they had done so 6 months later. The three companies that fitted computer restraints all also obtained the bottled water, so the total number of companies that did one or both of these two target actions was 33.

In addition to these companies fitting computer restraints, several companies chose alternative actions. Twice as many companies chose an alternative action to fitting computer restraints action than chose an alternative to obtaining water supplies. In total, 42 companies reported carrying out at least one action at the six months point. Of the actions chosen as alternatives to fitting computer restraints, seven were survival actions (like getting survival kits) and five were actions to mitigate damage, whereas the actions chosen as alternatives to getting water supplies were all survival actions. Four of the companies choosing damage-mitigating actions chose to secure or brace filing cabinets or bookcases, whereas the other one chose retrofit the building "to earthquake levels". It is interesting that although only three companies followed through in securing computers, five companies who chose actions that mitigate damage as alternatives to fitting computer restraints all completed the actions. (One of these was in the action plan condition and the other four in the information-only condition). The full list of alternative actions is shown in Appendix 5.

Participants' attributions for their actions

A coding scheme was designed to clarify the main categories of participants' attributions for their (in)actions. The coding scheme was developed by two researchers, based on 25% of participants' attributions for their actions or non-actions. In the subsequent coding of the remaining responses, the two coders reached 83% agreement on their coding of the responses. The main categories of attribution, the frequencies of attribution in each category are shown below, along with and sample attributions from each of the main categories. The numbers have lower totals than the number (96) who returned questionnaires, because many did not give attributions.

Attributions for not selecting any target action

Participants' attributions for not selecting any target action are shown in Table 3. The most common attributions were that the task was not a high enough priority and they did not have enough time or were busy.

Table 3: Attributions for not selecting any target action.

| Attribution | Action Plan Group | Information Group |
|--|-------------------|-------------------|
| 1 Not high priority | 4 | 7 |
| 2 Not enough time/busy | 5 | 2 |
| 3 Did not recall/misplaced information | 2 | 3 |
| 4 Business shifted/shifting; or The person responsible left | 2 | 5 |
| 5 Small staff | 2 | 2 |
| 6 Had already assessed preparation: | 3 | 2 |
| 7 Other | 4 | 1 |

Examples of 'Not high priority' attributions for not selecting any target action are:

"Quite simply it was a low priority item and hence I never got that far down on my list of 'things to do'."

"Just didn't prioritise it highly enough to action it."

"When mentioned it wasn't such a priority, then sat on the backburner before being forgotten about."

Examples of 'Not enough time/busy' attributions for not selecting any target action are:

"Work load meant we didn't have time to organise anything."

"I apologise but we have been busy and I didn't get the time. I did however replace our water."

"Due to constraints on time with running the business and seeing patients it slipped to the "must do some time" pile. Then [it] was not actioned."

Examples of 'Business shifted or the person responsible left' attributions for not selecting any target action are:

"No, as person I initiated research with has left (3 months ago)."

"Dear John, My apologies - I'm afraid due to a change of management your project got lost and we have not started let alone completed any action. Regards, [name given], Store Manager."

"Initial contact that survey was given to has gone on maternity leave."

Examples of '[We] had already assessed preparation' attributions for not selecting any target action are:

"We already have a water cooler with spare supply and we had already assessed our earthquake risk a couple of months prior to this survey."

Attributions for completing or not completing the target actions

The full set of participants' attributions for why they either completed or did not complete the target actions are shown in Appendix 5. The codings of these attributions into categories and examples of the most common attributions are shown below.

Attributions for NOT fitting computer restraints

Participants' attributions for not fitting computer restraints are shown in Table 3.

Table 3: Attributions for choosing to fit computer restraints but not doing it.

| Attribution | Action Plan Group | Information Group |
|---|-------------------|-------------------|
| 1 Computer/server on floor; use laptops | 7 | 7 |
| 2 Low on priority | 3 | 4 |
| 3 Time limitations/too busy | 2 | 1 |
| 4 Recognise need, waiting to action/may have initiated action | 6 | 2 |
| 5 Business shifted/shifting; supply issues | 2 | 2 |
| 6 High cost; risk seen as low | 0 | 4 |
| 7 Business type/nature of work environment; Don't use computers | 2 | 0 |
| 8 Other | 1 | 2 |

Examples of 'Computer/server on floor or use laptops' attributions for not fitting computer restraints are:

"Computer sits on floor. Screen is lightweight. Others are laptops."

"All our computer equipment is very secure and server is on the floor - not necessary to do any securement."

"A laptop is used at home/ LCD screen at work with computer on floor level."

Examples of 'Low on priority' attributions for not fitting computer restraints are:

"Did not do it straight away when reading info - so slipped down the list."

"Not a priority (and forgot we were supposed to try and action this within 6 months)."

Examples of 'Recognise need, waiting to action / may have initiated action' attributions for not fitting computer restraints are:

"We discussed this at the time but failed to get organised. Since your follow up letter we have contacted the supplier of restraints to request an appraisal, this will get done!"

Examples of 'High cost; risk seen as low' attributions for not fitting computer restraints are:

“Some of our equipment has restraints. I intended to complete this for the rest of the office but didn't - I think the cost of it was probably why.”

“Cost of computer restraint was prohibitive - option being investigated.”

Attributions for completing alternative actions to fitting computer restraints

Twelve participants chose alternatives to fitting computer restraints and reported completing these actions by 6 months. Five participants chose to secure cabinets or filing systems. Examples of attributions for these actions are as follows:

“Main reason because they (the filing cabinets) are high and the server is kept in this file storage also. Want to prevent things falling on top of people.”

“Important from health and safety perspectives.”

One participant reported that they (or their landlord) chose to retrofit the building to Earthquake code standards; i.e., make the building earthquake resistant.

“The owner of the building saw it as protecting his tenants and also a good selling point for the future. The action is still being carried out.” However, the contact person was reluctant to say that the research was the sole cause of this decision.

Other participants (7) chose enhancing survival kits as an alternative to fitting computer restraints. These included: Getting batteries, toilet paper, radio, torch (2), first aid supplies, and in one case a full emergency kit.

Attributions for storing water

Table 4: Classification of attributions for choosing to store water and doing it

| Attribution | Action Plan Group | Information Group |
|--|-------------------|-------------------|
| 1 Important for survival | 8 | 4 |
| 2 Able to use/expand/purchase water cooler | 4 | 2 |
| 3 Simple/easy/ low cost | 2 | 3 |
| 4 Part of general emergency plan or policy | 2 | 1 |
| 5 Study information prompted increase in supplies/check on water quality | 2 | 2 |
| 6 Tap water in workplace is terrible | 2 | 0 |
| 7 Other | 2 | 3 |

Examples of 'Important for survival' attributions for getting water supplies or alternative survival kit item are:

"I work in the basement - if building collapses in earthquake it might be some time before I am dug out - I now have 40 L water."

"It's good to have on hand in case of a tragedy, e.g., earthquake in case we are trapped etc... and there's no water to drink."

"To continue: next to that, we are 'medical' people. A sort of standard/basis on First aid, survival material is 'expected' of us. And reason 3, I'm a women and wanna (sic) make sure life supplies (toilet p) are all taken care of. To provide for people who need help."

"We felt it necessary to cater for staff with food and water should we be stranded."

Examples of 'Simple/easy/ low cost' attributions for getting water supplies or alternative survival kit item are:

"Simple to do. Attempted to find a whole earthquake readiness kit but they weren't readily available."

"It was easy, simple and cheap and didn't take long."

"We already have water delivered so added a few extra bottles to keep as reserves."

The attributions for alternative actions to storing water are shown in Appendix 5.

Attributions for NOT storing water

Table 5. Classification of attributions for choosing to store water and NOT doing it

| Attribution | Action Plan Group | Information Group |
|---------------------------------------|-------------------|-------------------|
| 1 Already have supply or water cooler | 3 | 3 |
| 2 Storage issues | 2 | 2 |
| 3 Not organised/apathy | 0 | 3 |
| 4 Office disruptions | 2 | 0 |
| 6 Other | 0 | 1 |

Examples of ‘Already have supply or water cooler’ attributions for NOT getting water supplies are:

“We already had bottled water and purifying tablets.”

“Because [we] already had in place: that is, [we] have a water cooler and there are always refills in store, which are quite large.”

“We always carry a stock of bottled water as part of our normal purchases of water.”

