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# Habitability of Homes after a Disaster

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## Summary

**Following disaster, keeping families in their homes, or at least in their communities, is preferable to the alternative of evacuating them. As well as reducing temporary accommodation and evacuation demands, this focus minimises the stress and trauma for the family. Communities need people in order to commence the recovery phase - children to go back to schools, shoppers to engage retailers and employees to staff factories and offices – and people need to be part of the community during rebuilding in order to retain a psychological connection.**

**In New Zealand, reliance on insurance payouts (or charity for the minority not insured) and the efforts of various agencies to extend benefit programmes not specifically designed for disaster relief (or to design ad hoc disaster relief benefits) does not facilitate concentration on those most drastically affected – people driven from their homes.**

**Identifying dangerous or insanitary homes following a disaster, applying temporary or rough repairs and keeping families in their homes, or returning them there as soon as possible, seems a sufficiently important element of disaster response and recovery to warrant a special focus by a national body with plans and resources to act but at present there is no such focus and no such body.**

**The Earthquake Commission, with its financial and human resources, could be transformed by a change to its legislation into a Natural Disaster Commission with the focus described above, thereby finally replacing its 1940's era model with one that better meet the needs of today's New Zealand families.**

**Keywords:** Housing, Community, Recovery, Habitability, Resources

## Introduction

One of the lessons from the big 21<sup>st</sup> century disasters throughout the world is that it is far preferable in the interests of community survival and recovery - and of the victims themselves - to support residents in place rather than to evacuate them. A goal now

unanimously acknowledged as socially and economically desirable is to keep as many people as possible in their homes following a disaster.

Of course it may be necessary to evacuate people out of harm's way. In 1987, 3,000 people downstream of the Matahina Dam were evacuated after the magnitude 6.6 Eastern Bay of Plenty earthquake. What needs to be minimised is transferring large numbers of people from emergency shelter to temporary accommodation instead of back to their homes.

Displaced families are at high risk of permanent harm and communities lose the most important ingredient for recovery – their people. Evacuated survivors of natural disasters may become widely dispersed and then, often, left without further targeted assistance. Citizens supported in place can recommence work, support local retailers and trades people, send their children back to school and undertake all the activities that enable a community to get back to normal as quickly as possible. Evacuees who have not helped rebuild the destruction may become psychologically dissociated from the community, leading to their not returning or subsequently departing in extreme cases.

Welfare agencies in New Zealand co-ordinate their efforts to provide emergency shelter and necessities of life with specific assistance programmes and benefit structures designed for normal times rather than post disaster situations. No single agency is tasked with providing for the longer term recovery needs of those who lose their homes through a natural disaster. Ongoing assistance is limited to the payments by private sector insurance companies for temporary accommodation expenses for a limited period. (The Ministry for Social Development can provide civil defence relocation and re-establishment grants to low income households if sanctioned by Cabinet. These, of course, may actually encourage permanent relocation).

A primary requirement after a disaster is for the maintenance of, or a speedy return to, habitability of as many homes as possible, whilst caring for those people who are displaced. However, there is a clear gap between the process of identifying homes that are unsuitable to continue to be lived in and helping households recover from this disaster and get back to normal life. This affects those people most in need and a core government responsibility – the safe housing of citizens

There are at present legal or statutory obstacles to efficient performance. A long term Foundation for Research, Science and Technology funded study led by Canterbury University, called “Resilient Organisations” has, as one of its objectives, a review of how legal and regulatory frameworks either facilitate or hinder reconstruction projects or programmes.

Also notable is the wide-ranging role expected of the territorial authority; it must identify both its regulated responsibilities and its moral obligations to a stricken community. Different TA's will take varying views of the latter. TA's must involve themselves in both the requirements for community recovery and the needs of individuals and families.

## **The Challenge**

Parts of the coastal town of Matata in the Bay of Plenty were engulfed in mud, flood waters and water-borne debris after heavy rain on 17 May 2005. Homes were evacuated

and several houses were swept away. Tauranga, Whakatane, Matata and other parts of the Bay of Plenty were all hit by storm and floods in 2005.

According to local authority disaster recovery updates issued through the Ministry of Civil Defence and Emergency Management, three hundred houses had to be evacuated and 42 were later found to be permanently uninhabitable.

Evacuated families spent a total of 30,559 days in temporary accommodation.(either found for them or by them).

