

4GK7QT



3 4067 01480 888 4

THE UNIVERSITY OF QUEENSLAND

LIBRARY

The persons whose signatures appear below have consulted this thesis  
by . . . . . PATRICIA MARGARET SHORT . . . . . and are aware that  
it is available for study only and that no quotations, or substantive information  
not otherwise available, may be published therefrom without the consent of the  
author.

NAME	DATE	NAME	DATE
Angela Pearce	16 Sept 77		

THE SOCIAL ORGANISATION OF VULNERABILITY: A CASE STUDY  
OF THE MORETON REGION FLOODS OF AUSTRALIA DAY, 1974

by

PATRICIA MARGARET SHORT, B.A. (Hons)

A thesis submitted in fulfilment  
of the requirements for the Degree  
of Master of Arts in the Department  
of Anthropology and Sociology at  
The University of Queensland

December 1988

Except where otherwise acknowledged in the text, this thesis represents my original research. The material in it has not been previously submitted, either in whole or in part, for a degree at this or any other university.

*A. M. Short*  
.....

## TABLE OF CONTENTS

	<u>Page</u>
PREFACE	1
CHAPTER 1 - INTRODUCTION (AND BACKGROUND TO THE MORETON REGION FLOOD STUDY)	3
The Beginnings of the Research	3
The Flood Study	6
The Samples	8
The Questionnaires	13
Theory, Method and Ethics	15
CHAPTER 2 - THE SOCIOLOGICAL STUDY OF DISASTERS: THEORETICAL AND METHODOLOGICAL FOUNDATIONS	21
Disaster Research	21
Natural Hazards Research	26
New Directions	30
A Conceptual Framework for the Analysis of Disaster	32
Knowledge, Power and Social Structures	35
CHAPTER 3 - THE VULNERABILITY OF FLOOD-PLAIN RESIDENTS	40
Introduction	40
The Concept of Vulnerability	40
The Social-Environmental Dimension	42
The Social-Economic Dimension	49
The Political Dimension	60
1. The Federal Government	61
2. The Queensland Government	63
3. Local Government	65
Conclusion	66

	<u>Page</u>
CHAPTER 4 - THE EMERGENCY PERIOD: THE MANAGEMENT OF VULNERABILITY	70
The Public Interpretation of the Threat	71
Private Interpretations of the Threat	74
The Public Response to the Emergency	77
The Police Department	78
The Mass Media	81
'Victims' and 'Helpers'	86
The Welfare Response	87
The Private Response	93
Conclusion	99
CHAPTER 5 - VULNERABILITY AND RECOVERY	103
Introduction	103
Vulnerability, Impact and Recovery	105
The Analysis of Recovery	109
Recovery, House Restoration and Emotional Strain	112
Personal Recovery	114
Material Recovery	115
Occupation and Recovery	116
Gender, Occupation and Recovery	120
Age and Recovery	124
Conclusion	127
CHAPTER 6 - CONCLUSION: THE SOCIAL ORGANISATION OF VULNERABILITY, IMPACT AND RECOVERY	130
The Nature of the Enquiry	130
The Social Organisation of Vulnerability, Impact and Recovery	132
The Significance of the Analysis	139
Conclusion	140

		<u>Page</u>
APPENDIX A - THE QUESTIONNAIRES	... ..	145
APPENDIX B - TEXTS OF EARLY WARNINGS	... ..	180
APPENDIX C - NEWSHEETS	... ..	185
APPENDIX D - DAMAGE SCALE	... ..	191
APPENDIX E - COLLAPSED VARIABLES FOR CONTINGENCY ANALYSIS OF RECOVERY	... ..	192
BIBLIOGRAPHY	... ..	196.

## LIST OF ILLUSTRATIONS

	<u>Page</u>
<u>Tables</u>	
1.1 Interviews conducted in each sample area ... ..	12
1.2 Respondents' first indication of the flood ... ..	75
4.2 Height of water when respondent first thought house might be flooded ... ..	75
4.3 Official warning and pre-evacuation preparations (Brisbane only) ... ..	76
4.4 Furniture and/or possessions removed from house ... ..	76
4.5 Purpose of contact with relief centre(s) ... ..	89
4.6 Reported satisfaction with services received at relief centres (Brisbane only) ... ..	90
4.7 Frequency with which types of relief centre workers mentioned by organisational study respondents ... ..	91
4.8 Method of evacuation ... ..	94
4.9 Immediate post-evacuation accommodation ... ..	95
4.10 Reasons for going to post-evacuation accommodation ... ..	95
4.11 Suggestions for improvements in emergency operations ... ..	96
4.12 Satisfaction/dissatisfaction with evacuation ... ..	97
4.13 People who helped during clean-up (Brisbane only) ... ..	98
4.14 People found most helpful during clean-up (Brisbane only) ... ..	98
5.1 Differences in occupational composition of households doing some repairs themselves and households having all repairs carried out by tradeworkers ... ..	118
5.2 Occupational groupings and recovery rates ... ..	118
5.3 Recovery patterns and occupational groupings ... ..	119