“We already have 2 water coolers which are refilled regularly.”

A Chi square analysis on the attributions showed that the difference between the action plan groups and the information-only groups was not significant but approached significance ($p < .15$). Especially in the attributions for not fitting computer restraints, it seems that the action plan group see the actions as more important, and see the risk for their business as higher; fewer of this group cite apathy-related factors as a reason for not doing the action. Therefore, it seems that the action plan may have been more effective in increasing awareness even if it did not lead to action, although the trend is not statistically significant.

Summary of Attributions

In sum, the most common attributions for not choosing a target action at the beginning of Phase 1 are not having enough time and being too busy. The most common attribution for not obtaining computer restraints was the perception that the action was not necessary because the computer/server was on the floor, or because they used laptop computers. The most common attribution for participants getting a water supply in the six month time frame is that it is seen as important for survival, whereas the most common attribution for not getting a water supply is that they had a water cooler on site. The most common attributions for alternative actions showed the same patterns. (See Appendix 5)

Usefulness of information brochures and booklets

The ratings of the usefulness of the three brochures sent to the businesses are shown in Table 6. The data are combined for the two groups as there was no difference between the two groups. The results show that the brochures were overwhelmingly seen as helpful and containing the right amount of information. This result is interesting in that it suggests that people's view of the usefulness of information about a risk or hazard has little relationship to their action in response to the hazard. For example, participants rate the information about computer restraints and water supplies similarly, yet many more took action in regard to water supplies than did so with computer restraints.

Table 6. Ratings of usefulness of information brochures

| | Helpfulness | | Amount of Information | | |
|---------------------|-------------|-----------|-----------------------|--------------|------------|
| | Helpful | Unhelpful | Too Much | Right Amount | Not Enough |
| CDEM Guide | 51 | 3 | 2 | 44 | 1 |
| Computer Restraints | 47 | 5 | 4 | 37 | 1 |
| Storing Water | 52 | 2 | 2 | 45 | 0 |

Other comments from Participants The full set is recorded in Appendix 5.

The other comments from participants were informative. About half of the comments simply expressed appreciation of the project and how it had helped them to get on with preparing:

"It really made me think what if? So now I prepared the office just in case, e.g., water storage."

"Only that it prompted me to do something I had been thinking about doing. A good reminder."

"This project has coaxed our staff and my partners' practice into an emergency management plan. We've got radios, meeting places, etc."

"Very easy to achieve."

Other stated that they valued the project but that it had been displaced by other more immediate concerns or they could not develop an adequate sense of urgency:

"All informative and motivating, until five minutes pass and you forget to go to the supermarket specially, or forget to buy water when at supermarket, or 'must remember to buy brackets for bookcases' etc. And never quite manage it."

"I lack a sense of urgency about the inevitable 'big one'. I know it will happen one day, it just seems too far off to worry about (although it may well be tomorrow!)."

Others made interesting and useful suggestions as to how the goals of preparedness could be achieved:

"Finding people within an organisation who are going to invest time into actioning (sic) these things is the key. I think by associating earthquake preparedness with something like first aid; then you might attract the right people who are motivated to do the necessary things."

"Projects to improve awareness concerning earthquakes and disaster management worthwhile. Trade associations can help extend communications to members."

"[You] Should just provide us with a contact to come and do all this for us. Set up an appt."

Summary of Phase 1 results

There are two key findings in the Phase 1 results. First, there was no significant difference in the actions taken by the information-only and action plan groups. Second, more than 40 of the 96 companies who sent a follow-up response at six months reported carrying out at least one of the two actions (computer restraints or water supplies or alternative). Many more companies obtained water supplies than fitted computer restraints. The attributions clarify the participants' view of the reasons why they carried out the actions when they did so, or why they did not complete the actions when that was the case. The most frequent attributions for not completing the actions were that it was not a high enough priority, or in the case of computer restraints, that it was seen as unnecessary. The

most frequent attribution for getting water supplies among companies that did this action was that it was important for survival, whereas the most frequent attribution for not getting water supplies was that the company already had a water cooler.

Phase 1 Discussion

The Phase 1 results have three key features: Participants' preparedness responses were not significantly different in the action plan and information-only conditions; however, a significant number of participants did report completing preparedness actions in the six month period; and there was a huge discrepancy across the two target actions in that vastly more participants obtained water supplies than fitted computer restraints.

The finding that the participants' responses were no different in the 'Action plan' and 'Information-only' conditions runs counter to the prediction that more actions would be taken in the action plan condition. It is not clear why this pattern occurred. Previous research has found that action plans are effective in the health domain, although this outcome requires that action plans are combined with information that established a degree of concern or anxiety (Leventhal et al., 1965; Leventhal et al., 2005). The 'Action plan' condition in the present research was designed to meet these twin requirements, but it did not enhance the effect. This may be due to the fact that the model is being applied to a different type of sample than previous studies (businesses rather than individuals) or to a different domain than usual: hazard preparedness rather than health and fitness. In theoretical terms, the value of an action plan should apply to businesses as much as to individuals. However, at an organizational level some additional issues come into play. For example, top management support is crucial for any successful implementation. The innovation literature also identifies a number of other facilitating factors (goal orientation, team climate, etc.). (Locke & Latham, 2002). The perceived costs and benefits may also differ moving from an individual to the organization.

An alternative explanation of this aspect of the findings is that the information we provided to participants did not generate sufficient concern or anxiety. A related explanation for this finding is suggested by Gollwitzer's (1999) observation about a key requirement for the enactment of implementation intentions, which are similar to action plans. Implementation intentions are dependent on the strength of commitment to both the implementation intention and the overall goal. In the current study, participants were necessarily recruited on a randomly selected basis; they were not restricted to companies that had a strong prior commitment to preparation. Thus although most companies 'recognize' the risk of earthquakes, they may not have had a strength of commitment to prepare for this particular hazard. This may account for the lack of an effect in the action plan condition.

In the attributions for not carrying out the actions, there was a trend towards a difference between the action plan and information-only groups, although this trend is not statistically significant. One of the main reasons for not adopting the action plan seems that people were busy (the action plan is seen as time intensive) and it dropped off the 'radar' or list among more important issues. It appears that the perceived risk of the damage did not outweigh the perceived costs for the organization (assigning the job to someone, monitoring costs to see whether the job has been completed, etc.). Therefore, it may be that increasing the threat and/or the cost/benefit ratio together with an action plan might be a suitable strategy.

The second key finding is that many more participants obtained water supplies than fitted computer restraints, although some participants chose other damage mitigating actions as alternatives to fitting computer restraints. This finding is consistent with other findings that people are more willing to undertake actions related to survival than actions to mitigate damage (Heller, Alexander, Gatz, Knight, & Rose, 2005; Russell, Goltz, & Bourque, 1995; Spittal, McClure, Walkey, & Siegert, in press; Spittal, Walkey, McClure,

Siegert & Ballantyne, 2006). This pattern might be seen as gratifying for personal survival; but it is a problem in terms of business resilience and continuity. These findings suggest that most businesses will require added motivation and incentives such as legislation or insurance to be motivated to take straightforward actions that mitigate damage in earthquakes. This pattern is particularly important with small businesses that may be preoccupied with day to day affairs and do not have business continuity plans that take account of low frequency hazards, regardless of the potential consequences of these hazards (Yoshida & Delye, 1996).

Many of participants' attributions for not carrying out the actions suggest that failure to prepare reflects a low prioritization given to business continuity planning in relation to hazards, earthquakes in particular. However other attributions suggest that businesses being better informed may be beneficial. For example, a number of participants said that their computer or server was on the floor so it would not fall over in an earthquake and it therefore did not need securing. This comment points to some participants' lack of awareness that in major earthquakes objects can be thrown around and need securing, even objects that are placed on the floor. This finding about participants' misunderstanding of the risk is an important outcome of the study. The attributions for obtaining water supplies show that participants do at least recognise the importance of this action for personal survival.

Phase 2 – Calibrating Phase 2 Objectives to Phase 1 findings

The original research proposal allowed for the possibility that if the 'action plan' group completed more preparation actions than the 'information-only' group, the 'action plan' option would be offered to the 'information-only' group in Phase 2, to fulfil ethical requirements. In fact, the results for these two groups did not differ in Phase 1, so Phase 2 implemented the alternative option of clarifying the findings in the qualitative data of Phase

1 and obtaining more quantitative data on these points. Hence the first goal of Phase 2 was to obtain numeric ratings of the qualitative attributions actions that participants gave for not completing the two preparations in Phase 1. This measure provides numeric data that allows quantitative comparisons between responses. It also provides information where respondents may have multiple reasons for not carrying out an action, but did not indicate all of these in their qualitative responses in Phase 1.