**Table 1.** Bay of Plenty storm 2005 – Temporary Accommodation Requirements

Period in temporary accommodation	Number of households permanently re-housed	Number of households in temporary accommodation
Up to 60 days	0	293
60 – 150 days	71	222
150 – 200 days	140	82
200 – 300 days	38	44
over 300 days*	35	9

\* Details not available after 16 March 06 (303 days after the event)

Even events of this moderate scale involve significant disruption to the lives of hundreds of people. In July 2007, flooding in Northland and Otago, and tornados in Taranaki, rendered almost 100 homes uninhabitable, many for more than two months. Before that, the far north had been struck by a storm (in March) that displaced 20 families, 7 of whom were still in temporary accommodation 3 months later.

It has been 77 years since New Zealand had a disaster approaching “large scale” and that was the Hawke’s Bay earthquake and subsequent fires of 1931. 258 people died, 400 were hospitalised, and 2,500 others suffered injuries of some sort, these mainly from a population of 16,000 in Napier and 11,000 in Hastings.

A refugee centre was set up in Nelson Park and evacuation of 6,700 people commenced within a couple of days. Another 2,000 or so left of their own accord. Relief camps were set up elsewhere. 8,000 people eventually passed through the Voluntary Aid Detachment facility in Wellington, with many being sent to the South Island.

Some people tried to avoid evacuation and moved back to their houses “prompting stern warnings about the health risks”.

Every house in Napier was damaged in some way with the Government eventually providing assistance for repairs to 8,500 houses. A decision was made by an especially

legislated commission initially to repair one chimney per house so they could become minimally habitable as fast as possible. While restoring essential services and repairing homes took priority, it was months before many people could return and years before much of the cities was rebuilt.

Some statistics from recent disasters around the world:

- Hurricane Katrina, Southern USA and Caribbean, 2005

Category 5 hurricane.

1,836 dead.

Thousands injured.

Around 400,000 residents left their homes.

134,000 houses lost or damaged.

200,000 people have not returned.

Relief agencies continue to work on recovery.

- Kashmir earthquake, Pakistan, 2005

Magnitude 7.6.

74,500 dead.

106,000 injured.

Tens of thousands of homes destroyed and damaged.

3.3 million homeless.

Relief agencies continue to work on recovery.

- Indian Ocean Earthquake 2004 (the Boxing Day Tsunami)

Magnitude 9.3.

230,000 dead or missing.

Tens of thousands of homes destroyed.

1.69 million people displaced.

Relief agencies continue to work on recovery.

Common features of these disasters are:

- Homes and whole areas rendered uninhabitable for a time
- People made homeless
- Huge demand for temporary accommodation

New Zealand may claim better standards and response plans than these countries' but such plans are not infallible. Nor does a smaller and less vulnerable population make us immune. It is a matter of scale and degree.

Wellington is the most vulnerable of the larger urban areas to earthquakes. Rupture of the Wellington fault is expected to be associated with a magnitude about 7.5 earthquake at a depth of less than 30 km. The average recurrence interval for such an event is thought to be about 600 years and the probability of it occurring in the next 50 years is estimated at 11 per cent.

A scenario for this event has 500 people killed and 6,000 injured. Uplift of the order of 1 metre occurs along the line of the Wellington fault and horizontal displacement is as much as 4 metres.

The most severe shaking is MM XI with slightly less severe intensity within the central business district of the city. Most streets in the Wellington CBD are blocked by debris and access to some 100 buildings is restricted because of jamming of lifts or damage to stairs.

Liquefaction of soils, rockslides and landslips occur at several locations. Throughout the region a significant proportion of old brick and masonry buildings have been badly damaged and some have collapsed.

Housing stock throughout the area has incurred serious damage. Some houses have been destroyed and thousands more are uninhabitable through either damage or lack of essential services. Some apartment buildings are also uninhabitable. A further 40,000 properties have incurred lesser damage to either the dwellings or the contents or both.

Elements of the region's infrastructure have suffered serious damage and some services will be restricted for many months.

Reconstruction will take at least four years. The effect on people's lives is profound.

Apart from the tragedy and trauma associated with death and injury, thousands of people are confronted with habitability problems. Perhaps 35,000 people are without shelter, at least for several nights.

Where they would all go and how long many would be in temporary shelter are problems that have not yet been confronted.