	<u>Page</u>
<u>Tables</u>	
5.4 Proportions of households with housewives ... ..	121
5.5 Labour force participation rates of married women, February 1974, Queensland and Australia ... ..	122
5.6 Labour force status and recovery ... ..	123
5.7 Recovery patterns and occupational groupings ... ..	126
5.8 Patterns of post-flood condition of home for different age-groups involved in repair work ... ..	opp. 127
<u>Figures</u>	
1.1 Brisbane sample areas ... ..	10
1.2 Ipswich sample areas ... ..	11
3.1 Major floods in the Brisbane River Basin 1941-1974 ... ..	43
3.2 Brisbane River Catchment ... ..	46
3.3 Population density ... ..	51
3.4 Male lower blue collar workers ... ..	52
3.5 65 years and over age group ... ..	53
3.6 University graduates ... ..	54
3.7 Upper white collar workers ... ..	55
3.8 Socio-economic status ... ..	56
3.9 Owner occupied homes ... ..	57
5.1 Vulnerability, impact and recovery - patterns of association ... ..	113



## ACKNOWLEDGEMENTS

This thesis has developed over a number of years and in interaction with many people who have contributed constructively to its formulation. I am indebted to them all for their intellectual support, encouragement, resistance and critical questioning of emerging ideas.

Special thanks are due to my supervisor, Dr Patrick Mullins, whose careful reading and appraisal of this work are very much appreciated. I also wish to thank Mrs Irene Saunderson for her meticulous attention to detail in the typing of this thesis and for her understanding and friendship in spite of my often unrealistic expectations.

## PREFACE

During 1974 and 1975, members of the Department of Anthropology and Sociology, and Social Work, at the University of Queensland, carried out a study to assess the social impact of one of Australia's greatest natural disasters, Queensland's Australia Day Floods of January 1974. One of many studies, this one was undertaken to assess the effects of the floods on householders and to evaluate the relief activities of formal organisations. This University of Queensland study (referred to here as The Flood Study) entailed a retrospective study of the evacuation of Normanton in far north Queensland; a study of organisations involved in relief and rehabilitation in Brisbane and Ipswich; and a longitudinal study of flood-affected households in Brisbane and Ipswich.

This thesis develops aspects of the longitudinal study through secondary analysis of the data. (The beginnings of the research are outlined in Chapter 1). An underlying concern in this work is the appropriateness of the conceptual framework used in the Flood Study. Therefore, a critique of some aspects of the Flood Study and the research traditions upon which it was based is undertaken, in Chapter 2. It is argued that concepts employed, which were chosen from the major traditions of disaster research, required reformulation. A review of these major traditions leads to the adoption of the concept of "vulnerability", which refers to risk-bearing in relation to the natural environment, as a central analytical tool. The complex of structures and processes by which householders' vulnerability is constituted is illustrated in Chapter 3. Bureaucratic management of the environment, the privatisation of the environment through private home ownership, and a confidence in

technological mitigation and post-impact relief measures are recognised as significant elements in the constitution of patterns of vulnerability. These structures are shown (in Chapter 4) to have been relevant also to the development and acceptance of a particular public (and dominant) account of the catastrophic flooding in the Moreton Region. This account emphasised the disaster groupings of "helpers" and "victims" which were formed in relation to what was defined as an environmental threat. The public account and the public response are shown to have been predicated upon an uneven distribution of knowledge of the hazard (held mainly by experts in government departments) and an acceptance by householders, who were mainly private home owners, that dealing with the effects of vulnerability was essentially a private concern.

In Chapter 5, recovery, though depending upon state organised financial assistance, is shown to be very much a private concern, achieved in large part by the private effort or household labour of those directly affected by the flooding. Chapter 6, providing a conclusion to the enquiry, emphasises that throughout the analysis, attention repeatedly returns to a paradox of acceptance by householders that management of the use of the environment is essentially a state responsibility, but that management of the unfavourable outcomes of using the environment (their vulnerability) is essentially a private responsibility. This is recognised as a core feature of the structuring of vulnerability, impact and recovery. Finally, elements of an emergent substantive theory and their practical implications are identified.

## CHAPTER 1

## INTRODUCTION (AND BACKGROUND TO THE MORETON REGION FLOOD STUDY)

The Beginnings of the Research

Among the many community reactions to the flood experience was a predictable interest in documenting and evaluating responses. Accordingly, particular agencies such as State Emergency Services, the Civil Defence Organisation, the Bureau of Meteorology and various other groups and organisations examined and reported on their own involvement. Media reports and contemplative articles in the press discussed the experience. No less predictable was the reaction of people in various university departments, who saw either the need or potential for research into various aspects of the situation. Responses came in particular from the Departments of Architecture, Geography, Psychology and Psychiatric Medicine, as well as from Social Work and Anthropology and Sociology, and from individual members of other departments at the University of Queensland. The University as a whole responded with discussion at many levels and through various channels, with organised seminars and public meetings.