The second goal of Phase 2b was to test the possibility, implied in some participants' comments in Phase 1, that one reason for the difference in take-up of the two target actions in Phase 1 was that people give a much higher priority to life and personal survival than business survival and continuity after an earthquake. Alternatively, this difference could be due to the idea that businesses think more about the short-term consequences of earthquakes, which include such as threats to life and survival than the long-term consequences these events (Webb et al., 2000). These two possible explanations for the findings in Phase 1 were therefore assessed by a structured measure in Phase 2, again with the same participants in Phase 1.

Phase 2 questionnaire

In the Phase 2 questionnaire, the first question asked the same pool of participants who participated in Phase 1 to rate six main reasons for not carrying out fitting computer restraints that were given by Participants in Phase 1: The computer/server is on floor; We use laptops; Restraints cost too much; Couldn't find supplier; Low on list of priorities; Time frame/waiting to action. For each of these six reasons, they chose one of three options measuring degree of importance (1. not important; 2. secondary; 3. important reason), by circling one of the three. The second question asked participants to rate 2 reasons for not purchasing bottled water, again based on the responses in Phase 1: (We have a water cooler

on site; We have no space in the office) followed by the same three response options (1. not important; 2. secondary; 3. important reason).

The third question tapped participants' perceptions of the long term versus short term consequences of an earthquake in terms of both business and personal harm. The item asked participants to rate four options attached to a single question stem, regardless of whether they completed the two target actions. The question stem 'When you think about the possible effects of an earthquake on your business' was followed by the following four questions:

1. Do you think about the immediate consequences for life, injury, etc?
2. Do you think about the immediate consequences for business losses, etc?
3. Do you think about the long-term consequences for life, injury, etc?
4. Do you think about the long-term consequences for business losses, etc?

Each question was followed by three categories [Not at all, a moderate amount, a lot], of which they could circle one.

This survey was accompanied by a letter thanking participants for participating in Phase 1 of the study, reminding them of the goals of the Study, and summarising the results of Phase 1. The letter explained the purpose of Phase 2, in relating to enhancing the findings in Phase 1. To enhance the return rate, the letter said that 5 of the respondents would be given a \$20 petrol voucher for filling in and returning the questionnaire. The questionnaire and the letter are shown in Appendix 6.

Phase 2 Findings and data analysis

Questionnaires were returned from 63 companies. Participants' ratings of the reasons for not fitting computer restraints and not getting water supplies are shown in Tables 7 and 8. With regard to fitting computer restraints, as can be seen in Table 7, the most important

reasons for not taking this action are that the computer or server is on the floor, they use laptops or it is a low priority. Citing the computer's location on the floor as an explanation for not securing the computer/server suggests that people think that when a computer is on the floor, securing the machine is unnecessary, and won't be damaged because it won't fall from a height in an earthquake. This assumption may be unrealistic, as objects can fly about in a major earthquake even if they have been sitting on a flat surface like the floor. The cost of the actions and the inability to find a supplier are rated as unimportant reasons.

Table 7: Ratings of reasons for not fitting computer restraints (frequencies and percentages). 'No responses' not included.

| | Not important | | Secondary | | Important | |
|---------------------------------|---------------|------|-----------|------|-----------|------|
| | Freq. | % | Freq. | % | Freq. | % |
| Computer/server is on floor | 18 | 29.0 | 13 | 21.0 | 16 | 25.8 |
| Use laptops | 18 | 29.0 | 10 | 16.1 | 14 | 22.6 |
| Cost | 27 | 43.5 | 9 | 14.5 | 7 | 11.3 |
| Couldn't find a supplier | 29 | 46.8 | 8 | 12.9 | 5 | 8.1 |
| Low priority | 20 | 32.3 | 11 | 17.7 | 15 | 24.2 |
| Time/frame or waiting to action | 26 | 41.9 | 14 | 22.6 | 3 | 4.8 |

With regard to obtaining water supplies, as can be seen in Table 8, the most important reason for not obtaining supplies is that they have a water cooler on site, whereas the less important reason is that they do not have the space.

Table 8: *Ratings of reasons for not purchasing bottled water (frequencies and percentages). No responses not included.*

| | Not important | | Secondary | | Important | |
|----------------------|---------------|------|-----------|-----|-----------|------|
| | Freq. | % | Freq. | % | Freq. | % |
| Water cooler on site | 11 | 17.7 | 5 | 8.1 | 16 | 25.8 |
| No space in office | 19 | 30.6 | 5 | 8.1 | 6 | 9.7 |

Figure 1. Ratings of how much they think about immediate consequences of earthquakes for life, injury and business losses.

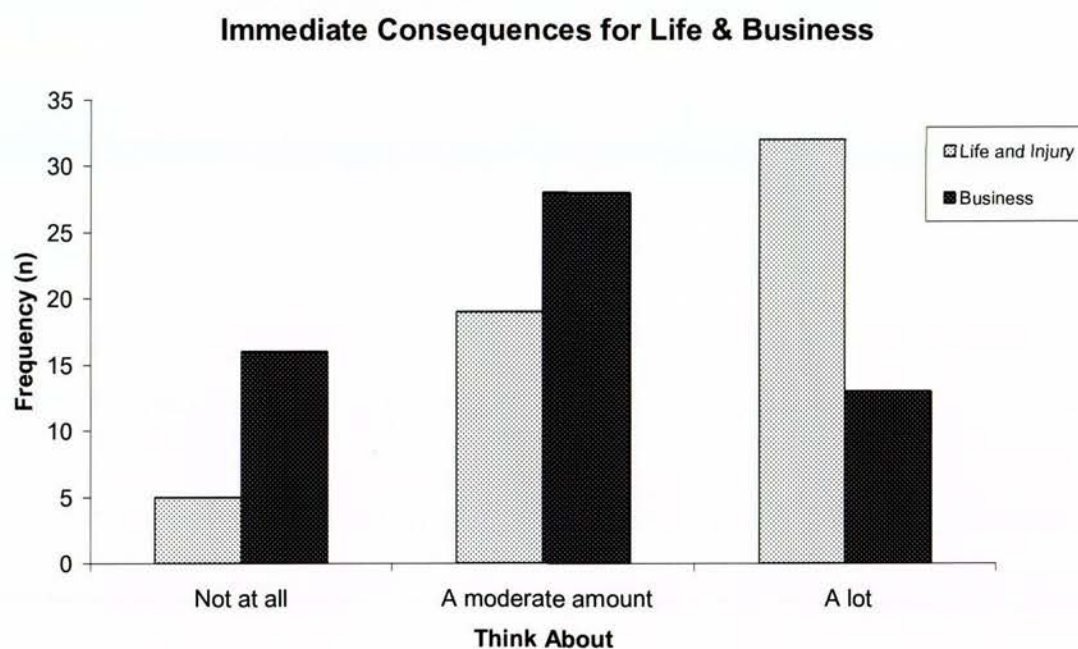
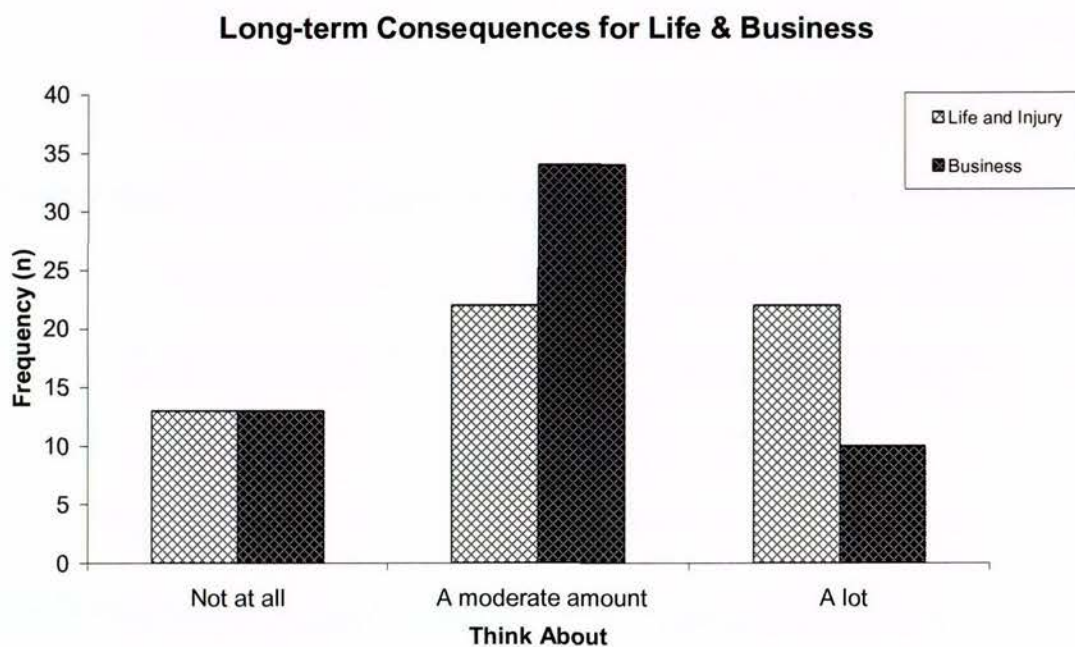