## **What Happens Now**

This section gives an indication of what entities like territorial authorities (TA's) and Civil Defence Emergency Management (CDEM) Groups face following a significant disaster event.

### **The First Three Days – Emergency Response**

In the first three days, search and rescue activities continue even though the disaster may be ongoing, e.g. aftershocks or sudden building collapses, adding to the terror and chaos. Survivors rely on their emergency supplies and implementation of their own plans. This includes disposal of waste (legally or illegally). Information is disseminated on how to cope until assistance arrives. This will include treatment of dead bodies and the injured, health threats, conservation of water and what is being done to help.

Fatalities and injuries, dangerous buildings and disrupted access, are dealt with whilst gathering information and intelligence about the conditions of lifelines, transport infrastructure, casualties and resources. Areas are checked for safety e.g. presence of hazardous substances, and land stability threats.

Attempts are made to get access to all suburbs and rural areas and to ensure all houses' occupants are accounted for. An initial ("drive by") assessment of the built environment for usage and safety is undertaken.

States of Civil Defence Emergency are declared under the Civil Defence and Emergency Management Act (2002) if TA's / CDEM Groups deem it necessary to acquire the additional powers such a declaration bestows.

Insurance companies and the Earthquake Commission (EQC) gather information and intelligence and commence resource planning to put their own catastrophe response programmes into effect. Claims can be registered but concentration will be on preparations for coping with the expected demand.

Central government seeks information to establish the extent to which it should become involved.

Charity appeals and mayoral funds are set up.

The news media concentrate on casualty numbers, search and rescue efforts, the heroism of emergency service personnel and tales of miraculous survival.

### **The Next Ten Days – Coping with Disruption**

During the next ten days, search and rescue and other emergency services wind down.

Potable water must be provided if evacuation is to be avoided. Collection from Council temporary supply arrangements will be replaced by mains pipes supply as soon as possible. Temporary arrangements may last many weeks (over 30 days) with risk of local water running out. TA's and CDEM groups may have to manage rapid evacuations for public health safety.

Collection and disposal of bagged waste and other debris / rubbish commences. Management of hazardous substance waste becomes a priority.

Emergency shelters are set up; limited mass shelters are made available, e.g. maraes or neighbours'/ friends' houses; billeting arrangements are set up within or outside the area.

Co-ordination of critical resources by regional and national authorities is needed to support local activities. Central government agencies support local activities including setting up help lines through the National Welfare Recovery Co-ordination Group. Government agencies and other support services draft in additional resources to cope with work loads.

Volunteers, either spontaneous or organised, start to arrive, requiring management and control. Management, co-ordination and distribution of donated funds and materials become important tasks.

Rapid buildings safety surveys by engineers and builders are needed to ascertain the extent of damage, further hazard, habitability and security situations, and whether homes

can remain occupied or be restored to minimum standards with shoring or temporary repairs.

TA's will have to rely on their own staff, any "borrowed" from other TA's and planned or unplanned recruitment of builders. There is an obvious haphazard nature to this. A tagging system is employed to denote structures safety surveyed and those assessed as unsafe or uninhabitable. If resources are available, unsafe structures are taped or fenced off. Urgent demolition and removal of debris may be required for safety, precautionary or health reasons. Structures are temporarily shored up or "roughly repaired" to enable continued habitation. Rough repairs to enable continued habitation raise issues of their own, including standards, rework, time limits, etc. Resource, decision-making, insurance and management / control issues will arise.

More detailed inspections of lifelines, vital transport infrastructure and other critical facilities are initiated, and they are made safe, in accordance with plans and crisis management. School and child care centres are included. Structural engineers, building services and geotechnical engineers will be required.

Insurance companies and EQC set up field offices close to the disaster area, bring in loss adjusters, and commence damage inspections (starting with general area inspections to assess access and local needs).

Temporary (as opposed to emergency) accommodation is sought on behalf of families whose homes will not be habitable for some time. Reliance is on Housing NZ units, vacant houses and caravans (including owner-occupied tents and caravans). In a large disaster these resources will be overwhelmed.

Health authorities take actions designed to prevent the outbreak or spread of disease.

Information is disseminated about

- rubbish and sewage collection
- water supply arrangements
- restoration of other services
- emergency funding
- shopping and transport capacity
- insurance claims and assessment timetable
- how to obtain assistance from government agencies

The news media cover the clean up, "human interest" angles like the fate of pets, people feeling neglected or let down by authorities, perceived disorganisation and any miraculous survival stories. Victims' shock, bewilderment and terror are replaced by frustration, anger and escalating expectations of a return to normality.