Similarities and differences in interest and approach were discovered and attempts were made to co-ordinate research efforts. After the initiation of the Flood Study, meetings were arranged in the Department of Social Work, which were attended not only by staff from that department and from the Department of Anthropology and Sociology, who continued as collaborators, but also by others from the Departments of Geography and Psychology. Attempts were also made to co-ordinate activities with research conducted by the Department of

Psychiatric Medicine. The final outcome of these discussions was that, apart from the congruence of interests between the Departments of Anthropology and Sociology and Social Work, there were significant differences in approach and in areas of interest, and it was accepted that an amalgamation of all interests into one co-ordinated project was not feasible. As a result a number of separate research projects were undertaken, with different aims and foci, but all drawing upon the same subjects - the flood-affected population. This fact had implications for the practical administration of research, particularly where questionnaire administration was concerned. Not only did it complicate the ethical issues associated with the use of the flood-affected population as the source of information, but the multiplicity of investigations added yet another dimension to the experiences of flood-affected people. Some flood-affected people were repeatedly the subjects of many different studies.

The Departments of Social Work and Anthropology and Sociology embarked upon a longitudinal survey of flood victims and a survey of helping organisations. This resulted in the publication of a report to the Department of Social Security, the Queensland Flood Report, Australia Day, 1974 (Chamberlain et al., 1981). This publication can be regarded as the first stage of the research which has led to this thesis. The thesis is essentially a re-examination of the original data in the light of additional data. It entails a critique of theoretical approaches to the study of natural disasters and, more broadly, to natural hazards. (The terms "natural disaster" and "natural hazard" will be distinguished in later discussion.) The relationship between the first stage and the re-analysis of data, though apparently sequential, is best described as dialectic. The

beginnings of this thesis lie in concerns about the relevance and usefulness of the theoretical and methodological approach adopted for the Flood Study in providing new directions for the understanding of disasters. The re-examination arose because, in a fundamental way, there appeared to be a 'poor fit' between the data and the theoretical framework. Victims' experiences were clearly not uniform and were not simply determined by the physical characteristics of the flood. Moreover, although at different times (because of the progress of the flood and the gradual accessibility of resources), most flood-affected people focussed upon the same activities, they were not all experiencing 'phases' of the disaster at the same time. There was a good deal of variability in the times people spent on various tasks as responses to the flooding. An early scepticism in this regard led to a rejection, even in the early stages of the Flood Study, of the concepts "disaster phases" and "flood/disaster victims" - both central concepts in disaster research literature and in welfare discourse. The Flood Study, as it was conducted, had little capacity to reveal the underlying determinants of the situation; to explicate reasons for the "disaster". The unsociological nature of the project prompted further theorising and the inevitable return to the data. The research comprising the Flood Study and this thesis is properly viewed as an exercise in "grounded theory" in the sense outlined first by Glaser and Strauss (1967), that is, the discovery of theory from data systematically obtained from social research.

The following account of the development of the research concentrates upon those aspects which are particularly relevant to the re-analysis of data, that is, most relevant to this thesis. A more detailed account of the Flood Study can be found in Chamberlain et al. (1981).

## The Flood Study

The first stage of this research had its beginnings in the period immediately after the floods, with the socially disruptive consequences of the floods becoming the subject of the study. The timing of the research affected its conduct in the following ways.

Firstly, there was no pre-established plan for such a study and the researchers had comparatively little experience or knowledge of the field of disaster research specifically. As a result, the preparation of research instruments and the definition of research tasks were, to a large degree, developmental.

The research plan was formulated at a time when the physical and social environment had not returned to "normal", and therefore research questions and hypotheses were heavily influenced by the everyday experiences of the research participants at that time. These included direct personal observation of the situations of relatives, friends, colleagues or acquaintances who were flood-affected; secondhand accounts by others affected by the disaster; media reports from a variety of sources; and other talk, both public and private, about "the disaster". This is not to suggest that the formulation of the research was unsystematic, or that research questions were developed solely in the light of such personal experience. A review of available literature contributed to the formulation of the research and alerted the researchers to common "disaster myths", but it presented no serious challenge to the "commonsense", everyday interpretations of the disaster. The research was designed to document the disaster events more systematically, to point to shortcomings in the counter-disaster effort and finally to make

recommendations for the further improvement of the counter-disaster effort.

A second effect emerging at this early stage of research was the sense of urgency which permeated early research activity. It was felt at the time that if a successful study of the effects of the flood were to be carried out, a major part of the data collection would have to be done in the immediate post-impact period. The implicit assumptions here were that the disaster was a short-term, sudden event that could not have been observed either before or after this time and that the flood-affected person's account of his or her flood experience recorded soon after the flooding would be more accurate than any account recorded at a later stage. These assumptions were never seriously examined during the first stage, although the practical implications of undertaking a large-scale research project in a very short time led researchers to assume the validity of survey data recorded as much as seven months after the flood. This sense of urgency which had influenced the initial organisation and conduct of the research and these assumptions upon which it was based can now be recognised as elements of the very social environment that was to be investigated.