Figure 2. Ratings of how much they think about long-term consequences of earthquakes for life, injury and business losses



Participants' ratings of how much they think about immediate and long-term consequences of earthquakes for life, injury and business losses are shown in Figures 1 and 2. A Chi Square test shows that the differences between business continuity and life/injury losses is significant, $\chi^2 = 13.56, p < .01$. The three categories 'not at all', 'a moderate amount', 'a lot' as measures of how much they think about losses were converted into a three point [1-3] Likert scale, which was analysed by an 2 (time) x 2 (type of loss) repeated measures analysis of variance. The results showed that participants thought more about immediate effects than long term effects, as shown by a main effect for time, $F(1, 59) = 5.64, p < .05, \eta = .09$. In addition, people thought more about life and injury losses than business losses, as shown by a main effect for type of loss, $F(1, 59) = 16.51, p < .001, \eta = .22$. There was also an interaction between type of loss and time $F(1, 59) = 5.06, p < .01, \eta = .08$, showing that people thought more about immediate effects than long term effects only with life and injury losses, and they thought about immediate and long term business losses an equal amount. In sum, they think more about life and injury losses than about business losses, and think more about immediate consequences than long term consequences, although this only applies to life and injury losses.

Phase 2 Summary of findings

Participants' ratings of the reasons for not fitting computer restraints and not getting water supplies are consistent with the qualitative data in Phase 1. The most important reasons for not fitting computer restraints are that the computer or server is on the floor or they use laptops or it is a low priority. The most important reason for not obtaining water supplies is that they have a water cooler on site, whereas the less important reason is that they do not have the space. Thus the main reasons for both actions are that they are seen as unnecessary or they are a low priority. The ratings of how much participants think about immediate and long-term consequences of earthquakes for life, injury and business show

that with both short-term and long-term consequences, participants say they think a lot about life and injury consequences more than business survival, whereas they think a moderate amount about business survival more than about life or injury.

Phase 2 Discussion of findings

The findings in Phase 2 confirm and extend the findings for Phase 1. The ratings of attributions for not carrying out the two target actions are consistent with the qualitative responses in Phase 1 – they involve a combination of seeing the actions as unnecessary or having low priority. Other issues such as cost or difficulty in finding a supplier are secondary. Thus the key factor restraining action is not the financial cost of the actions to the companies, although the cost factor might have more weight if the action was seen as necessary. The issue of seeing restraints as unnecessary may reflect the large number of small companies in the sample, which reflects the distribution of companies in Wellington CBD and the selection of our sample. Large companies are less likely to make the mistaken assumption that data in a server on the floor needs no securing or back up. They are likely to only secure the computer but back up the data in another city on a daily or weekly basis. (Yoshida & Delye, 2005)

There is a clear pattern in the responses showing what participants think about most in relation to the possible effects of earthquakes on their business. They think a lot about the consequences for life and injury more than business losses whereas they think a moderate amount about business losses more than consequences for life and injury. This pattern occurs with both the immediate and long term consequences, although it is strongest for short term consequences. This supports the hypothesis that when people think about the effects of earthquakes on their business, they think about the effects on people's life more than business continuity. This finding is consistent with the finding in Phase 1 that

many more participants took actions that would enhance survival, than took actions that would enhance business continuity, despite the low costs of those actions.

Conclusions

1. In this sample of 200 companies that were randomly selected and did not request to participate, 96 responded at six months and of these, 47 companies reported carrying out some preparedness action in the six month time frame.

2. Many more companies reported getting water supplies than fitting computer restraints. Five companies did select another damage-mitigating action as an alternative to fitting computer restraints, mostly securing filing cabinets or bookshelves. The fact that most companies reported that they did not fit computer restraints suggests that the more positive responses on obtaining water supplies were not an artefact of response bias.

3. The action plans did not lead to a greater level of preparedness than merely giving participants information about the hazards and the benefit of preparedness. Further investigation is required to clarify why the 'action plan' strategy was not effective in this context.

4. Several attributions are given for not completing the target actions. Some indicate that the participants think that an action like securing computers is unnecessary, particularly if their computer is on the floor. Other companies attribute their non-action to the fact that it was (or became) a low priority relative to other concerns.

5. When companies are asked what consequences of an earthquake they think about, they report thinking a lot more about consequences for life and injury more than business losses, whereas they think a moderate amount about business losses more than life and injury.

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Appendix 1 Phase 1 Recruitment phone call

The phone call - what to say – this is the same for both groups

1. My name is Nicolette Fisher. The Earthquake Commission is funding research is on Wellington businesses' preparation for earthquakes, done by a research team at Victoria University. We are aiming to increase business survival if an earthquake occurs.
2. We are testing strategies to help Wellington businesses do two simple preparations.
2. You are one of 200 Wellington businesses which have been selected to participate.
3. Why you should participate?
 - a. We are targeting only two simple actions – storing water & fitting computer restraints (these stop computers flying off in an earthquake & losing its data. They cost only \$20 each)
These two actions cost very little but have a high benefit (Computer restraints were the best predictor of business survival in the 1989 San Francisco earthquake).
 - b. It won't take much of your time – there is one page of instructions to read, and some brochures on business preparation for earthquakes if you want to read them.
Then it's up to you whether you do the two preparations.
 - c. You would have 6 months to take the actions we are targeting, if you want to do them.
 - d. If you participate, we can include you in a list of participating businesses if you wish, even if you do no preparation. We will make this list for our publicity at the end (of the project). - it could be good publicity for your business.
4. If you have already done the two target actions (fitted computer restraints, storing water), you can select another action from a short list I will send to you [*the ERS scale*].

Appendix 2: Letter to group 1 (information-only)

8 August 2006

Attention: Name

Address

Dear Recipient,

Re: Earthquake Readiness Project

Wellington is an earthquake risk zone and earthquakes pose a risk to individuals and businesses. An earthquake in Wellington could lead to a business being closed for months or going bankrupt. However, you can greatly reduce the risk by being prepared, and taking action that reduces harm to buildings, contents and employees.

As you are aware from our recent telephone call, the Earthquake Commission is funding a project to look at strategies for earthquake preparedness with businesses. We really appreciate your willingness to participate in this project.

The project targets two simple low cost actions for companies to take in earthquake preparation:

. *Action 1: Fitting restraints to computers and servers*

In the 1989 earthquake in San Francisco, the most important factor in business survival was the use of simple, cheap computer restraint. Many businesses lost all their records, data, and went bankrupt. Simple computer restraints (approximately \$18 each) could have made the difference to their business survival.

. *Action 2: Obtaining 3 litre supply of water per employee*

If employees are trapped in a building after an earthquake, a supply of water is vital for their survival.

These two simple actions offer a great potential benefit for your company, and we would encourage you to take them. If you have already completed these two actions, or if your business is not dependent on computer data, please refer to the Earthquake Readiness Scale (attached) and select another two actions you would like to target. The programme gives you six months to undertake these two actions. In six months time you will be contacted about progress to achieving the target.

At this point, we would like you to fill out the **Earthquake Readiness Scale** (Attached) to assess your company's current level of preparedness, and send this in the supplied envelope.