### **The Next Ninety Days (and Beyond) – Striving for Normality**

Allocation, direction and prioritising of resources become critical. Restoration of services, home reoccupation, living support, funding and assistance information need to be addressed, with help from special monitoring and support groups.

Water supply and sewage systems are restored to workable level but final repairs may take a long time.

Homes become suitable for re-occupation once they are cleaned and rubbish removed, power and telecoms are restored, they are made weather tight and “rough” or final repairs are done.

Temporary accommodation needs, which have been a major challenge, slowly reduce but there will be a requirement for some families lasting several more months or even years. Kitset / portacabin or other low cost housing (initially with communal toiletry and feeding) would help but there is no organisation specifically responsible for providing these. Other initiatives not in the ambit of any one entity are the provision of caravans on site for families while their homes are repaired, and dormitories for workers at local businesses while their families remain outside the area.

Temporary accommodation for the imported labour force must be provided.

Government assistance packages are announced and agencies gear up to put them into effect. Grants to evacuees from the Ministry for Social Development may be available, as well as other funding for qualified households. Special attention needs to be given to vulnerable people like young families, the old and infirm, the disabled and solo parents.

As time goes on:

- Retail payment facilities become operational and people’s savings become accessible.
- Schools and child care centres become usable at least for limited operating hours before full operating hours can be approved.
- Access to work places can be gained. Restocking takes place and production and customer servicing can be resumed.
- State highways can be used, then city and rural roads. Public transport restarts.
- Lifelines return to normal service.
- Appeals funds continue to be dispersed where needed.

Insurance companies and EQC continue to inspect damage and settle claims. Lack of resources for repairs (labour, equipment and material) may become a source of delay and frustration. Social and personal needs of victims have to be recognised by those dealing with them over claims for property damage. Stress levels for both victims and insurance representatives will be high.

Clearing and disposal of debris, including unwanted donations of goods and health hazards like asbestos materials, takes place. Transportation and land fill requirements are a challenge.

Information continues to be provided on such matter as:

- the water restoration timetable
- progress of insurance settlements
- weather tightness and “rough repairs” timetable
- final repairs timetable



- schools, main workplace access
- road and public transport availability

The news media concentrate on perceived delays and mismanagement, frustrations with progress (including lack of information), results of poor planning or co-ordination, poor application of government or charitable assistance, the plight of the uninsured or other vulnerable people and debates about the future of the community. People become frustrated with obstacles to their attempts to return to normal. Tolerance levels are not high.

## **The Rebuilding Process**

Housing issues will be of major concern following a large disaster. The available resources will be inevitably over-whelmed. There may be hundreds of homes deemed temporarily or permanently uninhabitable, with thousands of people homeless and in need of temporary accommodation.

The first three days after a disaster will be primarily about human safety i.e. dealing with fatalities, the injured and the others who have survived but have damaged houses and compromised essential services. Of course authorities will try to provide emergency shelter as best they can and people will be required to take initiatives themselves. However, quickly a phase is entered when the authorities must start making real progress on getting the recovery underway.

The requirement after a disaster is for the maintenance of, or a speedy return to, habitability of as many homes as possible, whilst caring for those people who are displaced.

The first stage of the rebuilding process is to take whatever steps are necessary to secure structures for human occupancy. Emergency repairs mitigate further losses and contain costs; they allow victims to stay in their homes, stabilising neighbourhoods and reducing outlay on temporary living expenses.

New Zealand's recent experience from several disaster events indicates a number of gaps in the assistance provided to householders who are victims of natural disasters. Most of these problems arise when people have to evacuate their homes.

- Under Section 124 of the Building Act, local authorities may certify that a house is dangerous or insanitary and cannot be occupied. Householders therefore must evacuate. Reoccupation of the property is a somewhat muddled process. Householders are required to present to the TA a report from a suitably qualified expert that certifies the home habitable once more. Frequently, there is an assumption by householders and local authorities that it is for insurance companies or EQC to provide such a certificate or even make the decision, but this is not so.
- Whilst response organisations may make arrangements for emergency accommodation for evacuees, those who require longer term temporary accommodation tend to be left to their own devices. When numbers have been

manageable, agencies like Housing New Zealand have been able to meet demand, but plans to deal with the thousands of long-term displaced people who could be a feature of a major disaster are assumed, mostly erroneously, to have been made by TA's.