It was under these developmental conditions that the two surveys of flood-affected households came to be designed and conducted in Brisbane and nearby Ipswich. The first of these was carried out during the period May to August 1974 (between four and seven months after the flood) and the second in April and May 1975 (fourteen to fifteen months after the flood). A discussion of sampling procedures, questionnaire design and conduct of these surveys follows.



### The Samples

When the samples were being designed, little precise information was available about the flood-affected population in Brisbane. A flood map showing areas of inundation at various levels on the Brisbane Port Office gauge and a careful estimate of the 1974 flood line had been prepared and published soon after the flood by the Queensland Surveyor-General. However, Windsor and Jindalee, suburbs which the research group wished to consider for inclusion in the sampling, were not shown on this map. Therefore an approach was made to the Brisbane City Council for information on the extent of flooding in these areas. Information was also available from the officers of the Queensland Disaster Welfare Committee (QDWC) on the number of applications for financial assistance which had been received by the Lord Mayor's Fund from various suburban areas in Brisbane. (The Queensland Disaster Welfare Committee was a central welfare co-ordinating committee of social workers and other welfare professionals which obtained funding from the Australian Department of Social Security to co-ordinate a working unit of social workers, some seconded from government departments and some employed under contract to the QDWC. Its purpose was to ensure effective service delivery and especially to ensure that disadvantaged groups and individuals with special needs were identified and serviced early.) At the time it was believed that the figures supplied by QDWC would be good indicators of the number of households affected by flood. This assumption may not have been altogether justified, since between 19 per cent and 22 per cent of the households surveyed appear not to have applied for financial assistance from this fund. Nevertheless, these two sets of information (that is, the maps of flood-affected areas and the estimates of applications to the Lord Mayor's Fund) provided the basis

on which the sample was constructed. Initially it was hoped that the entire flood-affected region might be covered, but after examination, some areas were eliminated. Among them were South Brisbane and West End, because of the high proportion of industrial and commercial sites in these suburbs. Others eliminated were Ashgrove and St. John's Wood, since only a few homes in these areas were affected, and the cost of paying interviewers to travel to and return for callbacks in these areas was prohibitive. Within the selected suburbs, boundaries were drawn around the most densely populated affected areas, thus defining the locations in which the data would be collected. Care was taken to ensure that the sample was selected from both river-flooded and creek-flooded areas. Once the sample areas had been drawn, the number of households to be interviewed within each area was determined. The number for each area was in direct proportion to the estimated number of affected households in the area. All streets from an area were randomly ordered and each street was then canvassed for interviews. Interviews were conducted on one side of the street only, this side being determined by systematically assigning either the odd numbered or even numbered side for each street alternatively as streets appeared on the randomly ordered list. Interviewers were instructed to begin interviewing at the lowest numbered house on the designated side of the street and proceed to interview at every fourth house from that one. Interviews were conducted only at households where floodwaters had entered the property. This, then, was the operational definition of the "flood affected household". Interviews were conducted with an adult person from the household which, in most cases, meant a household manager.<sup>1</sup>

---

<sup>1</sup>This term is used in place of the conventional sexist terms 'head of household' and 'spouse'.

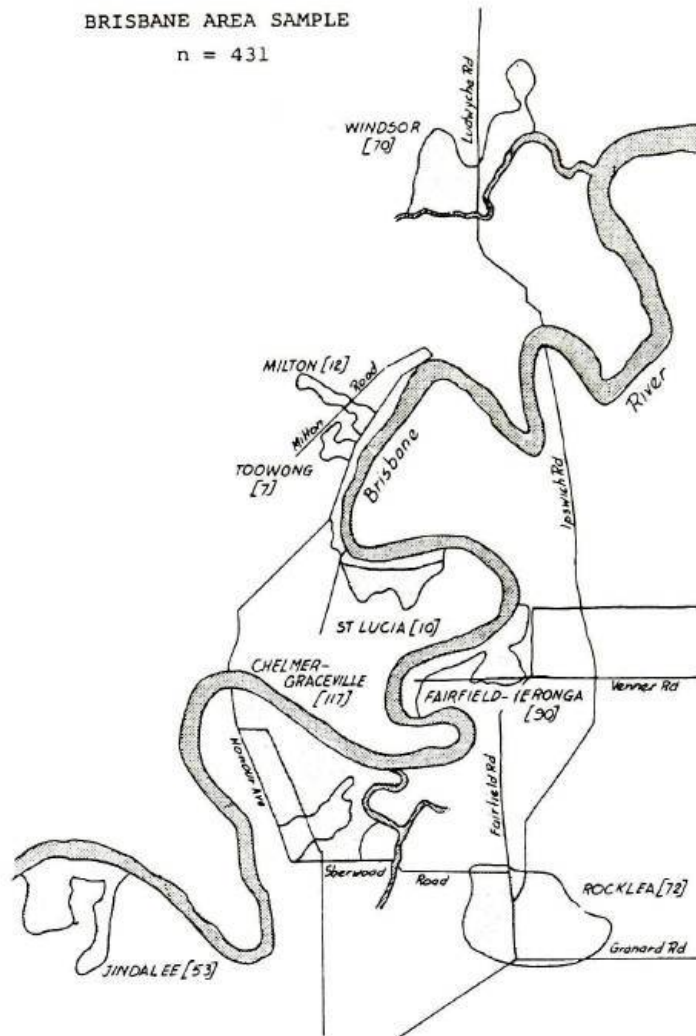


Figure 1.1: Brisbane sample areas.