Further information can be found in the three enclosed brochures:

General Business Planning (especially p. 17-19), Computer Restraints, Storing Water

Thank you for your participation. If you have any queries regarding the project please do contact us.

Assoc. Prof John McClure, Dr. Ronald Fischer, Dr Maree Hunt, Nicolette Fisher ***School of Psychology***

Assoc. Prof. Andrew Charleson, ***School of Architecture*** (Contact details on accompanying sheet)

Earthquake Readiness Scale [You don't need to identify your company on this sheet]

Please read the following to see which of the actions apply, and circle the corresponding numbers. If you have fitted computer restraints and obtained water supplies, please choose two other target actions from the list and put an asterisk next to them and keep a note of them for your own recall. When you have completed this sheet, please post it back to us in the supplied envelope.

- | | | |
|----|--|--------------------------|
| 1 | We have considered the risk of a major earthquake when deciding to work in the building that we do now. | <input type="checkbox"/> |
| 2 | We have obtained a working torch. | <input type="checkbox"/> |
| 3 | We have purchased a first aid kit. | <input type="checkbox"/> |
| 4 | We have ensured that objects which contain water have not been stored on top of electrical equipment (e.g. a pot plant or fishbowl on top of a television). | <input type="checkbox"/> |
| 5 | We have secured, toxic, corrosive or flammable materials. | <input type="checkbox"/> |
| 6 | We have a supply of essential medicines for illness and allergies. | <input type="checkbox"/> |
| 7 | We have ensured that heavy objects are stored on the floor. | <input type="checkbox"/> |
| 8 | We have obtained a supply of tinned food that could be used in an emergency. | <input type="checkbox"/> |
| 9 | We have accumulated enough tools to make minor repairs to the building(s) following a major earthquake. | <input type="checkbox"/> |
| 10 | We have obtained a working battery radio. | <input type="checkbox"/> |
| 11 | We have arranged the cupboards so that heavy objects are stored at ground level. | <input type="checkbox"/> |
| 12 | We have fastened the hot water cylinder. | <input type="checkbox"/> |
| 13 | We have either strengthened the building(s) to increase its earthquake resistance, or satisfied ourselves that it will probably not fall down in a major earthquake. | <input type="checkbox"/> |
| 14 | We have obtained a working fire extinguisher. | <input type="checkbox"/> |
| 15 | We have put aside spare plastic bags and toilet paper for use as an emergency toilet. | <input type="checkbox"/> |
| 16 | We have kept hallways and entrances clear for access after an earthquake. | <input type="checkbox"/> |
| 17 | We have ensured that the roof will probably not collapse in a major earthquake. | <input type="checkbox"/> |
| 18 | We have securely fastened cupboards with latches. | <input type="checkbox"/> |
| 19 | We have fastened tall furniture to the wall. | <input type="checkbox"/> |
| 20 | We have arranged a place to gather after an earthquake. | <input type="checkbox"/> |
| 21 | We have secured movable objects in the building e.g. computer. | <input type="checkbox"/> |

If you have already fitted computer restraints, can you please say why you did this

If you have already purchased bottled water supplies, can you please say why you did this.

Information Sheet

Contacts:

Nicolette Fisher

Email: nicolette.fisher@vuw.ac.nz

Assoc. Prof. John McClure

Email: john.mcclure@vuw.ac.nz

Phone: 04 463 6047

What is the purpose of this research?

This research will allow us to assess two strategies of enhancing earthquake resilience in businesses.

Who is conducting the research?

We are a team of researchers based in the Schools of Psychology and Architecture. Dr John McClure is coordinating this project. This research has been approved by the University Ethics Committee and is funded by the Earthquake Commission.

What is involved if you agree to participate?

- If you agree to participate in this study, you need to read the accompanying explanation and instruction sheet, which will only take a short time. If you wish, you may also read the enclosed brochures. In six months you will fill in a brief checklist noting any steps that have been made.
- We anticipate that your total involvement with us will take no more than 20 minutes.
- During the research you are free to withdraw at any point before the data have been collected.
- As a token of our appreciation, if you wish to be included, we will include you in a list of participating businesses in a public announcement through the University's information office at the end of the study. This statement will indicate that you participated in the programme but will not give any information about each business' actions in response to the programme or their level of preparedness for earthquakes.

Privacy and Confidentiality

- You will not be identified in the research project or in any other presentation or publication, unless at the end of the study you state in writing that you wish to be included in a list of businesses that have participated in this project to improve business earthquake resilience. The information you provide will be coded by number only.
- In accordance with the requirements of some scientific journals and organisations, the coded data may be shared with other competent researchers.
- Your coded data may be used in other, related studies.
- We will keep the data for at least five years after publication.
- A copy of the coded data will remain in the custody of Assoc. Prof. John McClure.

What happens to the information that you provide?

The data you provide may be used for one or more of the following purposes: The overall findings may be submitted for publication in a scientific journal, or presented at scientific conferences. If you would like to know the results of this study, they will be available approximately the 1st of March, 2007

[Phase 1] by email request to John McClure: john.mcclure@vuw.ac.nz

Consent

Participation in this study is entirely voluntary; you may withdraw your consent at any time, prior to the end of your participation. Completion of the tasks and questionnaire will imply consent.

Assoc. Prof John McClure, Dr. Ronald Fischer, Dr Maree Hunt, Nicolette Fisher *School of Psychology*
Assoc. Prof. Andrew Charleson, *School of Architecture*

Appendix 3: Letter to Group 2 (action plan)

8 August 2006

Attention: Name
Company and address

Dear Recipient,

Re: Earthquake Readiness Project

Wellington is an earthquake risk zone and earthquakes pose a risk to individuals and businesses. An earthquake in Wellington could lead to a business being closed for months or going bankrupt. However, you can greatly reduce the risk by being prepared, and taking action that reduces harm to buildings, contents and employees.

As you are aware from our recent telephone call, the Earthquake Commission is funding a project to look at strategies for earthquake preparedness with businesses. We really appreciate your willingness to participate in this project.

The project targets two simple low cost actions for companies to take in earthquake preparation:

. Action 1: Fitting restraints to computers and servers

In the 1989 earthquake in San Francisco, the most important factor in business survival was the use of simple, cheap computer restraint. Many businesses lost all their records, data, and went bankrupt. Simple computer restraints (approximately \$18 each) could have made the difference to their business survival.

. Action 2: Obtaining 3 litre supply of water per employee

If employees are trapped in a building after an earthquake, a supply of water is vital for their survival.

These two simple actions offer a great potential benefit for your company, and we would encourage you to take them. If you have already completed these two actions, or if your business is not dependent on computer data, please refer to the Earthquake Readiness Scale (attached) and select another two actions you would like to target. The programme gives you six months to undertake these two actions. In six months time you will be contacted about progress to achieving the target.

At this point, we ask you to do two things. First, please complete the **Earthquake Readiness Scale** (attached) assessing your company's current level of preparedness and return it in the self-addressed envelope attached. Secondly, please complete the 'Action Plan' on the following page.

Further information can be found on the three enclosed brochures:

General Business Planning (especially p. 17-19), Computer Restraints, Storing Water

Thank you for your participation. If you have any queries regarding the project please do contact us.

Assoc. Prof John McClure, Dr. Ronald Fischer, Dr Maree Hunt, Nicolette Fisher ***School of Psychology***
Assoc. Prof. Andrew Charleson, ***School of Architecture*** (Contact details on accompanying sheet)

Action Plan Programme

Action Plans have been highly effective in helping people carry out protective actions. When completing the action plan, please specify time, location and responsibility. If you have already completed Action 1 and Action 2 please refer to the Earthquake Readiness Scale to select an alternative action

| Targeted Action | Time Frame <i>When will this happen?</i> | Location | Responsibility <i>Who is responsible for executing the action?</i> | Completed <i>Please tick and date when completed</i> |
|--|--|--------------------------------------|--|--|
| Action 1: Fitting restraints to computers and servers | | <i>Which computers or server[s]?</i> | | |
| Action 2: Obtaining 3 litre supply of water per employee | | | | |
| Alternative Action 1: | | | | |
| Alternative Action 2: | | | | |

When you have filled out this plan, please place in a visible area e.g., on a notice board in the office, electronic organiser of person responsible for achieving targets. Thank you for your participation. If you have any queries regarding the project please feel free to contact:

Nicolette Fisher
Email: nicolette.fisher@vuw.ac.nz

or Assoc. Prof. John McClure
Email: john.mcclure@vuw.ac.nz
Phone: 04 463 6047

Appendix 4: Phase 1: Six month follow-up

15 February 2007

Attention:

Dear XXXX,

Re: Earthquake Readiness Project

Six months ago we invited you to participate in research on helping businesses be prepared for earthquakes and other hazards. The research is funded by the Earthquake Commission. We are examining which of two strategies is better at helping businesses to increase their preparedness for Earthquakes. To simplify this, we are focusing on two cost-effective actions: securing computers (or servers) and obtaining water supplies. We invited you to set a goal of completing these two actions in six months, or if you had already completed these actions, two alternative actions.

