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FUTURE CONTINGENCIES

2. SOCIETAL DISASTER

A Report to the
COMMISSION FOR THE FUTURE

by

A.R. PARR

April 1982
Wellington, New Zealand

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A SOCIOLOGY OF DISASTERS AND THE FUTURE

A Report to the

COMMISSION FOR THE FUTURE

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A.R. Parr

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COVER

Refugees from the 1931 Hawke's Bay earthquake (from D. Scott, Inheritors of a Dream: a Pictorial History of New Zealand, Riddle, 1962, p. 141).

CONTENTS

(1) "Global Future : Time to Act", Report to the President on Global Resources, Environment, and Population, p ix (Council on Environmental Quality, US Department of State, 1981).

(2) "The Global 2000 Report to the President : Entering the Twenty-First Century", vol 1, p1 (Council on Environmental Quality, US Department of State, 1980).

(3) Lester Brown in The Futurist, vol 9, 1975, p122.

(4) Rt. Hon. B. Talboys Speech to the United Nations General Assembly, 10 October, 1977.

(5) This is recognized, for example, in the NZ National Party's 1975 General Election Policy (Para 3, Policy number 32, on National Development).

(6) Heinemann New Zealand Dictionary (Heinemann, 1979).

(7) "Yearbook of World Problems and Human Potential", ref. 3561 (Brussels : Union of International Associations - Mankind 2000, 1976).

PREFACE TO THE 'FUTURE CONTINGENCIES' SERIES

The next few decades are a period about which it is much easier to be cautious and reserved rather than welcoming. Recent reports from a number of major institutions including the United Nations and the World Bank have persistently sounded a warning. The 'Global Future' Report has summed up the position as follows:

> Severe stresses on the earth's resources and environment are apparent. With the persistence of human poverty and misery, the staggering growth of human population, and ever-increasing human demands, the possibilities of further stress and permanent damage to the planet's resource base are very real. To reverse the present trends, to restore and protect the earth's capacity to support life and meet human needs, is an enormous challenge(1).

The world in 2000 is depicted by most futurists as being significantly more crowded, more polluted, less ecologically stable, and more vulnerable to disruption than the world we live in now - if present trends continue(2). But future resource impoverishment, environmental degradation, and soaring population growth are not a new discovery. What the recent reports have emphasized, however, are the accelerating pace and scale of the problems, and their interrelationships.

Accumulating evidence from around the world suggests that "we may be on the edge of one of the greatest discontinuities in human history - economic, demographic, political"(3). The New Zealand Foreign Minister has commented that "All of us, I think, can feel in our bones that in its economic, no less than its political condition, the world is not many steps away from chaos"(4).

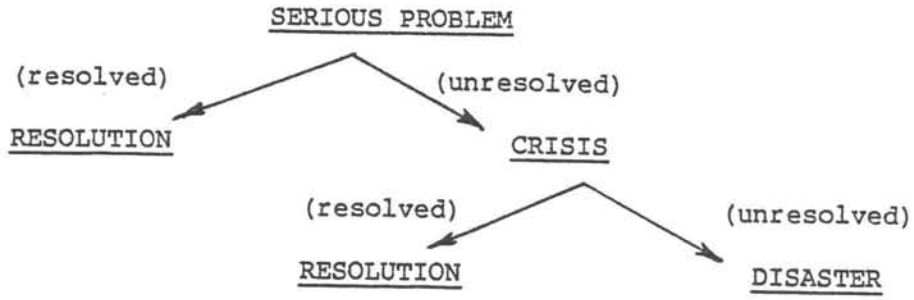
One of the most important functions of the emerging discipline of futures studies is to call attention to possible future disasters(5). The intention is of course to alert policy makers and others so that mitigating steps can be taken.

What is a disaster? A New Zealand dictionary (6) defines a disaster as "a greatly unfortunate accident or event" (DIS = 'not or without' + Italian ASTRO = 'a lucky star'). This is a useful starting point, but more helpful is the detailed definition in the Yearbook of World Problems and Human Potential(7) which describes a disaster as:

> ... an event concentrated in time and space, in which a society or a relatively self-sufficient subdivision of a society undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented. Thus a disaster disturbs the vital functioning of a society. It affects the system of biological survival (subsistence, shelter, health, reproduction), the system of order (division of labour, authority patterns, cultural norms, social roles), the system of meaning (values, shared definitions of reality, communication mechanism), and the motivation of the actors within all these systems.

A useful distinction can be drawn between 'crisis' and 'disaster', although these terms are often taken as synonymous. A crisis is "a crucial time or turning point in any series of events" (Greek KRISIS = decision). It results from an unresolved serious problem. If the crisis itself is not resolved, a disaster ensues, as illustrated below.

(8) "Anticipating World Crises : Five Overarching Crises in Prospect" by Theodore J. Gordon, in Current, No.168, 1974, p48.



It is not enough that there is a range of potential disasters lying before us in the future. There is also the possibility of 'megacrisis' - a number of crises occurring simultaneously. When these crises are interrelated, the potential for megacrisis is greatly increased. Its overall impact may greatly exceed the individual impacts of the contributing crises. Its consequences may well be beyond an administration's ability to cope. A nuclear holocaust could be an example.

The taxonomy of disaster can be treated in various ways. For instance, Theodore Gordon identified what he called 'five overarching crises' confronting mankind (8) viz.

- nuclear war
- severe food shortage
- deterioration of the biosphere
- imbalance in the distribution of wealth
- material shortages

For the 'Future Contingencies' reports, the taxonomy is derived from the predominant discipline invoked: natural science, social science, economics. Nuclear war, because of the potential magnitude of its impact, is considered as a separate issue. Wherever possible, a New Zealand perspective is adopted. The 'Future Contingencies' series includes the following reports:

1.	Natural Disaster	ISBN-0-477-06222-9
2.	Societal Disaster	ISBN-0-477-06225-3
3.	World Economic Disaster	under preparation*
4.	Nuclear Disaster	ISBN-0-477-06226-1
5.	Summary Report for wider dissemination	under preparation*

These reports are from ad hoc study groups working under the auspices of the Commission for the Future. The views expressed in them are those of the contributing authors, and do not necessarily represent the views of the Commission, nor any other organizations with which the authors are associated.

* The publication of reports 3 and 5 may be precluded by the abolition of the Commission For the Future in 1982.

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1. SOCIETAL DISASTER: AN INTRODUCTION

This Report, the second in a series on 'Future Contingencies', represents part of the research on societal disaster carried out for the Commission For the Future.

Its goal is to encourage thinking about the kinds of social problems which could occur in disasters over the next couple of decades. Most natural disasters can be traced to events occurring in the earth's physical environment - the land, the sea, the atmosphere. In turn these events lead to social problems, and this Report identifies what some of these might be in the future.

Other disasters, however, can have their roots within society itself. It is possible to construct some images of societal disasters in New Zealand's future, and to identify important determinants of collective behaviour which could lead to these unhappy developments. These determinants are present in today's society. Research into these aspects of societal disaster had not progressed to publication stage at the time the Commission was disbanded, but is continuing nevertheless.

The construction of unpleasant scenarios, whether derived from natural (impact) disasters or from within society itself, is not a provocative exercise. One of the more important functions of the emerging discipline of futures studies is to call attention to possible future disasters. Before a disaster can be mitigated, it must first be recognised as a future possibility.

In the final analysis, disasters are experienced by real people. This Report describes how people might react to disasters in the future, and complements the sociological content of the other two reports in the 'Future Contingencies' series thus far completed.

G.F. Preddey

On 3 February 1931 an earthquake shook Hawke's Bay. The wreckage in Heretaunga Street in central Hastings, shown here, was a typical occurrence (from Geoff Conley, The Shock of '31, Reed, 1980).

Survivors reach shore at Seatoun from the stricken vessel Wahine (from E. Grayland, More New Zealand Disaster, Reed, 1978).

2. SOCIAL TRENDS IN DISASTERS

"Safety is not only a right, it is also a responsibility"

The major goal of this report is to encourage New Zealanders to think about the future and the kinds of social problems which could occur in disasters over the next couple of decades. Identifying the potential sociological problems of future disasters so that they can be averted is the prime task of this paper. It is also the case that research into the future can enable a society to see its present situation more clearly and accurately.

A disaster is defined as an unresolved crisis and a crisis in turn is defined as an unresolved serious problem. (See preface) Many, if not most, serious problems can be resolved with a modest amount of thought and effort. However, even if some serious problems remain unresolved and a crisis ensues, strategic planning, decision-making, and resource allocation can forestall the crisis developing into a disaster. Future thinking is, thus, the key to preventing and mitigating disasters.

One way to obtain useful information about what future disasters might be like is to study previous disasters and identify the trends which have occurred in the past. Trend analysis is a major component of this paper. Previous disasters are analysed to identify the sociological trends which have occurred in the past. Knowledge about past trends can be the basis for anticipating what could happen in future disasters.

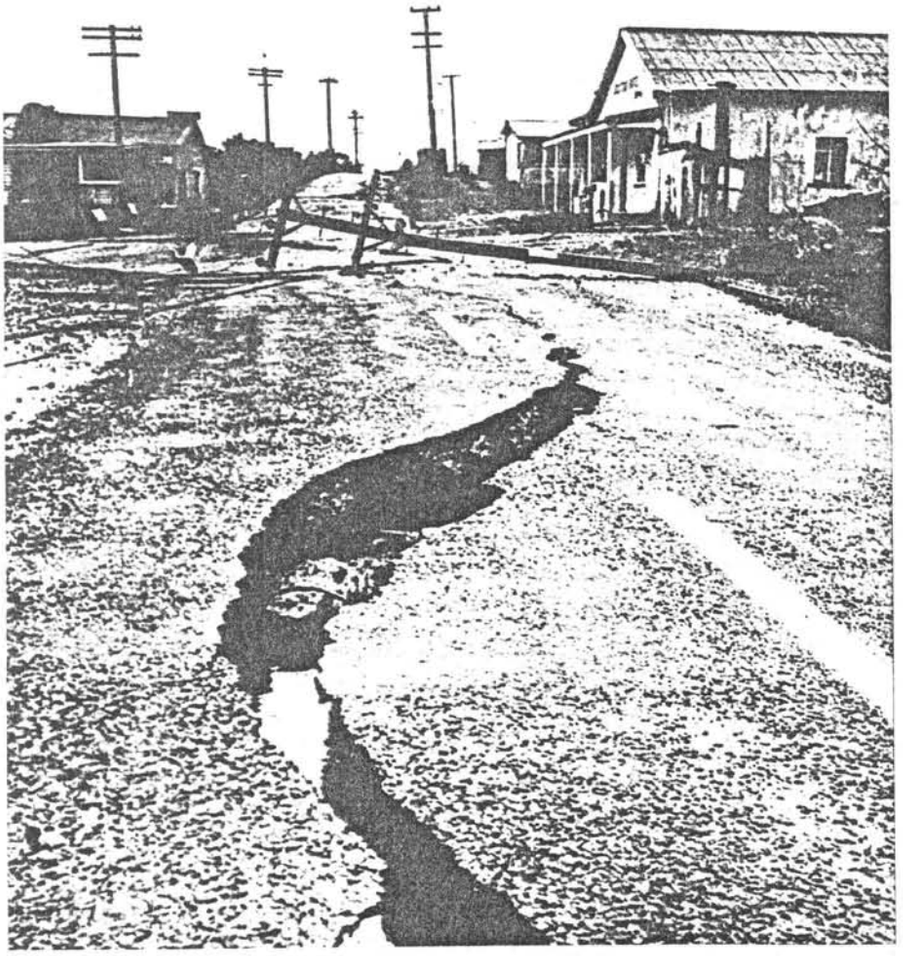
The identification of the problems which might occur in future disasters is based on an analysis of the trends in five major previous disasters in New Zealand, covering nearly a 50-year period. The following disasters served as a data basis: 1931 Hawke's Bay Earthquake, 1968 Wahine Storm, 1968 Inangahua Earthquake, 1973 Parnell Chemical Spillage and 1979 Abbotsford Landslip.