To sum up then, the sampling method adopted for Brisbane was basically a three-stage one, involving:

1. Stratified sampling of flood-affected areas;
2. Simple random sampling of streets within selected areas;
3. Systematic sampling of households.

For Ipswich, much the same sampling procedure was adopted, although there were minor variations because the field work did not commence until Brisbane data collection had been completed. The basis of the sampling procedure here was a flood map which showed 25 demarcated flood-affected areas with total number of known flood-lost (i.e. totally destroyed) and flood-affected dwellings in

each area. This is the major difference between the Brisbane and Ipswich samples. The starting points in Ipswich were known, not estimated, numbers of flood-affected units. Again, some of the 25 affected areas were eliminated on the basis of practical considerations. The inner city areas were not included and areas where the number of flood-affected households was comparatively small were also eliminated. All other areas were included in the sample.

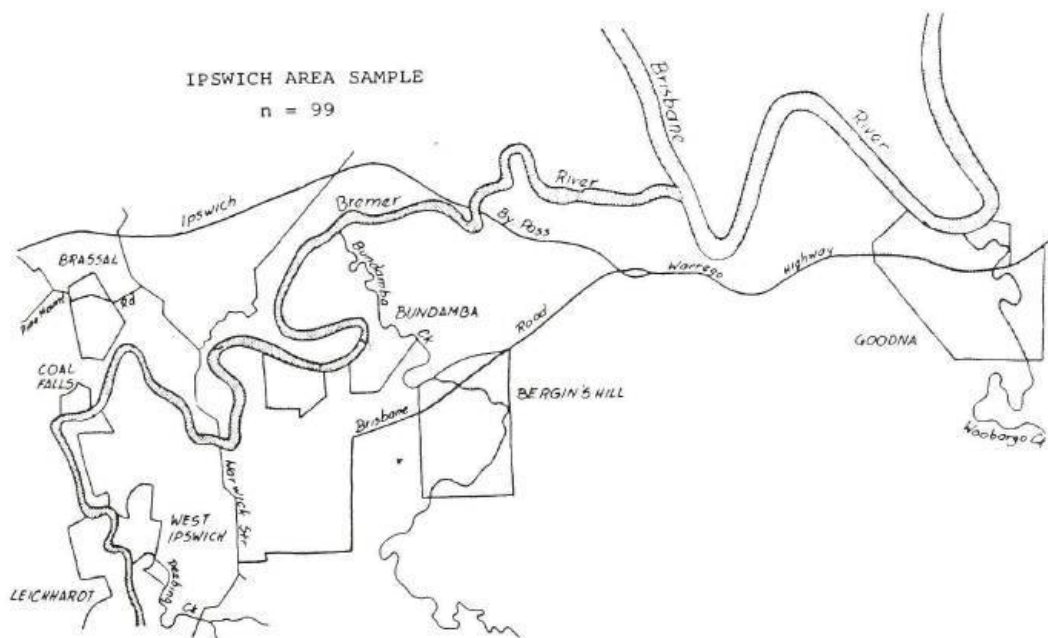


Figure 1.2: Ipswich sample areas.

Table 1.1 lists the number of interviews conducted in each sample area in 1974 and 1975.

TABLE 1.1

## INTERVIEWS CONDUCTED IN EACH SAMPLE AREA

	Number of Interviews 1974	Number of Interviews 1975
<u>Brisbane</u>		
Chelmer-Graceville	117	65
Fairfield-Yeronga	90	43
Jindalee	53	25
Milton/Toowong*	19	-
Rocklea	72	39
St. Lucia*	10	-
Windsor	70	39
<u>Ipswich</u>		
All Areas	75	35
Goodna	24	16
TOTALS	530	262

\*Interviews were not conducted in these areas in 1975 because the small numbers involved made interviewing in these areas uneconomical.

The procedure for the selection of respondents for the follow-up study in 1975 was quite straightforward. A simple random sample, consisting of half the number of 1974 respondents, was selected for each area from the 1974 lists. In a very few cases respondents interviewed in 1974 indicated at that time that they did not wish to be interviewed again in 1975. Such respondents were not approached on the second occasion, their names being struck off the list of follow-up study respondents, to be replaced by further random selection from the 1974 lists.