We are now following up on whether you have been able to complete these actions in the six month period. We would be very grateful if you could let us know if you have been able to carry out either or both of the two target actions. We realise that this may have slipped your mind or fallen down the list of priorities – but we hope that if this is the case, you will give us a brief idea of why you think this happened. This project is for research purposes (not commerce), and it is just as useful for us to know why people do not take these actions, as it is to know why they do take them.

Please fill in the attached follow-up sheet for the two target actions, indicating whether you have been able to do the two actions and why you did get them done or why you didn't. This task should only take a few minutes. Then please send it back to us in the addressed envelope.

Remember that your replies are anonymous, so your responses can remain confidential.

If we find that one of the two programmes that we are comparing has been more effective than the other, we will offer you the opportunity to participate in that programme, if you wish.

Thank you for your participation. If you have any queries about the project, please do contact us. The conversations that we have had with those of you who have contacted us about this research have been useful and interesting.

Assoc. Prof John McClure, Dr. Ronald Fischer, Dr Maree Hunt, Nicolette Fisher, Emma Scheib

School of Psychology

Assoc. Prof. Andrew Charleson, *School of Architecture*

Contact details

Assoc. Prof. John McClure

Email: john.mcclure@vuw.ac.nz

Phone: 04 463 6047

PS. We are including the original information sheet that we sent 6 months ago, in case you wish to recall the information.

Follow-up check on the two target actions

1. Did you select two target preparedness actions to do over the 6 months (circle one?)
Yes/no

2. If you did not select two target actions 6 months ago, can you tell us why (below)?

Explanation _____

If you did select two target actions, please answer questions 3 and 4.

3. Target action 1. Fitting computer restraints (or alternative action identify) _____

Did you carry out this action? (circle one) Yes/no

Explanation. If you did this action in the 6 months since we contacted you, please say why you did this in the space below. If you did not do it, please say why you think this didn't happen.

4. Target action 2. Purchasing bottled water. (or alternative action identify) _____

Did you carry out this action? (circle one) Yes/no

If you did this action in the 6 months since we contacted you, please say why you did this in the space below. If you did not do it, please say why you think this didn't happen.

5. In our letter 6 months ago, we included three brochures (CDEM Business Emergency Planning Guide, Computer Restraints, Storing Water). Were the brochures a help in motivating you to take actions, or were they unhelpful or unmotivating?

a. CDEM Business Emergency Planning Guide: Helpful / unhelpful. (circle one):

Too much information / Right amount of information / Not enough information / (circle one)

Comment/explain _____

b. Computer Restraints (circle one): Helpful / unhelpful. (circle one):

Too much information / Right amount of information / Not enough information / (circle one)

Comment/explain _____

c. Storing Water (circle one): Helpful / unhelpful (circle one):

Too much information / Right amount of information / Not enough information / (circle one)

Comment/explain _____

Any other comments? _____

What type of business are you? e.g., retail, trade, professional services _____

Company name if you do not wish to remain anonymous _____

When you have filled this in, please put it in the supplied envelope and send it back to us.

The follow-up phone call - what to say – this is the same for both groups

Before starting, make a new column on the spreadsheet and put a tick next to those businesses that did reply and identify themselves, so that we don't ring them.

1. My name is Nicolette Fisher/Emma Scheib. I'm following up on our research on business preparation for earthquakes – we're the research team at Victoria University funded by the Earthquake Commission. Is it possible to speak to the person handling this?
2. We recently wrote to you - to see if you have been able to make any preparations in the last 6 months. Did you receive our letter?
3. We included a short checklist for you to return to us. I'm checking if you have been able to send the one page checklist. Many companies have replied, but I'm not sure if we got a reply from you. Please can you bring this to the attention of the relevant manager or person. *[Some may have returned the form but not identified their business. so we don't know that which ones did.]*
4. We would appreciate it if you could fill in the checklist and send it back. If you [or the person dealing with this] prefer to do it over the phone now, we can do that. It will only take 2 minutes.
5. Even if you haven't done the preparations, it's useful to know from your perspective why these things didn't happen. We're getting really useful information on this from other companies.
6. If you've misplaced the letter, we will send you another one, if that's okay.
7. We really do appreciate your efforts and it would be great to get this information for the Earthquake Commission.

Appendix 5: Attributions at six month follow-up

Q2: Attributions for NOT selecting two target actions at outset *Action Plan Group*

Overseas when initial info arrived. Then put it in the 'to do file' and didn't do it.

Put to the side and never came back to it.

When mentioned it wasn't such a priority, then sat on the backburner before being forgotten about.

Just fell through the cracks, no one person charged with the task.

It was not a high priority for us at that time as we were fairly busy. *1

Busy doing other things.

I apologise but we have been busy and I didn't get the time. I did however replace our water.

Sent before started, had hoped to do water target, just got distracted, not enough time to arrange, hope to put in place at some stage.

Word load meant we didn't have time to organise anything.

Got busy and ran out of time - needs approval from our head office first and got lost in the process.

Can't remember.

Original form mislaid.

No, as person I initiated research with has left (3 months ago).

The person 'responsible' for it was about to re-locate, and though brought it up to her workmates, nothing else was done with regards to the research.

We are a very small business we only one or two staff on at any particular time. Imagining all staff had survived the earthquake I would have a very hard time keeping them on the premises. All of the staff here live less than 1 hours walk away from the store and regardless of obstructions would try to make their way home. We are also located two minutes from a supermarket. We only have one computer which is already secured quite well - although not with the straps from the leaflet. We have been prompted to take our monthly backups off-site though.

We are a small medium size business, no-one specifically responsible for this and thus can be hard.

Only one.

We already have a water cooler with spare supply and we had already assessed our earthquake risk a couple of months prior to this survey. *1

When I filled out the previous form 6 months ago, I bought a large container and filled all items suggested, so I'm ready for the big one, bring it on!

We didn't specifically target these two actions but we have achieved both of them during the past 6 months. This was a result of general discussion around preparedness for our company. We also discussed the actions we would need to take if an earthquake did occur (with respect to conducting business).

Because I work within another firm's premises and they take responsibility for these matters.

Office disruptions.

We didn't receive these 6 months ago.

Q2: Attributions for NOT selecting two target actions at outset Information Group

Quite simply it was a low priority item and hence I never got that far down on my list of 'things to do'.

Doing daily work grind. Preparedness means mentally focussing on something that may happen. Daily work blots it out.

Just didn't prioritise it highly enough to action it.

Busy...work demands...not seen as important.

Had water in place months prior to research participation. Had thought to choose two target actions... had not figured out what to choose, and then forgot about as not a focus point of attention.

Never really got around to it...did think about it...other things took over, the day to day.

Due to constraints on time with running the business and seeing patients it slipped to the "must do some time" pile. Then was not actioned.

Haven't got the time - understaffed and underpaid!

I don't recall going through any paper work - sorry not much help to your survey.

Did not receive information about completing this, only received 'Business Emergency Planning Guide' so completed this, and started our own emergency plan.

I don't think I saw the paperwork.

Dear John, My apologies - I'm afraid due to a change of management your project got lost and we have not started let alone completed any action. Regards, [name supplied], Store Manager.

No, as in process of shifting, so not wanting to do something permanent in current place.

We moved shop to a new location in July of last year, and have finally settled in.

Initial contact that survey was given to has gone on maternity leave.

Decided did not apply as have a one man business which is a safety supply business, *2

...and feels well prepared. *2

Our business is such that anything (like computers) that we lost wouldn't make much of a difference.

Survey was not conveyed to me as Principal by employee: therefore no action taken.