At 10:47 am on Tuesday, 3 February 1931 an earthquake of 7.9 on the Richter scale occurred in the Hawke's Bay. Napier with a population of 16,025 was disrupted most, as extensive fires in the city-centre burned for 36 hours. Between the first earthquake at 10.47 am and midnight of the same day, Hawke's Bay experienced 150 aftershocks with some causing more damage. The known death total was 256 persons, and property destruction and damage exceeded $7.5 million. Most of the deaths and disruption occurred within a two-and-one-half minute period. The earthquake is New Zealand's worst natural disaster.

At 6:41 am on 10 April 1968 the inter-island ferry Wahine struck rocks while entering Wellington harbour during a near-cyclonic storm. By 1:30 pm the 610 passengers and 125 crew members were abandoning ship, and between 2:15 and 2:30 pm the abandoned Wahine sank. There were 51 deaths due to drownings and other causes such as exposure and crushing on shore rocks. The sea-rescue was the largest in New Zealand history.

At 5:24 am on Friday 24 May 1968 an earthquake of 7.0 magnitude on the Richter scale occurred in the Inangahua area. The Civil Defence Controller declared a state of local major disaster for the Inangahua County Civil Defence area at 11 am, 24 May. The state of disaster was terminated at 6 pm on 30 May, but Inangahua remained a restricted area under police supervision. The disaster caused three deaths, numerous injuries and the evacuation of 301 persons.

On the morning of the 27 February, 1973, toxic fumes from a chemical spillage began to affect the residents and other persons in the Parnell area of Auckland.



The main street of Inangahua - split down the middle (from E. Grayland, More New Zealand Disasters, Reed, 1978).

One of the many victims of the Parnell chemical spillage receives attention (from E. Grayland, op cit).

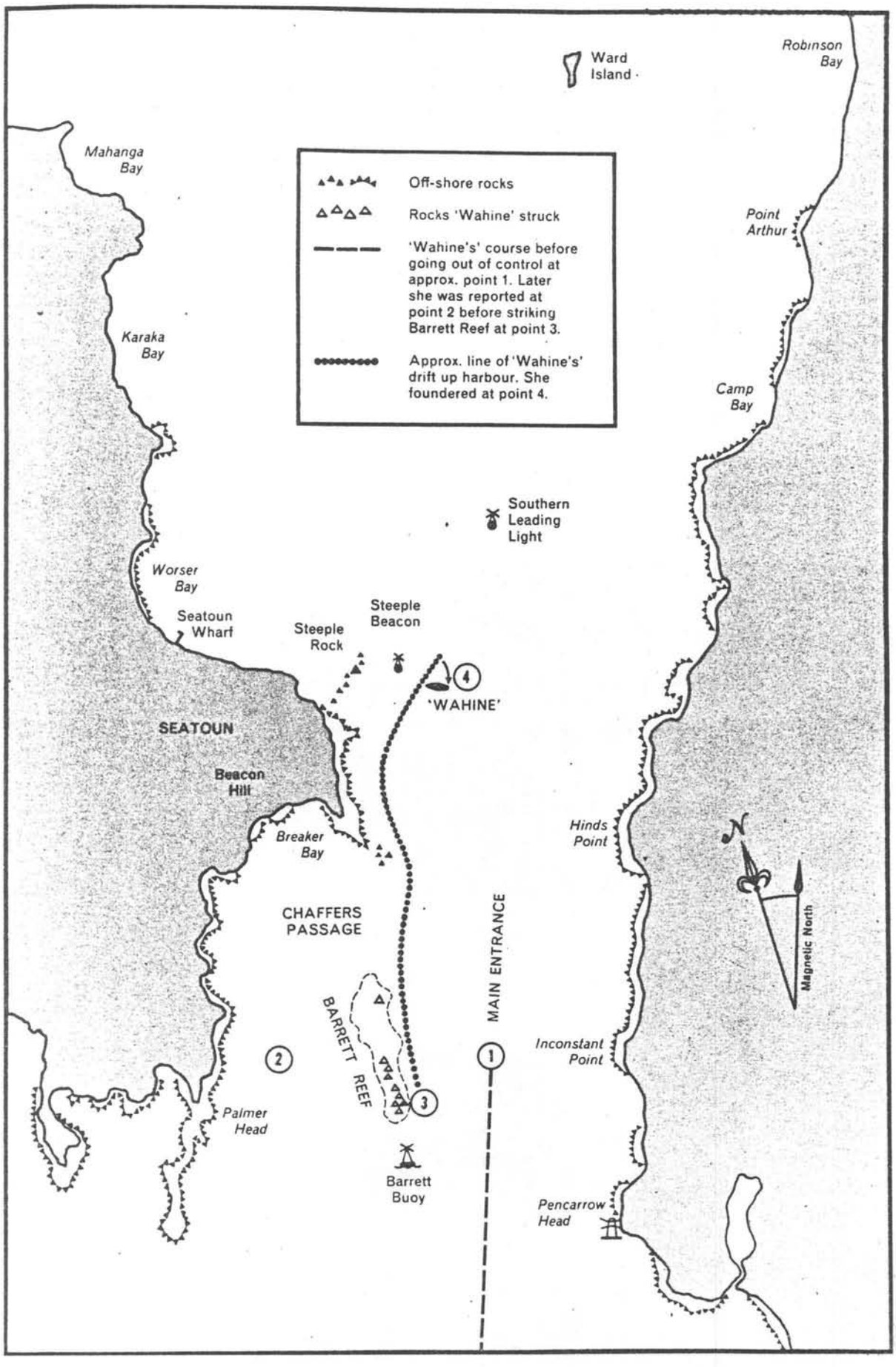
A declaration of a state of civil emergency was made on 28 February and was not terminated until 4 March. During this time, evacuation of parts of Parnell was enforced and a large number of persons attended Auckland Hospital for treatment and testing while a further number reported to clinics and to private medical practitioners.(2)

On 8 August 1979, the Abbotsford landslip occurred involving the movement of 18 hectares of land and 69 houses. A state of local Civil Defence emergency had been declared two days earlier. Six hundred and forty people were evacuated. The state of Civil Defence emergency was terminated on 10 September. During the state of emergency, major earthworks were undertaken, 13 houses were demolished and 18 houses were removed.

In the following sections of Part One of this report, these previous disasters are analysed in terms of:

1. disaster information and communciation;
2. disaster authority and coordination;
3. organisational functioning; and
4. disaster plans and preparations.

Houses, gardens and roading were destroyed or partially buried by the Abbotsford landslip (The Evening Star, Dunedin).



The Wahine drifted a considerable way after being holed (M. Lambert and J. Hartley, The Wahine Disaster, Reed, 1969).

(1) Auckland Weekly News 11 Feb 1931, p12.
(2) The Report of the Commission of Inquiry into the Parnell Civil Defence Emergency, (Government Printer, 1973), p67.

3. DISASTER INFORMATION AND COMMUNICATION

3.1 Insufficient Initial Information about the Disaster

In previous disasters, insufficient initial information about the nature of each disaster has been a critical problem. It is often in the very early part of a disaster that the problem of lack of sufficient information is most serious.

The amount of information about the Hawke's Bay earthquake remained very limited outside the earthquake area during the first day. Radio messages from ships in the Napier harbour, "Northumberland", "Taranaki" and "Veronica", gave the briefest indication that the position was serious. The difficulty of access between the vessels and shore meant that the messages that were sent out were extremely restricted.

Later in the disaster, journalists had problems getting news out of the area. Amateur radio operators were too busy and were not allowed to handle news releases because of Post and Telegraph Department regulations.

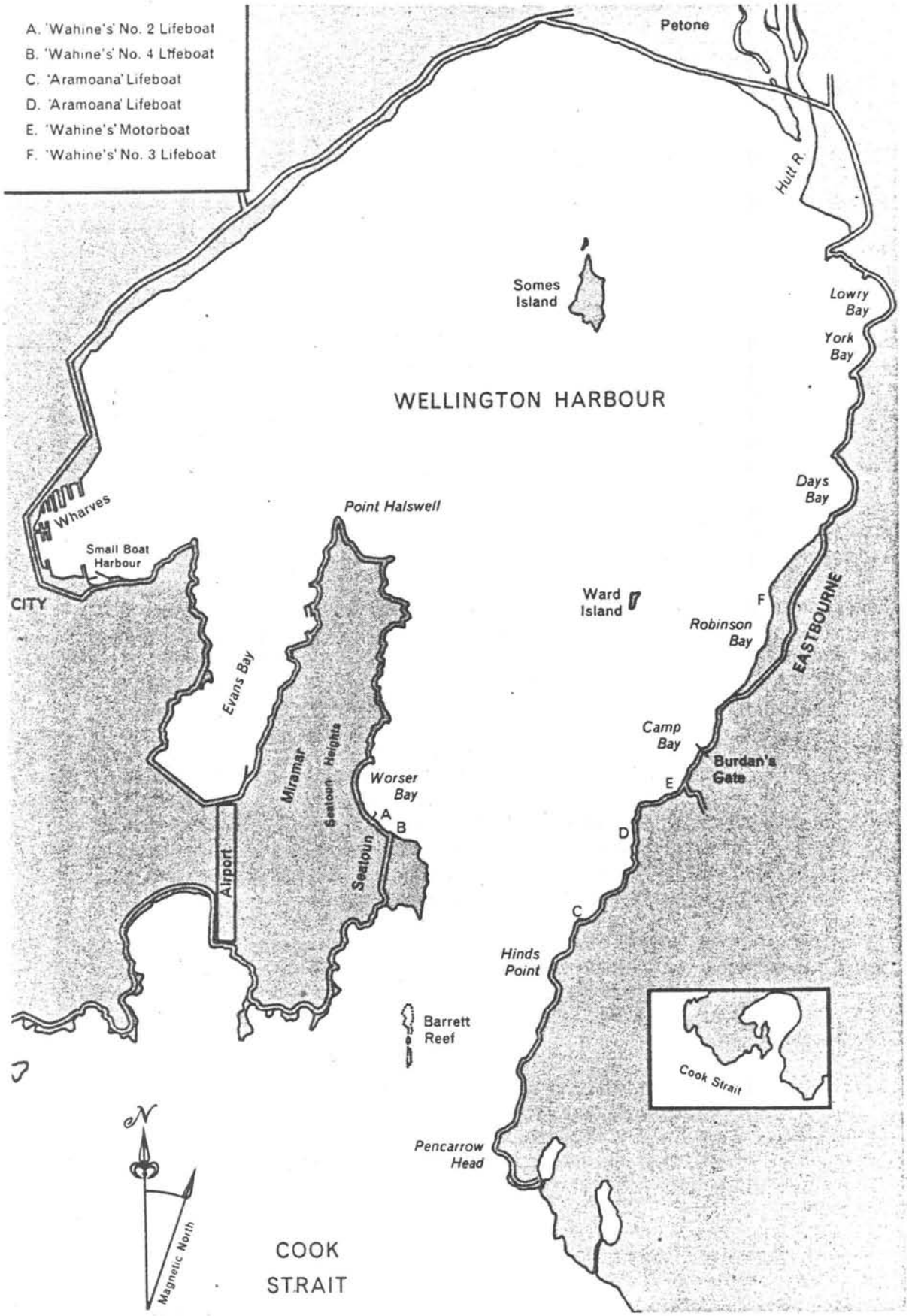
In the Hawke's Bay disaster, it took sometime for an overall picture to develop, especially in the case of Napier. "The whole city was hopelessly disorganised and reports, true and false, could only be collected by word of mouth. The only really acccurate information that could be obtained by residents during the night of terror was that which their own circle had actually witnessed."(1)

In the Wahine disaster, the amount of damage that the ship sustained as a result of the hitting of rocks at 6:41 a.m. was not known until divers inspected the sunken vessel. Although lower compartments of the ship had flooded, it remained relatively stable, and so the amount of initial damage remained severely under-estimated. If the extent of damage had been estimated more accurately, more advanced preparations would have been made for a sea rescue and the decision to abandon ship may have been made earlier.