- Private sector insurance policies covering home contents usually contain an extension for temporary accommodation expenses. These are limited by time or as a proportion of the total sum insured and, for long-term cases (for example, those having to wait for a house to dry out after a flood), the extension is insufficient, and householders must meet further costs of staying in temporary accommodation themselves.
- In some cases, returning a home to an acceptable standard of health and safety would not involve a great deal of work. Temporary repairs may be sufficient to allow a family to remain in its home. Resources of labour, materials and equipment would need to be marshalled and managed if an effective programme of temporary or urgent repairs were to be in place, but the required planning seems to be outside the scope of any agency's responsibilities.
- There is anecdotal evidence of an increasing number of family homes that are uninsured. There is no agreed policy on dealing with uninsured property owners. They must be handled in a way that ensures a minimum standard of shelter and assistance without discouraging the purchase of insurance by the majority.

The current EQC scheme provides financial compensation for damage caused by some natural disasters but not others. In the cases of storm and flood the scheme is only partially operable (to cover loss or damage to land). In this respect the scheme has not kept up either with developments in the insurance market or in civil defence legislation. Insurance policies nowadays insure against any accidental damage, rather than a list of named causes. The Civil Defence and Emergency Management Act (2002) takes an "all hazards" approach to civil defence. Thus the consequences of misfortune have been given priority over its cause, but for EQC, cause is still paramount.

Once the cause of the damage is identified, and it is one that is listed in the Earthquake Commission Act (1993), EQC pays for all damage, subject to a small excess (claimant contribution). A revised scheme covering all forms of natural disaster instead of some, but restricting eligibility only to those whose homes have been rendered uninhabitable, would fill gaps and meet needs currently left to chance.

Preliminary analysis shows the cost of such a scheme is comparable with that of the current one. Since 1997, just under half the commission's total claims expenditure on dwelling damage of \$79 million was on claims exceeding \$50,000 each. Even if total liability increased by one third, EQC's capital and reserves of \$5.6 billion, and income of \$400 million per year, are adequate to cope with the financial strain of the proposed new scheme.

The planning, training and operational skills EQC staff have developed over the past decade could be utilised under a new scheme to assist TA's with resource requirements for urgent residential habitability assessments and temporary repairs aimed at keeping

the maximum number of victims in their homes. EQC could assist those who are made homeless by working with other agencies like Housing NZ, TA's and the Ministry for Social Development and by providing temporary accommodation, including its importation and construction, if necessary. This assistance would be aimed at getting people back into their homes (or other permanent accommodation) with a minimum of delay.

The new scheme itself could cover the costs of:

- Temporary repairs to enable dwellings to remain occupied or be re-occupied as soon as possible. These temporary repairs would have a finite life, under the control of the TA. This would apply to all dwellings, whether insured or not.
- If contents insurance is carried, an immediate fixed-sum grant to families made homeless, to tide them over the initial period of uncertainty and need.
- If they are insured, reinstating dwellings to their pre-disaster state, including bringing up to the latest code requirements, those parts that require repair. If not insured, dwelling would be repaired just to a minimum standard of habitability (i.e, the temporary repairs would be made permanent).
- If the dwelling is insured, reinstating and protecting a stable building platform on damaged land, including access to a standard equivalent to the pre-disaster condition.
- If they are insured, permanent re-housing of people whose homes have to be abandoned or demolished.
- If they are insured, the cost above that met by insurance policies of accommodating displaced people until they can return to their homes or are permanently re-housed.

New Zealand is well-prepared for disaster, although the fact that we haven't experienced a large disaster for three generations means it will come as an awful shock. And it will inevitably be overwhelming – of victims, communities, services, and resources – and recovery will take longer than we dare imagine.

There are good systems in place. There are organisations and people tasked with responsibilities for emergency response and recovery. And they will do their best. Yet a review of the management of people and shelter following a disaster has led me to conclude that we do not have the necessary focus on those among the most badly affected – families who lose their homes.

That focus could be taken by EQC if its legislation were changed to allow this. The contention of this paper is that it is time to move on from the farsighted initiative of the post World War II politicians who conceived the Earthquake and War Damage Commission and transform its successor into a Natural Disaster Commission with a mandate to meet the needs of New Zealand families living in the new millennium.