Q3 Attributions for fitting computer restraints by 6 months:

We purchased a new computer which is lighter and a flat screen which is fixed on the desk. **[Action Plan Group]**

Upgrading computers - done as part of this upgrade. **[Information Group]**

Brought new computer/ hard drives are now all on the floor, lightweight, flat screen on desk. **[Information Group]**

Q3 Alternative action and Attributions for completing action: Action Plan Group

| Alternative action | Attribution |
|---------------------------|---|
| Toilet paper, batteries | The information brochures made us think, being on the 3rd floor chances of survival are reasonable if you have the right material. |
| Radio, Torch | We did not secure computers as we did not consider it worth while. We did provide radio, torch, water. |
| Fastened filing cabinet | - |
| Purchased working torch | Although shop has plenty of natural light - during a black out in winter months a torch would be vital in an evacuation or similar. |

Q3 Alternative action and Attributions for completing action: Information Group

| Alternative action | Attribution |
|--|--|
| Secured filing systems, the cabinets. | Main reason because they (the filing cabinets) are high and the server is kept in this file storage also. Want to prevent things falling on top of people. |
| Braced filing cabinets and bookcases | Important from health and safety perspectives. |
| Re-fit the building to Earthquake levels i.e. make the building earthquake resistant. | The owner of the building saw it as protecting his tenants and also a good selling point for the future. The action is still being carried out. The contact person was reluctant to say the research caused this behavioural decision. |
| (Radio) battery dynamo | It was a major item missing from our civil defence kit. |
| We did ensure that all 1st aid supplies were current, stocked waterless hand cleaners and long life led torches. | Re. computer target: our computers are on a mezzanine floor, on the floor under a desk. Restraints would be pointless. |
| Obtaining an emergency kit (first aid kit, radio, torch, matches etc). | Office co-located with personal dwelling so benefits family as well. |
| Got a torch | - |

Q3. Explanation for not fitting Computer Restraints: Action plan group

Computer backs onto wall.

Computers at ground level. Flat screens more stable and easy to reinstate.

After inspecting equipment/shelves etc, I realised this had already been done by our maintenance manager. Shelves, etc were screwed onto the wall. All hard drives for PC's were situated on the floor below the desk.

Portable computers.

Did not do it straight away when reading info - so slipped down the list.

We have information and contacts but have not prioritised following up.

Not a priority (and forgot we were supposed to try and action this within 6 months).

This action had slipped my mind. The office is not our main area of action.

Extremely busy and didn't get around to it.

Office disruptions.

We discussed this at the time but failed to get organised. Since your follow up letter we have contacted the supplier of restraints to request an appraisal, this will get done!

Still on the 'to do list' haven't got around to it.

I looked at the restraints available and nothing seemed to be available for flat screen monitors. Was going to look elsewhere but didn't get around to it.

We obtained a quote however didn't get round to confirming and arranging a time.

We decided to fasten the second computer when we did the office revamp (which has not happened yet).

IT company, things get moved around a lot.

Needs to be organised by head office. Would be good if contacts supplied about who would do this for us.

Um - wasn't likely that they would fall over, given their position, and nature (i.e. Laptop, but agree screens could break.

Computers sitting on floor under desk.

No computer at work place.

Servers are fitted, individuals aren't fitted - no need as we back up every night.

Q3. Explanation for not fitting Computer Restraints: Information group

Got too busy and looked at restraint brochure and thought they looked ugly and was quite expensive.

Same reason for #1 - too easy to put it off.

All our computer equipment is very secure and server is on the floor - not necessary to do any securement (sic).

Have a small computer and suite safe as on top of desk.

Computer sits on floor. Screen is lightweight. Others are laptops.

Slipped down the list of priorities with Xmas and end of financial year.

Too many other high priority things to do.

A laptop is used at home/ LCD screen at work with computer on floor level.

Low on the order of priority.

Time limitations.

It was brought to attention and still waiting for action!

Restraints were to be fitted on arrival at new premises. *3

We are moving offices/ delayed by builders. *3

Moving to new premises - will action in new premises.

Considered low risk.

Cost of computer restraint was prohibitive - option being investigated.

Some of our equipment has restraints. I intended to complete this for the rest of the office but didn't - I think the cost of it was probably why.

We re-evaluated the need to restrain our computers and as they are both on the floor between the desks we thought it was unnecessary. We purchased blankets and a torch instead and a first aid box.

Our server is in Auckland.

Did not receive information about completing this, only received 'Business Emergency Planning Guide' so completed this, and started our own emergency plan.

Q4. Explanation for purchasing water supplies by deadline: Action plan group

We purchased a large amount of water and put in cupboard where it was easily accessible in case water was cut off due to earthquake. Water is essential.

It's good to have on hand in case of a tragedy, e.g., earthquake in case we are trapped etc... and there's no water to drink.

Aware of the importance of keeping water stored for the case of an emergency, for all employees in an inner-city business.

To continue: next to that, we are 'medical' people. A sort of standard/basis on First aid, survival material is 'expected' of us. And reason 3, I'm a women and wanna (sic) make sure life supplies (toilet p) are all taken care of. To provide for people who need help.

Provide us with fresh water for drinking for up to 4-5 days in event of water being cut off.

We had a floor meeting and decided this was really important. We have a good store.

Chilled water dispenser (15 litres) deemed sufficient for four staff.

We keep 1 extra refill of the water cooler now.

Simple to do. Attempted to find a whole earthquake readiness kit but they weren't readily available.

We already have water delivered so added a few extra bottles to keep as reserves.

Easy to achieve.

I went to Petone and filled four 3 litre containers with the Buick street water (from a bore).

It was done as part of over general emergency planning process.

This is part of our regulations and policy for emergency procedures.

To begin to prepare. Couple of clients have a lot of preparation, alerted to not having much!!

Sensible idea. Also use on a daily basis in office to ensure turnover.

Because we thought we had enough bottled water on premises but this project prompted us to recalculate.

We didn't realise that we required 3 litres per person. We changed water and got a bigger container.

We have such terrible water here anyway and I'd hate to be stuck here and have to drink it - selfish reasons I suppose.

In case of an emergency. Plus the water from our tap tastes bad.

Because we have a similar supply/ set up at home.

Q4. Explanation for purchasing water supplies by deadline: Information Group

We now have sufficient (hopefully) water.

I bought water containers and I filled and dated the water. Will replace every 6 months.

In preparation for an emergency as this was identified as a priority.

Sensible thing to have supplies in place.

Use for drinking.

We felt it necessary to cater for staff with food and water should we be stranded.

I work in the basement - if building collapses in earthquake it might be some time before I am dug out - I now have 40 L water.

It was easy, simple and cheap and didn't take long.

Simple to do and of benefit to business and family.

Refilled containers.

We were in the process of setting up an emergency kit.

Purchased a large water cooler for filtered water which is kept full. Not plumbed in!
Reason - staff access.

We were finally able to locate a supplier suitable for our needs.

This is partially completed - have brought 4L to work on the train but really need more bottled water. Main barrier is heaviness of water to carry on public transport.

Q4. Explanation for carrying out alternative to water supplies by deadline.

| Alternative action | Attribution |
|---|--|
| Supplied EQ bags to each desk – contains emergency equip[ment] including water [information group] | - |
| [Bought] store of Food [Action plan group] | Desire to be ready. Spend much of my time working at home as well as out, so wanted to be prepared for family. |
| Arranged a place to gather Food [Action plan group] | At any given time there are at least 45 litres of bottled water on premises. |
| To provide all employees with an emergency pack which has 750ml bottle of water and two muesli bars, and remind them that it is up to them to get more if deplete supplies. [information group] | For civil defence purposes to survive first 3 hours after an earthquake hits. |
| To put shatterproof glass in the storefront doors. [information group] | For the purpose of keeping escape routes safe. |
| Large container for water [information group] | Because I realised that water is an essential thing needed in an emergency. |

Q4. Explanation for NOT purchasing water supplies by deadline: Action plan group

The task of purchasing bottled water for the office was assigned to our office manager. She was to take petty cash and buy from the supermarket. This wasn't done and I didn't follow it up. As we were both advised we were being made redundant, neither of us followed through with this.

Have a water purifier & again needs to be approved by head office.

Haven't yet determined where to store water in office.

Storage.

Office disruptions.

Q4. Explanation for NOT purchasing water supplies by deadline: Information Group

We do have a water cooler.

We already had bottled water and purifying tablets.