The initial information about the Inangahua disaster remained very limited. The first radio broadcasts indicated that Greymouth rather than Inangahua was the scene of the disaster. Information about the disaster was not well-known outside of the disaster area as late as 10:00 to 10:30 a.m., about five hours after the earthquake.

In the Parnell disaster, the amount of initial information about the identification and characteristics of the chemical was extremely limited and at times inaccurate. Because insufficient information was such a crucial problem in this disaster, the situation will be analysed in considerable detail. The Parnell disaster epitomises the nature of the information problem which occurs in many disasters.

In the Parnell disaster, there was no disclosure by the master of the "Good Navigator" or by its agents in San Franciso and elsewhere of information as to the nature of the contents of the damaged drums prior to the arrival of the ship in New Zealand.(2) When the unloading of the "Good Navigator" was delayed, because of the request of the waterside workers that the damaged drums be first removed, both Mr D'Aubney (Wharf Superintendent) and Mr Smith (Wharf Foreman) employed by the Stevedores, Seatrans Consolidated (N.Z.) Ltd, called on Chief Officer Filippis of the "Good Navigator" to find out from him about the nature



In the Wahine disaster, four of the six lifeboats reached the east coast where there were problems of road access, transportation, and communication (M. Lambert and J. Hartley, op cit).

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(3) Ibid, p68.
(4) Ibid, p69.
(5) Ibid, p70.
(6) Ibid, p21.
(7) Ibid, p21.
(8) Ibid, p24.

of the cargo contained in the drums. Chief Officer Filippis in a sworn statement to the Police, acknowledged that he was given the poison labels at Los Angeles and that although they were affixed to the drums he said they were washed off by waves during the storm. He further said that he had retained one such label in his possession and that he had given the label to the stevedore and ship's agents at about 10 o'clock on Monday morning. This evidence was denied by Mr D'Aubney, Mr Smith and Mr Koerselman (ship's agent).(3)

The Commission of Inquiry found that in fact the poison label was not given or shown to the ship's agents or the stevedores by Chief Officer Filippis on Monday morning. The information contained on the label was the very type of information that the stevedores and Mr Koerselman were seeking, and if the label had been given them it seems incredible that they should not have referred to it during the course of the day. The reference on the label, "Don't breathe fumes, touch contents or swallow", would have placed the persons responsible more fully on their guard at a very early stage and decisions made and action taken would no doubt have been different(4). If the full information in the possession of the ship's officers had been disclosed to those enquiring about the nature of the contents of the drums, the Commission had little doubt that a different course of events would have followed(5).

Because the waterside workers had refused to unload the "Good Navigator" until the damaged drums of Merphos had been taken off the ship, Mr Kraal of Russell and Somers Ltd telephoned his Karlander principals in Australia and requested information concerning the chemicals in the damaged drums. At approximately 2:00 p.m. Monday he received a reply by way of cable:

"Good Navigator re damaged drums marked VAL/54/540 ex Manznilo contents being HERPHOS chemical hermicide no other description available."(6)

Mr Kraal not being satisfied with the description as HERPHOS referred to a chemical dictionary and found a reference to a chemical 'Merphos'. It gave the scientific name as tributylphosphorotrithioite and described it as a cotton defoliant, "probably highly toxic".(7)

At about 4:15 p.m. the Harbour Department of Health inspector, Mr Burdett, received a call from Mr Koerselman advising him that the chemical for which he was seeking clearance, was Merphos and that he thought it was only a mildly toxic susbstance. He told Mr Burdett that the idea was to store the damaged drums that night in the yard belonging to the Auckland Cartage Company, The Strand, Parnell and that later, the contents of the damaged drums would be put into sound containers. Mr Burdett then went and discussed the matter with the senior health inspector, Mr Flint, and after reference to the Merck Index, they found under the name phosphorothioite a reference to parathion. They checked parathion and found that it was:

(a) An organo-phosphate chemical
(b) It was highly toxic
(c) It's trade name was Merphos 25
(d) It should be handled with care and protective equipment
(e) It should be stored in a place inaccessible to unauthorized persons(8).

Mr Burdett told Mr Koerselamn that the drums could be moved to the yard providing that protective clothing was used by the handlers and that none of the chemical was spilt.

After the emergency call to the Fire Brigade at 9:19 a.m., 27 February, Station Officer Mears consulted the Institution of Fire Engineers Hazardous Loads book

(9) Ibid, p30.
(10) Ibid, p31.
(11) Ibid, p31.
(12) Ibid, pp35-36.
(13) Ibid, p36.
(14) Ibid, p36.

which provides a reference of well-known chemicals. He was not able to identify the chemical as it was not listed under the name he had been given. Station Officer Mears then advised Bridgade control at Pitt Street that he was responding to a call about chemical spillage and requested help in identifying the chemical.(9)

Station officer Mears then carried out a preliminary investigaton of the site, confirmed the name as "Merphos" on the drums, instructed his crew to stand-by rigged in compressed air breathing apparatus. He was completely unaware at that time of the potential hazards and so made no attempt to disperse the spillage.

Meanwhile, at Fire Brigade control, details on Merphos were found in the condensed Chemical Dictionary and a reference was also found to a chemical thought to be most closely related in Sax's book of Dangerous Properties of Industrial Materials. The chemical was tributylphosphorotrithioate. As it was believed from these sources that the chemical involved could have similar properties to parathion the necessary information relating to precautions was conveyed to Divisional Officer Radovan at the scene in the control car. The instructions were:

> that the substance could be toxic,
> to use breathing apparatus at all times,
> avoid any personal contact,
> cover spillage with dry sand or soda ash,
> avoid any entry of spillage into drainage systems.(10)

This information was confirmed by Mr Campbell, Safety Officer for A.C. Hatrick (N.Z.) Ltd of 22 York Street, Parnell, whose staff were complaining of smarting eyes, headaches and dry throats. Mr Campbell refered to the Condensed Chemical Dictionary seventh edition and determined the chemical name for Merphos was tributylphosphorotrithioite. His inquiries showed that the material was an organo-phosphate and regarded as being similar to tributylphosphorotrithioate with a toxicity similar to parathion. Mr Campbell conveyed this information to Divisional Officer Radovan at about 9:33 a.m.(11)

Mr Selkirk of the D.S.I.R., Chemistry Division was requested to go to Parnell as there was a serious spillage of chemical suspected to be parathion. Mr Selkirk decided the only prudent course was to treat the chemical with extreme caution and until evidence was forthcoming to the contrary, the chemical should be treated as having a toxicity similar to parathion, the most dangerous of the organo-phosphate compounds.(12)

Treatment with soda ash was at that time being considered, but Mr Selkirk was firmly of the opinion that caustic soda would give a much faster reaction with the organo-phosphate chemical and would also be more effective in binding what appeared to be a mercaptan type of gas being evolved.(13)

Between 12 noon and 1:00 p.m. Mr Selkirk was asked to listen in to a telephone conversation with the assistant chemist of the Australian company to which the drums of Merphos were consigned. Mr Selkirk heard it stated that the material Merphos was of low toxicity and that the spillage should be washed down the drain.

This he decided could not be done, firstly because to do so would place the obligation on the Auckland Regional Authority Drainage Division and secondly because much of the chemical had been absorbed into the ground surfaces and could not be flushed out with water.(14)

Residents of Abbotsford were largely unaware of what was taking place in their suburb, and few conceived of this final outcome (The Evening Star, Dunedin).

Total destruction of dwellings in the Abbotsford landslip (The Evening Star, Dunedin).

(15) Ibid, p36.
(16) Ibid, p36.
(17) Report of the Commission of Inquiry into the Abbotsford Landslip Disaster, (Government Printer, 1980), p30.
(18) Ibid, pp31-32
(19) Ibid, p32.
(20) Ibid, p36
(21) Ibid, p37.

At about 1:30 p.m. Mr Selkirk obtained a sample of the leaking material. This was examined by Dr. P. Nelson of D.S.I.R. and found to contain at least two compounds, the major ones being organo-phosphorus compounds. Analysis showed it was not parathion.(15)

At this stage Divisional Officer Brown who was then in charge of Fire Brigade operations at Princes Wharf received a telex from Russell and Somers Ltd. originating from Karlander in Australia containing advice from the head chemist of Amalgamated Chemicals, Sydney, including technical information of Merphos.

The telex read:

> Good Navigator - Merphos - have now been in contact with head chemist Amalgamated Chemicals, Sydney, who advised as follows; To neutralize, flush with water , douche with soda ash. This will not neutralize smell which can be partly neutralized by douching with sodium hydro chlorate. He informs that this chemical is highly toxic and if inhaled in large quantities could be fatal. Please keep SKULD agents closely advised developments and endeavour arrange removal/dumping best possible.(16)

It was decided to treat the chemical with caustic soda but to use soda ash as a stop gap until the required quantity of caustic soda became available.

In the Abbotsford disaster, there was considerable information available about land movement as movement was detected as early as May. However, the initial information made available to residents and the public generally was limited. By the end of June, although there was considerable concern amongst qualified people and although the damage to some houses was obvious, no public statement was made. A personal enquiry by a resident on 30 June at the Green Island Borough Offices did not produce any satisfying information.(17)

On 11 July a meeting was held between Bird and Associates, acting on behalf of the Earthquake and War Damage Commission and the Green Island Borough Council to discuss public safety and insurance matters and in particular the question of a responsibility for informing residents concerning the situation. Messrs Bird & Associates considered that the Borough should offer informal advice to residents, but the Borough had obtained legal advice that it was not a local authority function to do this, and indicating a possible legal liability if it did.(18)

On 13 July a newsletter was distributed by the Borough Council. This newsletter advised residents affected by the landslide that it was their duty to notify the Borough, Bird and Associates and their insurance company of any movement. It set out the steps that should be taken by residents moving out of their houses. With this newsletter was distributed a circular letter from the Secretary of the E & W.D. Commission setting out the Commission's attitude toward claims arising out of the landslide. It is not clear whether all affected residents received the newsletter.(19)

Another Borough newsletter was delivered on 25 July. It described the engineers findings and suggested that the land movement would continue for some months at the present rate. However, the possibility of acceleration of movement was mentioned.(20)

On 26 July, it was decided to restrict the availability of the engineers' findings.(21)

Isoseismal map for the main Inangahua earthquake (DSIR Research Bulletin 193, 1968, p. 14).