## The Questionnaires

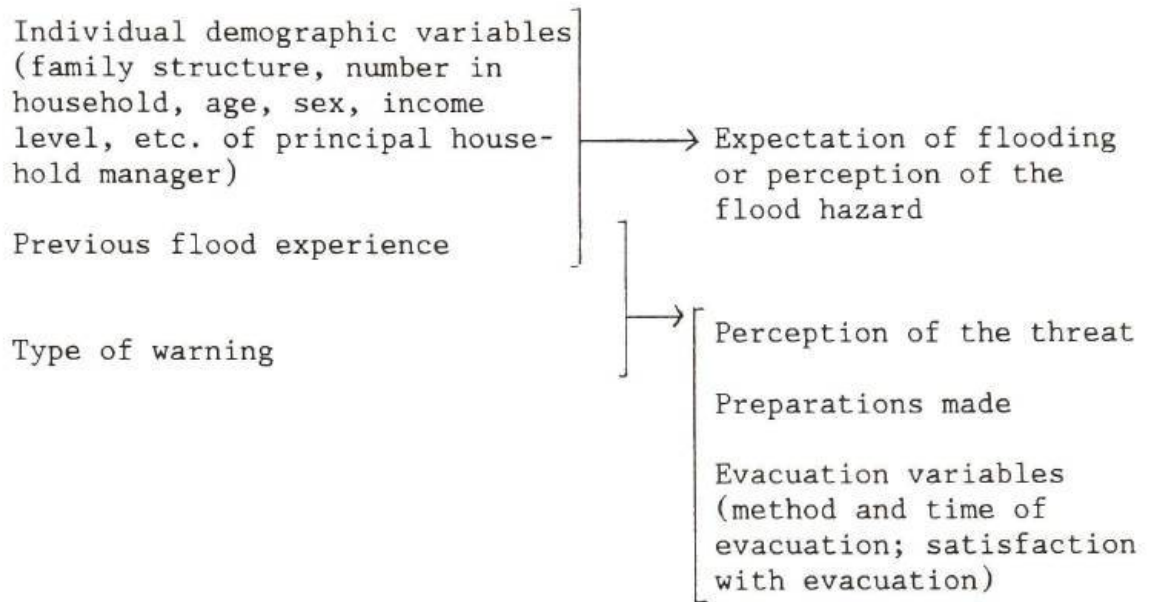
Copies of the questionnaires or interview schedules together with copies of letters of introduction and interviewer instruction sheets are reproduced in Appendix A. The basic questionnaires for the Brisbane and Ipswich surveys covered a number of areas of interest. These can be grouped under four main headings:

- (i) Personal and social characteristics of affected individuals, e.g. age, socio-economic status, previous flood experience, family size and composition;
- (ii) Flood dimensions - peak height, speed of onset, duration of impact;
- (iii) Impact on the individual's immediate physical environment;
- (iv) The operation of other forces within the social environment, e.g. the response of other individuals, groups and organisations whose actions may have been directed either at controlling the physical agent or at supporting or assisting the affected individuals.

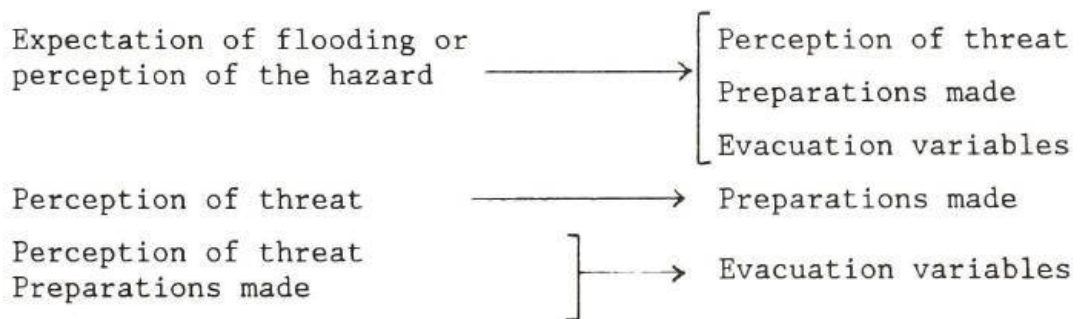
The 1974 questionnaire was designed to document, record and, where applicable, measure these factors, so that their inter-relationships could be discerned at the analysis stage. The follow-up questionnaire was intended chiefly to assess recovery and the extent of adjustment to the flood hazard. Several questions were asked about financial assistance in 1975 in an attempt to confirm the reliability of the 1974 data. A large battery of questions, focusing on the flood-affected person's perception and knowledge, use and evaluation of helper organised activities, was also included. Finally, a major section of the follow-up schedule dealt with the association respondents had with different organisations and their involvement in local area activities. The aim was to document more extensively the potential networks of support available to flood-affected people and to identify those they had used in the process of recovery and rehabilitation.

### The Analysis of Data

Frequency distributions and extensive cross-tabulation were carried out on these data to explore the relationships between variables in the groups outlined above. The following diagram shows the main inter-relationships between variables which were examined in the Flood Study.



Within this second group of variables the following relationships were also considered:



Finally, the effects of all these variables on a set of variables which were labelled "impact" variables and upon reported recovery were assessed.