Because already had in place, that is have a water cooler and there are always refills in store, which are quite large.

We carry sufficient ... (writing illegible).

We always carry a stock of bottled water as part of our normal purchases of water.

We already have 2x water coolers which are refilled regularly.

We do not have the room for storing bottles of water. We have asked cleaner not to put coloured detergent in toilets and will use this water if necessary.

Storage space at our office is limited... *4

... coupled with not getting organised. *4

Hardly thought about it after agreeing it was worthwhile and prudent.

Apathy.

Did not receive information about completing this, only received 'Business Emergency Planning Guide' so completed this, and started our own emergency plan.

Q8. Other Comments: Action plan Group

Finding people within an organisation who are going to invest time into actioning (sic) these things is the key. It think by associating earthquake preparedness with something

like first aid; then you might attract the right people who are motivated to do the necessary things.

It was useful having this brought to our attention. Thank you.

It really made me think what if? So now I prepared the office just in case, e.g., water storage.

I think it's a good idea... very important but can be challenging to actually do something!

Only that it prompted me to do something I had been thinking about doing. A good reminder.

Very good thing to do make people aware, everyone should have to do it!

Office thrown into major disruption due to constant medical requirement for a person. When situation stabilises will address above. Thanks.

There might still be some things to work on but we would like to thank you for the awareness and ideas you have given us. Much appreciated!

Projects to improve awareness concerning earthquakes and disaster management worthwhile. Trade associations can help extend communications to members.

Should just provide us with a contact to come and do all this for us. Set up an appt.

To be honest we didn't have a good look at them.

Very easy to achieve.

I can't fairly answer question 5 as I always intended to read them, but never did.

This project has served as a RE check of preparation done previously.

Apologies for not dealing with this survey, it is of course very important. We have covered most things through our work with "Securo", who assist with our "OSH" requirements. Happy to help in any future projects.

Q8. Other Comments: information group

Appreciate the work involved in this research. Well done.

We appreciate your approach but do not want to continue.

Made me realise I should actually do something! Nagging may be the way to go...reminders are a good idea, public campaigns? Publicity, monthly reminders, television, newspaper feature articles perhaps a way to get the message across.

Agreed to participate as think the research is a great idea, provides a motivation to act.

Think the research is a good idea.

Has a particular concern with the target action (item from ERS) of securing a hot water cylinder - does not find this relevant as these are often tightly secured anyway.

Found nature of the research more intellectual than practical.

[I] Think the research is a jolly good idea, makes people aware.

I found all the brochures very interesting. It was all good information to take on board.

N.B. In case of disaster where are your computer back ups and emergency plans stored - are they safe?

Having supplies in a workshop environment is a good idea but what about people who operate mobile services - could be caught out away from these supplies.

All informative and motivating, until five minutes pass and you forget to go to the supermarket specially, or forget to buy water when at supermarket, or 'must remember to buy brackets for bookcases' etc. And never quite manage it.

This project has coaxed our staff and my partners practice into an emergency management plan. We've got radios, meeting places, etc.

I lack a sense of urgency about the inevitable 'big one'. I know it will happen one day, it just seems too far off to worry about (although it may well be tomorrow!).

The best the business has in place is an earthquake kit which consists of equipment only but as yet no food or water.

Appendix 6: Phase 2 letter and questionnaire

25 July 2007

Re: Earthquake readiness project

Name and address [maximum 3 lines?]

Dear XXXX

A couple of months back, many of you sent us your feedback on the earthquake readiness research project, funded by the Earthquake Commission. We want to thank you for participating in the project and we'd like to tell you the results.

We contacted 200 companies representing a cross-section of businesses in Wellington, and divided them into two groups of 100. With both groups, we proposed that to enhance your company's resilience for an earthquake, you take two actions within six months: get water supplies (a survival action) and fit computer restraints (a damage mitigation action). If you had already had done these two actions, you could choose an alternative action from our list. We included brochures on business preparedness, computer restraints and water supplies.

There was one key difference between the two groups – with one group we sent only the letter and the brochures, whereas with the second group we also suggested that you make an action plan specifying when the actions would occur, where they would occur, and who would be responsible. We included this action plan because research in other domains shows that people who make action plans are more likely to carry out a goal.

So what did we find? We got returns from 96 companies. About half of these companies had taken at least one action in the 6 month period. There were some differences, but not those we expected. We expected that more businesses in the action plan group would do preparedness actions, but there was little difference between the two groups. However, many more businesses got water supplies (39) than fitted computer restraints (3). This finding fits with other findings that people take actions that enhance survival more than actions that mitigate damage. Some companies who already had water supplies and computer restraints chose other actions, and follow-up on these showed the same pattern.

We also solicited your explanations for why you did or didn't carry out the actions. And these were also interesting. As a final part of this project we are asking if you would rate the various explanations given by companies for the actions that they didn't take in phase 1 of this project (see the next page). We'd like to know how much these reasons also apply to you. It would be great if you could fill it in and return it in the stamped envelope. We will give 5 companies who fill in this very short survey a \$20 petrol voucher.

Thank you again for helping in this research by participating.

Assoc Prof John McClure, Dr Ronald Fischer, Dr Maree Hunt, Emma Scheib *School of Psychology*
Assoc. Prof. Andrew Charleson, *School of Architecture* (Contact details on accompanying sheet)

Short survey on reasons for not carrying out earthquake preparations

[We will give 5 companies who fill in this very short survey a \$20 petrol voucher.]

A. Reasons for NOT carrying out fitting computer restraints [if you did not].

Circle one of the three options for ALL reasons.

1. Computer/server is on floor: not important / secondary / important reason
2. We use laptops: not important / secondary / important reason
3. Restraints cost too much: not important / secondary / important reason
4. Couldn't find supplier: not important / secondary / important reason
5. Low on list of priorities: not important / secondary / important reason
6. Time frame/waiting to action: not important / secondary / important reason

B Reasons for NOT carrying out purchasing bottled water. [if you did not].

1. Have water cooler on site: not important / secondary / important reason
2. No space in office: not important / secondary / important reason

C. Please rate these 4 items regardless of whether you did the 2 actions.

When you think about the possible effects of an earthquake on your business,

1. Do you think about the immediate consequences for life, injury, etc?

Not at all, a moderate amount, a lot. [circle one]

2. Do you think about the immediate consequences for business losses, etc?

Not at all, a moderate amount, a lot. [circle one]

3. Do you think about the long-term consequences for life, injury, etc?

Not at all, a moderate amount, a lot. [circle one]

4. Do you think about the long-term consequences for business losses, etc?

Not at all, a moderate amount, a lot. [circle one]

Thank you! Please send this back to us in the stamped addressed envelope. If you wish to be in the draw for a \$20 voucher – you will need to send a business card or equivalent. If you would like to know more details of the results, you will also need to do this.

Contacts:

Emma Scheib

Email: emma.scheib@vuw.ac.nz

Assoc. Prof. John McClure

Email: john.mcclure@vuw.ac.nz

Phone: 04 463 6047

LAYPERSON'S ABSTRACT

Despite the significant risk from earthquakes in New Zealand, many citizens and companies do not prepare for these hazards. Building regulations ensure that new buildings meet the required standards, but most other steps require voluntary actions. Most interventions to encourage preparedness focus on information about the hazard, and have limited effectiveness. In other spheres, using an action plan has been an effective method of increasing preventive actions. Action plans specify a deadline for the action, a person responsible for the action, and a location for the action plan. This project applied action plans to business preparation and tested whether earthquake hazard information accompanied by an action plan led more companies to take two low-cost preparation actions than the same information without an action plan. 200 Wellington companies were given a six month time frame to complete two actions: a survival kit action (getting water supplies or alternative), and a damage mitigating action (obtaining and fitting computer restraints). Half of the companies received the action plan intervention. After six months, 39 of the 96 companies that replied had obtained water supplies but only three had fitted computer restraints. There was no difference between the action plan group and the information-only group. The companies gave attributions (reasons) for their actions or non-actions. The follow-up study obtained participants' ratings of attributions for their failure to complete the target actions and ratings of how much they thought about the immediate and long-term consequences of earthquakes for business survival and for life and injury. For both immediate and long-term consequences, companies reported thinking more about life and survival more than business continuity. This finding is consistent with companies' higher adoption of survival actions than mitigation actions. The findings do not show that use of action plans enhances hazard preparedness.