Christchurch-based communications repair gang crossing a mud slip at end of vehicle access in the Inangahua disaster (NZ Society for Earthquake Engineering, Bulletin, vol. 2, no. 1, 1969, p. 76),

(22) Ibid, p38.
(23) Ibid, p40.
(24) Ibid, p43.
(25) Report on the Inangahua Earthquake (Ministry of Civil Defence, 1968), p28.
(26) Ibid, pp12, 18, 39.
(27) Ibid, p12.
(28) Max Lambert and J. Hartley The Wahine Disaster (Reed, 1969), p174.

In a further newsletter from the Borough on 28 July, the residents of East Abbotsford were told about an information centre which had been set up with representatives from key organisations. The newsletter also advised about car stickers for access to the slide area, security patrols, and available help.(22)

A newsletter on 2 August urged residents to have firm plans to move out at short notice. It also advised that non-essential chattels be removed.(23)

The final newsletter on 6 August stated that two daily radio bulletins would be issued at midday and 5:30 p.m.(24)

By this time, it had become evident that the residents in the slip area were concerned in general about lack of sufficient information about what was happening.

3.2 Inoperative Communication and Transportation Facilities

Inoperative communication and transportation facilities create major problems in disasters. Vital communication equipment is damaged and roads, railways, ports, and airports are disrupted.

In the Hawke's Bay earthquake, telegraph, telephone, road and rail links between Hastings, Napier and the rest of New Zealand were all inoperative after the earthquake, with the exception of the radio facilities of the ships at Napier and a couple of amatuer operators. These facilities could handle only a fraction of the demand for communication links.

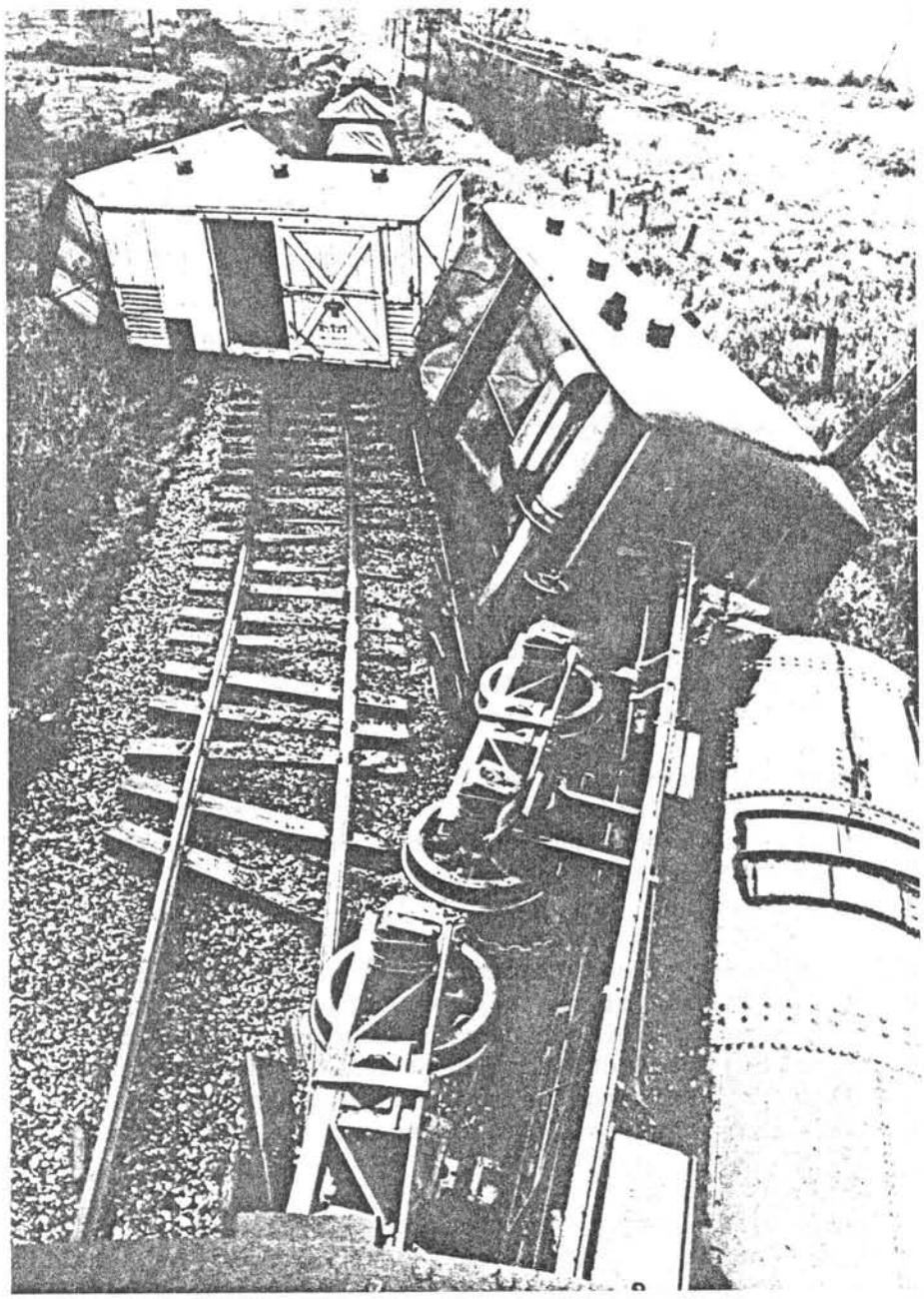
In the Inangahua disaster all telephone, radio, rail, and road links between Inangahua and the rest of New Zealand were severed. The regular communication and transportation facilities in the Inangahua area were all inoperative for the first few hours after the earthquake. Inangahua was informationally isolated from the rest of New Zealand.

By 6:10 a.m. on 24 May the New Zealand Electricity Department at Stoke knew that there had been a major dislocation of the Department's installations within the Inangahua substation. However, no direct contact could be made with Inangahua. By 6:30 a.m. the Electricity Department contacted the Waimangaroa substation by radio-telephone. At 8:10 a.m. Waimangaroa and Inangahua established communication by mobile radio, thus bringing to an end the informational isolation.(26)

This was followed a short time later by another contact with the outside by a rather circuitous route. "About 9:00 a.m. weak radio contact was established with Ministry of Works in Gisborne, who were asked to pass a message to the Ministry's base in Westport. Thereafter there was intermittent contact with Westport, to whom the local situation was reported."(27)

In the Wahine disaster, shore rescue along the east coast was hampered severly by lack of road access initially. After 3:30 p.m. the coastal road was cleared of slips and debris by front-end loaders and a bulldozer, and four-wheel drive vehicles were able to reach the shore to transport survivors.(28)

The Police operations on the east coast were hampered by communication as well as transportation problems. The only communication between front line police



Road and rail communication was severed by the Inangahua earthquake (from E. Grayland, More New Zealand Disasters, Reed, 1978).

(29) Ibid, p180.
(30) Report of the Commission of Inquiry into the Abbotsford Landslip Disaster, op cit, p48.
(31) Report on the Inangahua Earthquake, op cit, p36.

and the control point at Burdan's Gate was by runner. The police had no radio transmitters or walkie-talkies. All requests for aid, medical supplies, blankets, stretchers and the numbers coming ashore was communicated by runners.(29)

Transportation and communication problems and lack of sufficient warning in the Wahine disaster meant that insufficient rescuers, blankets, and other supplies were present when the first persons reached the east coast.

In Abbotsford, during the major slip on the evening of 8 August, telephone and power lines broke. From that time, radios had to be used to maintain contact with the various services and with the residents isolated on the slip.(30)

3.3 Inadequacy of Communication Facilities

In previous disasters, communication facilities were often inadequate. Inadequacy may be due to overloading of facilities or noisy radio channels. Another common problem is that two organisations may be using the same radio frequency.

In the Hawke's Bay disaster, even after regular communicaton links were restored, the number of official and private messsages was too large to be handled by the existing facilities.

In the Inangahua disaster, once the Ministry of Works established radio contact with Westport, this communication link came under heavy use and demand. During the first day, the link was used almost entirely for Ministry of Works purposes. It could not, for example, be used extensively for civil defense purposes, even though a pressing need existed.

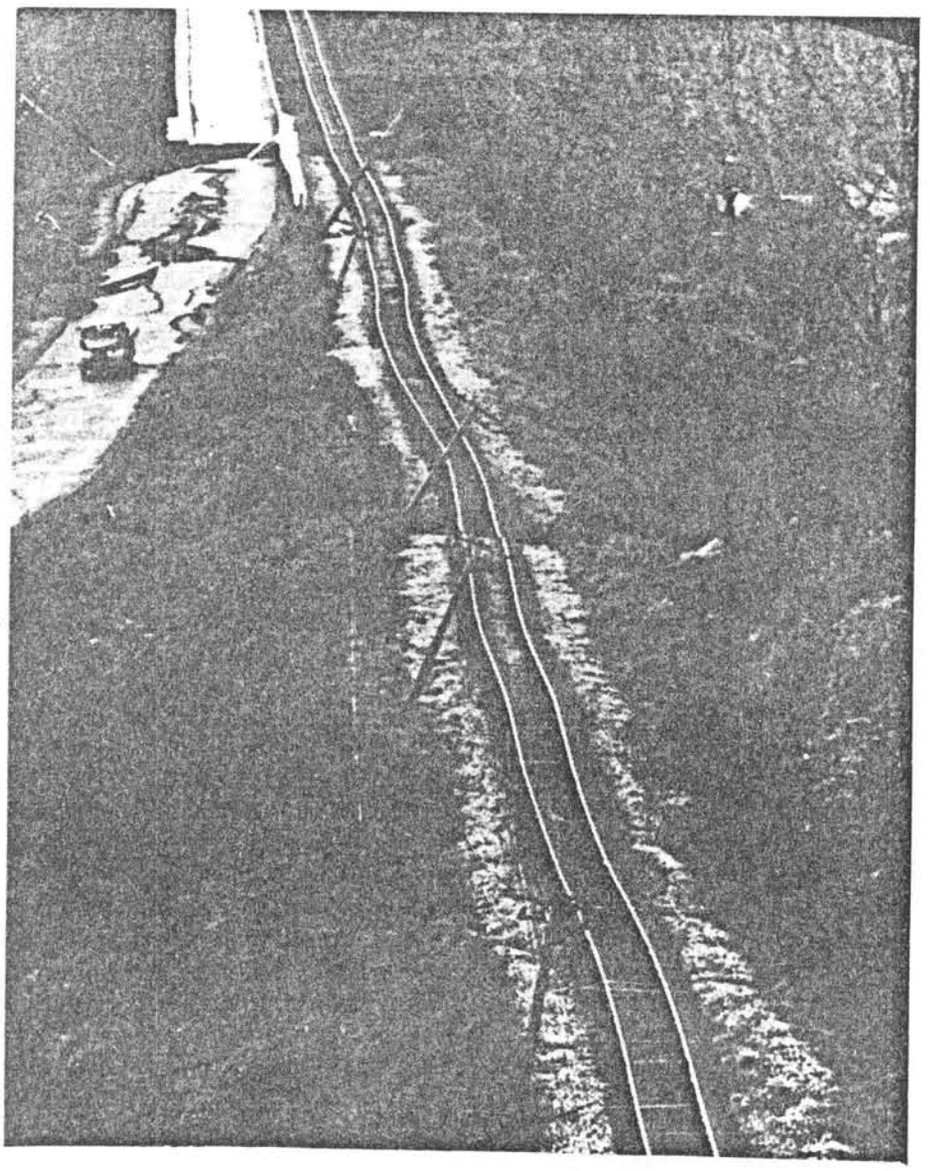
"On 24 May the earthquakes cut all telephone lines within the Inangahua County as well as those connecting to centres outside the country. This was the most important feature of the disaster as it affected civil defence arrangements. As a result of this disruption of its facilities the great volume of messages (that) usually flowed through the Post Office communications systems on the West Coast had to share the relatively few radio and radio-telephone circuits that remained.