However, this thesis is concerned not only with developing a better understanding of what happened during, and in the aftermath of,

the 1974 Moreton Region floods but also with the issue of whether conventional sociological studies of disasters have posed useful questions. More particularly, it addresses the issue of whether more relevant questions than those posed by the Flood Study could be asked about the Moreton Region floods of 1974, and a re-analysis of the data does suggest other useful lines of enquiry.

This re-examination of theory and data has been motivated by a general concern about theory, method and ethics in sociological research. Such concern implies an examination of the models of society which have informed natural disasters research as well as an awareness of the ways in which the research programme itself is related to the social environment which it purports to investigate. It implies also a questioning of the responsibility for conducting disaster research after impact and of the utility of knowledge so gained.

#### Theory, Method and Ethics

The approach to theory and method taken here has been motivated by what can be described broadly as the interpretive tradition in sociology - by Winch's (1958) account of a philosophy of action, the phenomenological tradition (Schutz, 1964; Berger and Luckman, 1967), by some of the insights of ethnomethodology (Garfinkel, 1967; Schutz, 1972; Cicourel, 1964) and particularly by Habermas's extension of the hermeneutic tradition embodied in his suggestion that the structure of critical social theory should reflect that of the psychoanalytic encounter. According to Habermas (1979), the task of the psychoanalyst involves, first, interpretation - interpreting the meaning of what the patient thinks and feels. Next the psychoanalyst must develop an explanation of what is happening to the patient. This



will involve reference to forces which are not independently controlled by the patient and the language of explanation here is like the language of the natural sciences. It recognises that there are circumstances in which human social life is shaped by forces of which the social actors are unconscious. Then, a third element in the psychoanalytic encounter involves emancipation - actively transforming what is happening to the individual into what the individual makes happen; transforming, if you will, the locus of control. Habermas, in recognising the essential reflexivity of human action, argues that critical social theory should also have this structure, that it too should involve interpretation, explanation and emancipation. This statement has been influential because it is concerned not only with the inter-relationships of theory and method as conventionally conceived but also with the ethical dimension of sociological work - the question of the "uses" of sociology and the liberating potential of sociological knowledge.

This critical tradition stands as an alternative to the positivism and functionalism which dominated American and Australian sociology in the 1950s and 1960s - what some refer to as 'Establishment Sociology'. In the positivist tradition, theory (logical explanation) and method (the rationale for the acceptance or rejection of hypotheses) were seen as distinct specialties and separate from everyday matters - independent of the social world of investigation and the scientist's own social location. Positivism as a methodological tradition, in denying the essential reflexivity of human action, denies also that social life, the social world, is actively constituted by and through the actions of its members.

In contrast, the interpretive tradition asserts the significance of the internal logic of social life and the significance of subjective knowledge. In this respect, the interpretive tradition not only challenges positivism but also structural-functionalism of which "systems theory" (which, it will be illustrated, has informed much of the sociological analysis of disasters) is an elaborate outcrop. Indeed, the recognition of the significance of subjective knowledge in the interpretive tradition makes the nomological dimension of the whole gamut of structuralist theory problematic, in part because of the cultural difficulty, in a world dominated by science and technology, of sustaining a genuinely structural as opposed to a causal explanation of social phenomena. A genuinely structural explanation is based not upon the simple assumption of underlying causes of human social action but upon the assumption that social structures which condition or shape social action are both the medium and the outcome of social actions. A structural explanation entails a focus upon the way in which people as social actors (members of social groups) make things happen or allow them to happen.

At the same time, many writers, including Robert Merton in his formulation of the notion of "middle-range theory" (Merton, 1957), have acknowledged the difficulty of applying the methodology of positivism - of testing "grand theory" using positivistic methods. Merton's response remains within the positivist tradition in its acceptance of the validity of a unidirectional sequence of hypothesis formulation, observation, testing and conclusion as procedures for the construction of theory. It is "grand theory" rather than the positivist method which Merton casts aside. He fails to acknowledge that the difficulty of applying large-scale grand theory lies in its overly deterministic, law-like character, because of the links which

grand theory has had with positivism as a methodological tradition. Thus, his middle-range theory inherits, but disguises, the problems of applying positivist methodology to the social world. It continues to use the language of the hypothetico-deductive method, searching for and proposing causes. Theory and method remain separate activities; and the possibility of the researcher being neutral is assumed to be real. There is no doubt, in Merton's account, that description can be free from interpretation and that value-freedom is possible. Furthermore, the question of who makes use of sociological knowledge is not part of the formulation of the notion of "middle-range theory".

In accordance with this (North American) tradition of functionalism and middle-range theory, systems models of society have been conventionally employed in disaster research, and researchers have clung to the methodological tradition of positivism. Such models have assumed that (at least for the purpose of analysis) a societal cognitive and value consensus exists with regard to any disaster and that the actual physical impact of a hazard is the prime cause of a natural disaster. Thus physical characteristics of the "disaster agent" (flood, cyclone, tornado) and the dimensions of impact (number of people killed or injured, number of buildings affected, costs of damage) form the basis of generalisation and comparison (see Barton, 1969:42-45 for a typology of disasters based on these factors). Such studies have not taken sufficient account of the internal logic of particular social structures which have been affected by natural hazards. These studies have failed to acknowledge the interdependence of theory and data.