During the morning of the earthquake the communications picture was very confused."(31)

3.4 Insufficient Information about Deaths and Injuries

When there is a great deal of physical damage and destruction in the disaster, a large number of deaths and injuries will be expected. However, the initial information about the number and location of the dead and injured will often be very limited.

Lists of dead and missing persons were very difficult to prepare comprehensively and accurately in the Hawke's Bay disaster. The number of casualties was large,



The railway line out of the stricken Inangahua region provides a graphic illustration of the disruption to transport (from E. Grayland, op cit).

(32) Auckland Weekly News 11 Feb 1931, p26.
(33) DSIR Report 43, 1933, p29.

approximately 2,500, and no records existed of persons who had evacuated the disaster area. The lack of accurate lists of the disaster victims made the task of handling thousands of welfare enquiries immensely difficult.

In the Inangahua disaster, the first identification list of injured and evacuated persons was not prepared until the night of the 24 May, over 12 hours after the earthquake had occurred.(25).

3.5 Inaccuracy of Disaster Information

In some previous disasters, inaccurate information was a serious problem. Varying reports developed in each disaster. Initial damage reports were often quite inaccurate. The degree of damage is usually grossly overstated. Accounts of trapped victims arise and persist in most disaster situations.

In the Hawke's Bay disaster, numerous rumours developed. The most common one was about the rescuing of people from ruins. For days after the earthquake rumours circulated that injured people were trapped and awaiting rescue. An old man was dug out of ruins still alive on Friday at 12:30 a.m. "This is the only authentic case of a man being found in collapsed buildings alive. Very many cases have been reported but all save this one have proved to be hoaxes."(32)

The other rumours concerned the exaggerated number of deaths in particular collapsed buildings, the compulsory evacuation of Napier, operations without anaesthetics, and the declaration of martial law for Napier and Hastings.

3.6 Inadequate Sharing of Disaster Information

In previous disasters, information has not been shared sufficiently among the responding organisations. Almost every responding organisation carries out an inventory of damage and disruption of its own facilities and services, but this information tends to remain within the organisation that gathered it. Initial efforts to define disasters are confined usually to either individuals or organisations. Arrangements to pool or share information on a disaster-wide or interorganisational basis is limited. The collecting and disseminating information on a disaster-wide or interoganisational basis is a neglected task in many disasters. The passing on of information from one organisation to another is often fortuitous or arbitrarily selective in nature.

In the Hawke's Bay disaster, the "work of the Executive Committee was considerably hampered through the difficulty of communicating decisions, directions and instructions to a populace which no longer had any fixed address, and in which the usual means of providing news were destroyed. As the days wore on... this difficulty gradually grew less,... telephone and telegraph services were repaired, and it became possible to publish news bulletins, the first issued by a temporary press established by the Daily Telegraph. These news bulletins were issued to convey instructions to people as they assembled for meals and at other points of assembly throughout the towns."(33)

In the Inangahua disaster, communication problems persisted into the second day of the disaster. About mid-day of 25 May the Civil Defence Controller "brought

Typical damage to poles near New Creek, 12 km up the Buller Gorge from Inangahua Junction. Cut telephone lines hampered the Civil Defence response for some time (NZ Society for Earthquake Engineering, Bulletin, vol. 2, no. 1, 1969, p. 76).

(34) Report on the Inangahua Earthquake, op cit, p44.
(35) Ibid, p33.
(36) Report of the Commission of Inquiry into the Abbotsford Landslip Disaster, op cit, p43.

Constable Le Fevre back from Inangahua to bring some order into the Communications Section at Civil Defence Headquarters. His principal task as Communicatons Officer was to establish a signals centre coordinating Army, Air Force, Police and Forestry radios as well as the local telephone systems. In effect this meant that the Civil Defence organisation in Reefton became responsible for ensuring that all messages transmitted to Civil Defence Headquarters reached the Officer for whom they were intended and that his replies reached the transmitters."(34)

The task of providing the media representatives with disaster information about the Inangahua situation became a large and time-consuming task for Civil Defence. "During the early stages of the emergency the Controller and Deputy Controller found newspaper, radio and television reporters making great inroads on their time and distracting their attention from more pressing civil defence matters. Accordingly at the night meeting on 25 May they appointed a Press Officer."(35)

Some of the information and communication problems in the Abbotsford disaster were due to the fact that Civil Defence did not have a staff member to handle dissemination of information to residents and the public in general. During the Abbotsford disaster, Civil Defence made unsuccessful attempts to obtain a suitably qualified public relations officer to deal with communications, as the member of the organisation responsible for this had retired.(36)

4. DISASTER AUTHORITY AND COORDINATION

4.1 Ambiguity Over Legitimacy of Authority

Ambiguity over the legitimate source of authority has occurred in previous disasters. There have been disagreements concerning which official, agency, or organisation has the authority to make crucial decisions about disaster activities. This problem has been exacerbated when the disaster occurs across politically and legally defined boundaries. Certain officials may be very reluctant to assume overall control of the disaster situation because areas of legal jurisdiction and responsibility are not clearly defined. Overlapping of jurisdiction creates authority problems in disasters. Ambiguity over who should be in control exists in disasters. Lack of clarity about official, legal responsibility creates problems of actual operative direction of disaster activities.

A chain of command for authoritative decision-making has not existed in previous disaster situations. Ambiguity over authority occurs in disasters, because a well-delineated authority structure has not been worked out to effectively control all disaster activities.

In the Abbotsford disaster, control of the situation was not clear-cut until a local Civil Defence emergency was declared on 6 August. The threat persisted for over a two-month period, and during this time considerable ambiguity developed. By the 11 July the Green Island Borough Council had received legal advice that it was not a local authority function to inform residents about the advisability of evacuation or other aspects of the threat and that there was possible legal liability if it did.

Civil Defence was reluctant to recommend a state of emergency be declared because there was no direct threat to life. The situation came to climax in a meeting of the Dunedin Combined Area Civil Defence Committee on the evening of 5 August. At this meeting:

> The Mayor of Green Island, Mr Crimp, was strongly in favour of a state of local civil defence emergency being declared. The Earthquake and War Damage Commission outlined its position. The engineers indicated that the maximum velocity and total movement which could be tolerated while maintaining habitable conditions in the occupied houses were 4m of total movement or 450mm per day predicted to occur by Sunday 12 August. They considered the risk of loss of life was not particularly high, but that there was danger in people sleeping in houses, particularly those on the lower edge of the slip where ground could break away quite quickly. Mr Crimp referred to S22 of the Civil Defence Act and added that if something was not done that night then he would divorce himself from all responsibility. He said that if the meeting resolved not to do anything then he would ask someone to accept responsibility for whatever might happen. For the police, Superintendent Bardwell expressed the view that if an emergency were declared, the Police could not follow a "go slow" policy but would be obliged immediately to compel people to leave their homes. If people refused to move, the Police would have to arrest them. Mr Crimp said he was not familiar with all the legislation affecting disasters and asked whether Superintendent Bardwell could show him the provision in the Act which called for such action by the Police. He

(37) Ibid, pp41-42.

could not see soup kitchens being set up or tin hats being worn, etc. His people would act responsibly, and if need be, evacuate the area in an orderly fashion. Superintendent Bardwell said that the Police would take their directions from the civil defence group controller and would not accept any responsibility for delay. Mr Skeggs said that he believed along with other members of the committee that there was every justification for declaring an emergency. He suggested the meeting should consider and determine various stages to follow. As he saw it, the people could not be worse off if an emergency were to be declared and if loss of life were to occur it would probably be at night when people were asleep. The evacuation would have to be orderly and he asked Mr Wood to suggest the ways and means this could be achieved. Mr Wood, the civil defence controller, said he did not wish it to be thought that he was resistant to the declaration of a civil defence emergency, but he did not wish to create panic or to use unnecessary power. He went on to say if the committee decided in favour of a declaration, the the Civil Defence Organisation would confer with the emergency services and local councils and that plans would be tempered to meet the circumstances.

The meeting decided unanimously that a state of civil defence emergency should be declared. There was a second resolution that this take effect from 8 a.m. the following day. It was left to the group controller and the borough to define the actual area to be covered by the declaration.(37)

4.2 Authority Lapses and Lack of Disaster Scene Command Posts

In previous disasters, there have been authority lapses during the early part of disaster response. The legitimate encumbents of authority positions did not exercise effective control of the disaster situation.

Some encumbents of authority positions are unable to fill their position because of death, injury, or being cut-off from where disaster decisions and activities are taking place. That is, they are not present to immediately exercise control and direction of disaster activities.

Other encumbents of authority positions do not actively and effectively exercise authority. Rather than providing over-all direction and control, some encumbents devote their time and attention to actually carrying out specific disaster tasks, such as looking for the dead and injured. Key decision-makers have not resisted the temptation to assist in carrying out these urgent field tasks. As a result, they have not kept abreast of what is happening and stayed on top of the whole operation.

Some encumbents of authority positions do not establish permanent bases of operations, and thus are not readily accessible for consultation or advice. Some key decision-makers are in and out all the time, and others do not operate from a fixed and known location.

The lack of command posts at the disaster scene means that adequate control of activities does not occur at the beginning of the disaster response. At disaster sites, there is a rush of activity to rescue the injured and recover the dead, and the establishment of overall control and supervision through setting up command posts is often neglected.

(38) DSIR Report 43, 1933, p26.
(39) Ibid, p34.
(40) Ibid, p22.

New authority structures developed during the Hawke's Bay disaster. In Napier, "at 7:30 a.m. on the 4th February a meeting of citizens was held at the police station to set up an emergency committee. By this time a number of executive officers had arrived from Wellington and elsewhere, so that both a nucleus for an exective was at hand and knowledge of what outside assistance was forthcoming was available."(38)

This Committee legally became a sub-committee of the Napier Borough Council on 6 February at the first meeting of the Council after the earthquake. "Early in March, when it was plain that the immediate emergency steps necessitated by the earthquake had been completed, the work of the Napier Citizens Relief Committee was brought to a conclusion, the executive was disbanded, and on 11th March the affairs of the town were handed over to two Commissioners appointed by the Government, Mr J.S. Barton, Stipendary Magistrate, and Mr L.B. Campbell, A.M.I.C.E., of the Public Works Department. These Commissioners functioned in place of a Borough Council, and worked in close association with three other bodies, two of which were statutorily constituted as a result of legislation passed during the following sessions of Parliament.

In April 1931, the Hawke's Bay Earthquake Act (21 Geo, V , 1931, No.6) was passed. This Act contained two main provisions. The Hawke's Bay Adjustment Court was set-up to facilitate adjustment of pre-earthquake liabilities. The Court consisted of three members, the President and two nominated members, and was granted wide powers to deal with any matters brought before it. Under the provisions of the Act, debtors and creditors were required to come to a settlement either through adjudication by the Court or by private arrangement. The terms of these settlements had to be confirmed by the Court before any assistance was granted to applicants from the funds at the disposal of the Rehabilitation Committee.

In Nov, 1931, the Hawke's Bay Earthquake Relief Funds Act (22 Geo.V,1931,No.29) was passed to make provision for the control and administration of the relief funds which had been contributed throughout N.Z. and from overseas, in all a sum of £396,000. The Act established a relief committee to administer the fund which was under the immediate executive control of the Public Trustee."(39)

4.3 Lack of Interorganisational Coordination and Task Omission and Duplication

In previous disasters, the responding organisations have not been adequately coordinated. In these disasters, organisations have carried on their operations quite independently of other organisations. In other words, there has been organisational atomisation of the disaster situation.

Activities centred on assessing and defining the disaster situation often occur on a very uncoordinated basis.

There has been needless overlapping of task performance in some disasters. On the other hand, some high priority tasks have not been performed as soon as they should have been.

The initial search and rescue activities in the Hawke's Bay disaster were largely uncoordinated. "All day long on this fateful Tuesday the work of rescue proceeded without any organisation in both Hastings and Napier. As far as possible each fended for himself, and all participated in some activity of the general scheme of unco-ordinated rescue in progress".(40)

(41) Report on the Inangahua Earthquake, op cit, p60.

(42) Ibid, p61.

In the Inangahua disaster, it took a couple of days to achieve coordination of restoration activities. "At first there was little liaison between the Civil Defence organisation and the various government departments engaged in restoration work in the Inangahua County Civil Defence area.

... Ministry of Works gangs based in Reefton and acting quite independently of Civil Defence," worked on and opened various roads.(41)

Although various Government Departments "had commenced repair and restoration work very early on the day the earthquake occcurred, it was not possible to arrange a general conference to discuss work priorities and co-ordinate effort until the Sunday afternoon, 26 May."(42)

(43) Ibid, pp21-22.

5. ORGANISATIONAL FUNCTIONING

5.1 Organisational Poverty

The demands of performing disaster activities often exceed the capabilities of responding organisations in disasters. In some cases the responding organisations are under stress because of organisational poverty in the disaster area. Certain disaster organisations are largely "paper" entities with very small permanent, full-time staffs. Those organisations with a volunteer membership are often unable to draw upon very many well-trained volunteers in disasters.

The Country Civil Defence organisation for Inangahua was described as "a new inexperienced team" and the newly recruited members had to carry out "unaccustomed tasks" during the disaster. "Although there had been a Civil Defence organisation in Inangahua County for some years it had lost much of its efficiency because many of its key members were not replaced when they left the district. In May 1968 this organisation was in the process of being revitalised but appointments were not complete. When the emergency was declared, many of the Civil Defence officers were not in Reefton or, for various reasons were not available. The Civil defence controller was not available because of trouble in his own area, his deputy was in hospital and had been there for some time, the Staff Officer (Operations), who was usually second-in-command of the Civil Defence unit, was absent from the district on leave, the Intelligence Officer - the Assistant County Clerk - was away at a conference. Others could not be released from their normal duties. The Postmaster and Stationmaster, who were the Civil Defence Signals and Transport Officers respectively, were because of departmental commitments, unable to leave their posts to assume their civil defence duties. In all, eight of the twelve members of the Inangahua County Civil Defence organisation were not in a position to take up their special duties when the emergency was declared. The County Clerk who acted as Controller .... throughout the period was normally Staff Officer (Administration) in the County Civil Defence organisation. When the ... organisation was put to the test, a new inexperienced team had to be recruited." (43)

5.2 New Disaster-Generated Tasks

In previous disasters, new tasks have occurred which could not be handled immediately or adequately by responding organisations. Search and rescue is a major new task in many disasters. Search and rescue teams have to be organised and allocated areas of operation. The opening, staffing, supplying, and operating of evacuee shelters is another new task in many disasters. Ensuring security of the disaster area is a new task in disasters. This involves closing off an area to only that traffic which is absolutely necessary. Passes for access to the disaster area have to be authorised and issued. There is considerable convergence of materials of all kinds, and responding organisations have to devote crucial time and attention to receiving and temporarily storing the materials. Many volunteers are motivated to help in disasters, and the main way of doing so is through organisational participation. The responding organisations are faced with the task of organising volunteers to effectively assist with disaster activities, and incorporating volunteers into an organisation's disaster response produces increased demands upon the organisation.

The patients went first, then their beds and bedding, stretchers, and medical supplies - a scene outside the Napier Public Hospital during its evacuation (Geoff Conly, The Shock of '31, Reed, 1980).

(44) DSIR Report 43, 1933, p32.
(45) Ibid, p29.
(46) Report on the Inangahua Earthquake, op cit, p62.
(47) DSIR Report 43, 1933, p12.

The control of convergence of persons into the disaster area was one of the new tasks in the Hawke's Bay disaster. "Owing to influx of visitors immediately after the earthquake it was found necessary to place a check upon those arriving from the south ... within 2 or 3 days ... no one was permitted to enter ... without the necessary written authority."(44)

In the Hawke's Bay disaster, the setting up of the field hospital was a major new task. The race course at Greenmeadows was chosen as the hospital site and available staff, mattresses, blankets, and other supplies were despatched from the main hospital where all wards were damaged and unsafe. Steps were taken to move patients. Operating tables and equipment was set up in an improvised theatre and by early afternoon four operating tables were available. Numbers of marquees were erected on the race course to accommodate patients after receiving medical attention. Attending the wounded proceeded all day and late into the night, lights for the operating-room being provided by improvised acetylene burners and the headlights of motor cars.(45)

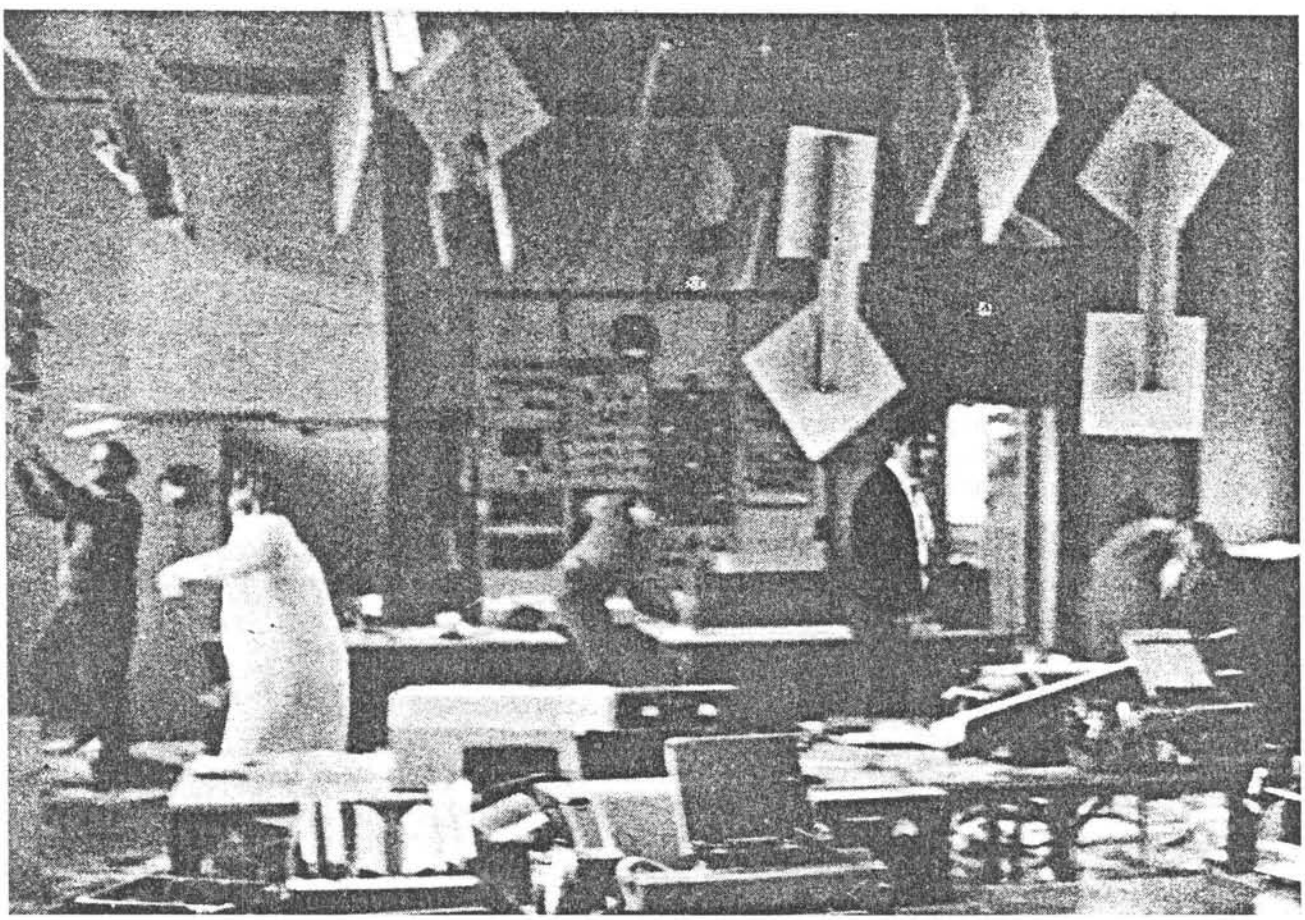
Unattended dogs became a problem in Inangahua and created a new disaster task on 27 March. "Dogs released during the earthquakes were running wild. Police collected all they could and impounded them in the children's sand pit in the school playground. The same afternoon Works section sent a van to bring them to Reefton. This was done as often as the pound refilled."(46)

5.3 Exceptionally Large Disaster Tasks

In previous disasters some tasks have been of such magnitude that demands for responding organisations have increased unexpectedly creating severe stress for organisations. The regular tasks of certain organisations increase significantly in size. Search and rescue activities considerably increase the demands on some responding organisations. The direction and control of traffic in the disaster area is often a very large task. Emergency vehicles converge on the scene and congestion of access and egress routes creates problems. Traffic bottle necks slow down the accomplishment of urgent tasks, such as conveying the injured to hospitals. The task of identifying the dead often exceeds the capabilities of any of the organisations with available relevant resources and needed skills.

In the Hawke's Bay disaster, identification of the dead was very difficult especially in the case of burned victims. Some bodies were buried unidentified. On the afternoon of 4 February, those identified in Napier were buried in a common grave with a joint religious ceremony. Subsequently arrangements were made to bury those unidentified, after detailed descriptons had been made of each body.

Fires started in Napier minutes after the earthquake and they burned unchecked throughout the day and night. The lack of water, equipment and access made normal fire fighting and control nearly impossible. Eventually all of the business district was burned out. "Water was first drawn from the baths on Marine Parade, but as these were situated too far from the fires for the hose available an attempt was made to obtain a supply by pumping from the sea further down the Parade. The suction hose ... became blocked with shingle and the attempt had to be abandoned. The only supply then remaining available to the Brigade was one from a well situated in Clive Square."(47)



Interior of Greymouth Telegraph Office showing damage to ceiling tiles (NZ Society for Earthquake Engineering, Bulletin, vol. 2, no. 1, 1969, p. 76).

(48) Report on the Inangahua Earthquake, op cit, p62.
(49) Report of the Commission of Inquiry into the Parnell Civil Defence Emergency, op cit, p36.
(50) Report of the Commission of Inquiry into the Abbotsford Landslip Disaster, op cit, p50.
(51) DSIR Report 43, 1933, p25.

For the Hawke's Bay disaster, the feeding and sheltering of evacuees, was a task of gigantic proportions. The policy was to evacuate women and children from Napier. Camps in Palmerston North were the destination for most evacuees. By Saturday after the earthquake, 3260 persons had arrived at the camp in the Palmerston North show grounds. This camp had its own Post Office, police station, clothing shop, cafeteria and other facilities. In the disaster area, the distribution of food and meal preparation for evacuees was a massive task. Meals for 700 to 800 persons at Nelson Park and 1500 persons at Hastings Street School were prepared daily.

In the Inangahua disaster, welfare activities became a very large task for Civil Defence. "On Saturday, 25 May it was decided that one person could not manage the many responsibilities which were falling on the welfare section."(48)

The disaster organisations in the Wellington area were under stress all during the morning prior to the abandoning of the Wahine. Storm conditions made it difficult to carry out emergency services. Transportation and communication channels were disrupted. The Fire Brigade responded to over 50 calls. The hospitals were operating on auxiliary power.

In the Parnell disaster, the Fire Brigade was the first organisation to become involved in evacuation, and some problems were encountered. On Tuesday, 27 February at 10:21 p.m. instructions were issued to Brigade personnel at the disaster scene to advise all of the occupants in the residental and commercial area bounded by Bradford Street, York Street, Bath Street and Parnell Road that the area should be evacuated immediately due to the possible toxicity of the fumes. In the endeavour to clear this area Brigade personnel encountered considerable opposition particularly from the business firms who were reluctant to evacuate their permises. Some elderly residents in the residential area also could not be persuaded to move at this particular time.(49)

In the Abbotsford disaster, evacuation became a large scale task. Over 600 persons were evacuated between 9:07 p.m., the time the major land movement started, and 1:30 a.m. and by 2:30 a.m. accommodation for all evacuees had been provided, and by 6:30 a.m. all evacuated families had been reunited.(50)

5.4 Damage or Destruction of Organisational Material Resources

In previous disasters, office space, communication and transportation facilities, and other material resources have been impaired, and as a result certain organisations have been left with a limited response capability. The resources of many organisations are severely curtailed by disaster disruption.

The earthquake disrupted all the essential services in the Hawke's Bay disaster area. "Absence of electric light and power rendered the subsequent work of rehabilitation and the general organisation, especially by night, somewhat difficult."(51)

Water and sewerage services were disrupted in Napier by the earthquake. Water was tanked by lorries to distribution points where it was collected by householders. The sewerage disposal system required major redesign and replacement and in the meantime, a night soil collection service was started.

Civil Defence operations started in the Inangahua County Council Office Building at Reefton, but this proved inadequate and operations were moved to the Forest

Firemen at the scene of the Parnell disaster use breathing equipment as protection against the toxic fumes (from E. Grayland, More New Zealand Disasters, Reed, 1978).

(52) Report on the Inangahua Earthquake, op cit, p22.
(53) Report of the Commission of Inquiry into the Parnell Civil Defence Emergency, op cit, pp41-42.
(54) Ibid, p49.

Service School and the Forestry Hostel. The Council building was too small to handle all Civil Defence activities, especially welfare operations of housing, clothing and food distribution.(52)

In the Parnell disaster, scarcity of material resources created problems. At 2:30 p.m. on 27 February it was decided to treat the spillages with caustic soda and soak contaminated materials in a caustic soda solution in polythene-lined jumbo bins. A request was sent out to suitable size jumbo bins and the required several tons of caustic soda. "Considerable delays were experienced in obtaining these resources. Only ½ ton of caustic soda had been delivered by night fall."(53)

The next morning, three tons of caustic soda arrived. Work spreading the caustic soda over the ground spillages proceeded, but further delays were experienced due to the difficulty in obtaining suitably sized jumbo bins for the caustic soda solutions.

5.5 Incomplete Mobilisation of Organisational Personnel

In previous disasters, the mobilisation of organisational personnel has been difficult, thus leaving organisations with limited response capabilities. The mobilisation of organisational personnel is not always rapid or complete. Communication and transportation problems will make it difficult for organisations to rapidly and fully mobilise their members. Organisations also have difficulty fully maintaining their staffing. Organisations loose the services of on-duty personnel who leave at least temporarily to check about the safety and welfare of their families and other close relatives. When disasters occur at night, weekends, or holidays, many organisations are not operating and have to undergo membership mobilisation. On these occasions other organisations are operating with only skeleton staffs and have to undergo further membership mobilisation in order to respond effectively.

The weather conditions and the time the disaster occurs affect the degree to which organisations operate effectively. During darkness and stormy conditions organisational activities are hampered.

In the Wahine disaster, the severe weather conditions limited the scope of the sea rescue which could be mounted. Only vessels of proven sea-worthiness were able to safely operate in the stormy conditions.

In the Parnell disaster, the toxic fumes affected fire and police officers so badly that some were unable to continue operations and required medical treatment. In the Police, 25 officers were affected and four were admitted to Auckland Hospital, and 126 Fire Brigade officers required treatment and 15 were admitted to hospital.(54)

5.6 Lack of Disaster Warning

Some previous disasters have occurred with little or no warning. The lack of warning contributes to the creation of excessive demands for the responding organisations.

There was no forewarning that the Wahine would be abandoned. When the abandonment decision was made, it was generally expected that the ship would ride out the storm. Thus, the sea-rescue was not fully mobilised when the passengers were actually leaving the ship. This was partially due to storm conditions preventing ships and boats from leaving moorings during the morning.

In the Wahine disaster, it was not realised until after life rafts, life boats, and people began drifting across the harbour that the major land rescue would be occurring on the rocky east coast rather than the sheltered Seatoun coast. Land access to the east coast was very restricted. The only road was blocked by a slip and other debris until 3:30 p.m.

Heretaunga St, Hastings, showing earthquake debri from the Grand Hotel right across the street (Geoff Conly, The Shock of '31, Reed, 1980).

Sailors excavating for the bodies of twelve nurses in the ruins of the Nurses' Home, Napier Hospital (D. Scott, Inheritors of a Dream: a Pictorian History of New Zealand, Riddle, 1962).

6. DISASTER PLANS AND PREPARATIONS

6.1 Lack of Prior Disaster Experience

It is as important to understand the social pre-conditions which permit disasters to develop as it is to study the social consequences of disasters. However, practical prior experience is often quite limited in disasters. Infrequency of certain disasters means that very little residue of past experience is available to guide and direct disaster activities.

In such cases there are no bodies of knowledge gained from prior experience which can be utilised by the responding organisations. Organisational members have not had extensive experience of dealing with disasters. As a result, there is little interest or motivation to make plans and preparations for disaster mitigation.

6.2 Inappropriate and Inadequate Plans

In previous disasters, the existing disaster plans and preparations have been often inappropriate or inadequate. The plans are inappropriate in some cases because they focus upon only one type of disaster, such as a nuclear catastrophe. Plans which prepare specifically for one type of disaster often are very inappropriate when a different type of disaster occurs. General as well as specific disaster plans are required. The scope of plans needs to be broadened to encompass all types of disasters.

Disaster plans are inadequate in some instances because the disaster turns out to be much larger than expected. Some disasters are larger than any which have occurred previously. Some disaster plans are not broad and comprehensive enough to be appropriate and adequate in a large disaster situation.

An overall disaster plan which covers the entire disaster situation is often unavailable. Interorganisational planning, in particular, is frequently inadequate.

In previous disasters, many of the plans have been merely "paper" preparations which have not been practised in any way. Disaster simulations are infrequent, and hence many disaster plans remain unpractised and untested.

In some disasters, the plans are very out-dated. Some are so old and neglected that they are virtually obsolete and unuseable. Staff turnover, through promotion, retirement, and termination, means that disaster plans become inadequate. New personnel are unfamiliar with the existing plans unless these are regularly rehearsed, reviewed, and revised. Disaster equipment which remains unused for long periods of time without any trial runs often proves inadequate during a disaster situation.

6.3 Threatened Values

Primary values are threatened severely in disasters. Preservation of life is the primary value which receives the highest priority in a disaster situation. Immediate and rapid action occurs in disasters because primary values have been threatened.

(55) Geoff Conley, The Shock of '31 : the Hawke's Bay Earthquake, (Reed, 1980), p45.
(56) Ibid, p33.
(57) Report of the Commission of Inquiry into the Abbotsford Landslip Disaster, op cit, p49.

In the very early part of disasters, key decision-makers come under considerable pressure to reach decisions which result in immediate action. A moral compunction that something needs to be done becomes part of the basis of developments in disaster situations.

Certain tasks are seen as requiring immediate attention while basic values remain under threat. There is a sense of urgency about completing certain disaster tasks. Dealing with the dead and injured receives urgent attention. The evaucation of large numbers of people in a short period of time often has to be accomplished in disasters. To save as many lives as possible, this task is given high priority and treated with upmost urgency. Feeding and sheltering evacuees is also a high priority task. This often has to be accomplished with limited resources of both trained personnel and crucial equipment and supplies.

In the Hawke's Bay disaster, the value placed on preserving lives meant that resuce work superceded all other activities. "The need to rescue the buried and trapped before the flames reach them was a chief reason so much property in stocks and documents was lost. Lives came first."(55)

"In the immediate aftermath of the main earthquake shocks, property had no value. Only life had. A Hastings youth who had escaped with nothing more than a few bruises rushed back into a collapsing building to aid a stranger trapped by a beam. The youth lost his life."(56)

In the Abbotsford disaster, the rescue of 17 persons who were trapped on the slip island was an urgent, high-priority task. The resources of the police Department, Fire Brigade, and Electricity Department and the assistance of civilians were required to assist the resident to safety.(57)

(58) J. Oliver, "An Assessment of Problems and Practice: Natural Hazard Management in Northern Australia", in G. Pickup (ed.), Natural Nazards Management in North Australia (Australian National University, 1978), p.9.

7. IMPLICATIONS

"A hazard does not ... have an absolute meaning" (58)

The study of five previous impact disasters reveals that serious sociological problems have occurred in all of the disasters. Moreover, during nearly a fifty year period, similar problems have kept occurring in New Zealand disasters. However, it is not inevitable that these sociological problems should continue to occur in the future. On the contrary, the study of previous disasters has provided ideas about what future disasters may be like, and these ideas can be the basis for decisions, policies, and plans which result in the mitigation of problems in the future. That is, by thinking about the problems that could be avoided in disasters, the policies, plans, and resources will be developed which will actually bring about the prevention of the problems.

A number of specific implications can be drawn on the basis of the findings from the study of these five disasters in New Zealand. Some of these may appear self evident, but the problems they are intended to overcome have arisen repeatedly in previous disasters.

(i) As much information as possible has to be known as quickly as possible about the nature of the disaster situation in order to facilitate the most effective handling of the disaster problems.

(ii) Resources must be devoted to the development of communication and transportation facilities which will remain operative during and after very severe impact disasters.

(iii) Communication facilities which will handle adequately a very large volume of messages in a short period of time need to be readily available for use in disasters.

(iv) The preparation of comprehensive identification lists of the dead and injured must be accomplished as quickly as possible.

(v) Attention must be devoted to verification of the accuracy of disaster information.

(vi) An overall, disaster-wide assessment of the situation has to be achieved. There needs to be a mechanism for sharing of disaster information on an interorganisational basis so that the disaster situation is comprehensively defined.

(vii) There needs to be clear specification of responsibility for control and direction of disaster activities. To avoid ambiguity over authority in disasters, a well-delineated authority structure has to be worked out to effectively control all disaster activities.

(viii) The decision-making and over-all direction and control in disasters should emanate from legitimate authority positions. Key decision-makers should prevent authority lapses, by devoting themselves to maintaining control and coordination, rather than carrying out such field tasks as search and rescue of the casualties.

(ix) Command posts should be set up as soon as possible at the scene of disaster activities.

(x) The activities of responding organisations should be coordinated on a disaster-wide, interorganisational basis.

(xi) Organisational response capability should be developed to handle a disaster of any magnitude. The capacity should exist to handle all new disaster-generated tasks and exceptionally large tasks.

(xii) Supplementary material resources should be readily available for replacement of organisational resources which are damaged or destroyed during disaster impact.

(xiii) Organisations must devote special attention to membership mobilisation during a disaster.

(xiv) Procedures should be developed to provide as much disaster warning as possible.

(xv) Disaster plans should be constantly practised and revised.

(xvi) A range of disaster plans should be developed to cover every potential type of disaster.

The study of disasters from a futurist perspective has far-reaching implications. In the sociology of disasters, the emphasis needs to change from reactive thinking about how people respond to disasters, to anticipatory thinking about how disaster problems can be prevented. Rather than merely reacting to problems, the problems must be anticipated and avoided as much as possible. Once a capacity has been developed to anticipate what could happen in future disasters, plans and decisions can be made to prevent and mitigate the anticipated social problems from actually occurring. In most cases, sociological problems can be prevented from occurring in disasters. Thus, thinking about disasters and the future needs to focus upon how problems can be mitigated and prevented.

In order to be successful in preventing and mitigating disaster problems in the future, the future must be viewed as very open to change and as having an infinite variety of possibilities. In other words, it is important to accept and act on the fact that we have control over future developments.

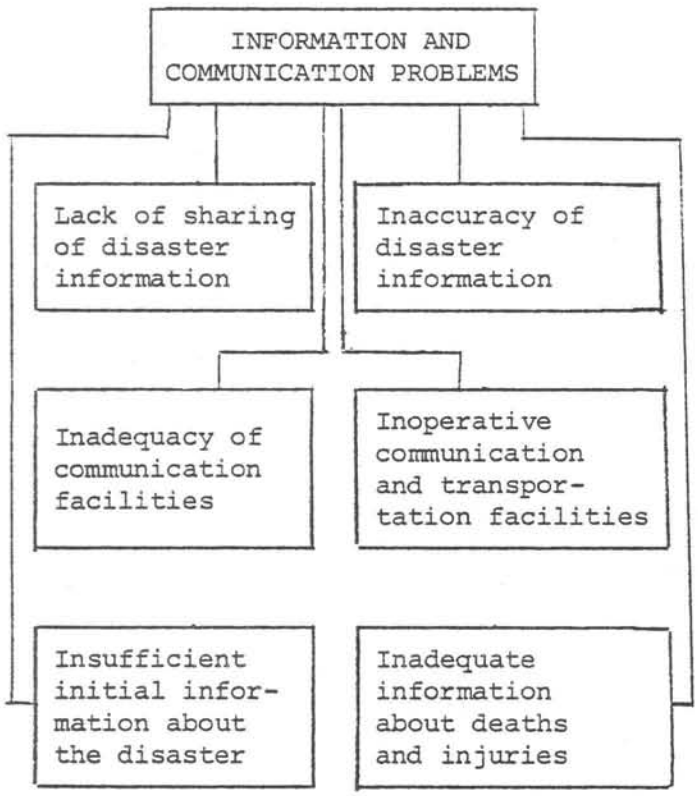
As a starting point, a great deal of creative brainstorming would produce various possible solutions to the problems which have occurred in previous disasters. Regular brainstorming sessions, involving Civil Defence, Police, Fire, St John Ambulance, and personnel from other oganisations which deal with disasters would produce innovative solutions to problems, or ways of avoiding these.

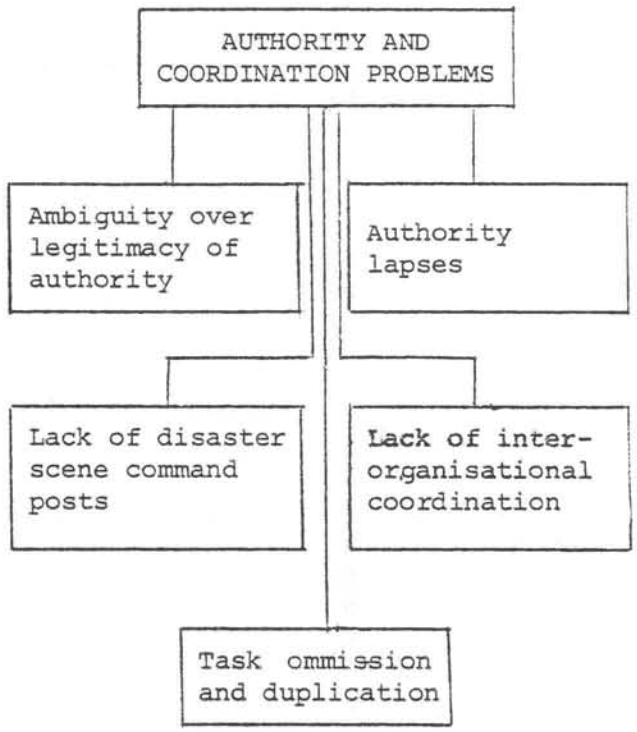
In the area of planning, existing plans require considerable elaboration, extension, up-dating, and practice, but equally important, alternative plans need to be formulated. Disaster planning must occur in the context of the possibility of a megacrisis occurring in New Zealand. The ramifications of a megacrisis make traditional plans seem hopelessly inadequate and inappropriate. Supplementing traditional plans with alternative plans would be a very meaningful development for planners and citizens at large.

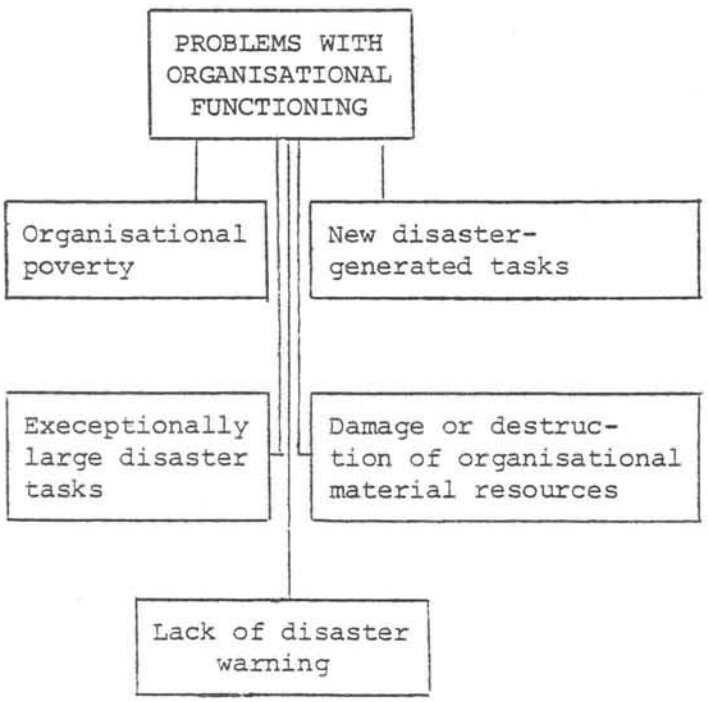
Once alternative plans have been developed, regular disaster simulations should become an integral and regular feature of New Zealand social life. As wide a cross-section of people as possible should have the opportunity to participate in simulation exercises. In these simulations, alternative plans should be applied through several scenarios of a disaster.

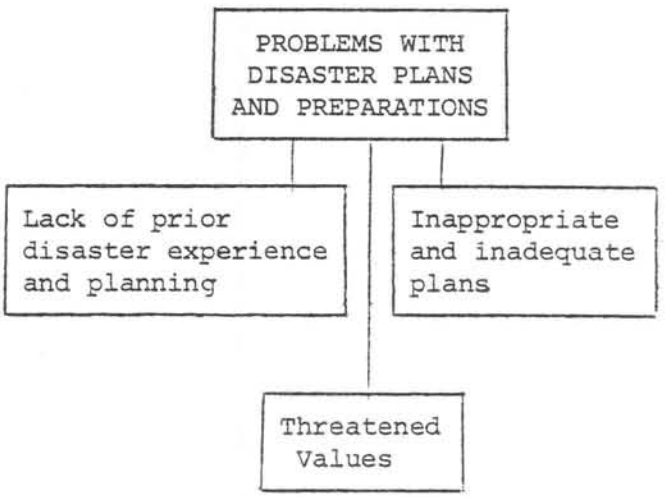
Extensive brainstorming about disasters could also be done in schools as a regular part of the secondary school work. This would be a good way to

MAJOR SOCIOLOGICAL PROBLEMS IN NEW ZEALAND DISASTERS









encourage flexible thinking, handling uncertainty, and creative problem-solving. In education in general there is a need to develop an orientation toward self-reliance and taking control of future developments. A major component of schooling should be education for the future.

The future will involve more uncertainties than have characterised the past, and education should develop the skills to deal with uncertainties and rapid social change. The same type of education will develop a general capacity to control the future as well as develop disaster coping skills. That is, for the future, the education needed for dealing with disasters is very similar to that needed for daily life. Specifically, far more practical things need to be taught about how a community works with respect to essential services, organisational activities, and communication and transportation systems.

The major conclusion of this report is that an anticipatory approach would improve our capacity for dealing with disasters. It is necessary to anticipate what sociological problems could occur in future disasters. After this crucial development of anticipating the future has been accomplished, a plethora of constructive possibilities for mitigating and preventing disasters will unfold. However, only an anticipatory approach as a necessary beginning point will facilitate an effective alleviation of sociological problems in disasters.

The trends which can be identified in previous disasters reveal the likely nature of the social problems which could occur in future disasters. However, it is not inevitable that disasters will occur and create the same problems in the future. Through future studies, social planning, and policy development by futurists in New Zealand, we can ensure that the social goals and purposes of society develop in such a manner that regardless of the nature of the disaster health and economic disruption for human beings would be minimised.