The Brisbane Flood Study can be included in this critique, for implicit in the lines of enquiry was a "model" of a smoothly functioning society suddenly disrupted by the floods, an event which

provoked a more or less unified response from a variety of agencies, whose goal was to restore society to its "normal" pattern. Although factors such as socio-economic status and strength of personal social networks were seen as likely to affect the level and speed of individual recovery, the level of flooding and the amount of property damage were viewed as the most important factors affecting recovery. Socio-economic status and strength of personal support networks were treated in the analysis as personal attributes of "victims" and not as structural features of the society. "Recovery" was seen as a restorative process, essentially collective and necessarily directed by those with the institutional power to control resources. Indeed, the major rationale for the project was to gather data which would assist in making future policy decisions about the "distribution" of welfare in disasters. Moreover, there was no expectation that the knowledge produced by the study would necessarily be shared by those most directly affected by the hazard - the "victims" - to be used if necessary by them to improve the quality of their lives. In other words, a critical, emancipatory dimension was absent from the Flood Study, just as it has been from most disaster research.

In contrast to this conventional approach to disaster research, this thesis, in taking its direction from the interpretive tradition and from critical theory, attempts to follow an alternative strategy for the reinterpretation of data. In this task, the work of Glaser and Strauss (1967) has provided a most useful prescription at the practical level, and this thesis, as previously stated, should be regarded as an exercise in grounded theory as formulated by Glaser and Strauss. Their formulation, like Merton's "middle-range theory", can be regarded principally as a response to the difficulty in using grand

theory in social research. Unlike Merton, Glaser and Strauss have utilised the insights of the interpretive, phenomenological tradition. They reject the imposition of the external logic of hypothetico-deductive language and recognise not only that meaning systems and the internal logic of social arrangements must be taken into account in devising explanations of the social world (cf. Cicourel, 1964; Douglas, 1970; Baldamus, 1976; Phillips, 1971; Habermas, 1968; Giddens, 1982, 1984) but also that systematic social research really involves "tripping back and forth from data to theory", a process of "progressive double fitting". Here there is a continuous adjustment of concepts and data, theory and method (Glaser, 1981). Like Baldamus (1972, 1976) who describes this latter activity as one "sui generis" of sociological work, Glaser and Strauss (1967) see no other way of doing sociological analysis. It is in the recognition that this is the nature of sociological work and the basis of sociological knowledge that the possibility for a critical and humanistic (emancipatory) knowledge of social structure and human agency lies.

Accordingly, the analytical strategy adopted in this thesis, which is based upon a re-analysis of survey data from the Flood Study, takes account of additional information gathered during the Flood Study by less formalised methods. Knowledge gained in the actual conduct of the research at that time has also contributed to a critical re-analysis. It is a strategy which concentrates not upon personal stress (which was emphasised in the Flood Study) but upon social categories and upon relevant social practices. It is also based upon the belief that a major goal of sociological analysis is to discover the underlying mechanisms by which commonsense knowledge is produced and not simply to re-affirm it by reproducing it in 'scientific' terminology.

## CHAPTER 2

THE SOCIOLOGICAL STUDY OF DISASTERS: THEORETICAL AND  
METHODOLOGICAL FOUNDATIONS

In this chapter, the development of the conceptual framework informing the re-examination of the Flood Study data will be examined and the questions which have directed this analysis and re-interpretation will be stated. Two separate research traditions provide the background to the present analysis. The first, 'disaster research' and the second, 'natural hazards research' can be distinguished, not only by their differing approaches but also by their respective attention to different stages in the development of natural disaster or hazardous events. Disaster research has, for the most part, focussed upon the way societies function at times of actual threat and impact of natural hazards and during the immediate post-impact period. Natural hazards research, in contrast, has been concerned with all situations where there is at least the potential for the impact of a natural hazard, whether or not an impact has occurred. A review of the differences and links between the two traditions provides a useful starting point for a discussion of concepts.

Disaster Research

Despite some calls to concentrate to some extent upon the study of the response to disasters, in terms of structural characteristics of whole societies and cultures (Quarantelli and Taylor, 1978; Westgate and O'Keefe, 1975; Clausen et al., 1978), the field of disaster research is dominated by studies of the functioning of local communities (for example, suburbs, towns, cities or even regions) and formal organisations operating during impact. This emphasis on the

study of community and organisational functioning has come about because there is the belief that effective response to the impact of disaster is largely a matter of appropriate preparations and efficient response by informally organised groups and formal organisations developed specifically to deal with problems arising from extreme environmental conditions (Quarantelli, 1972). This research has been heavily influenced by systems theory. Organisational personnel and counter-disaster planners think of organisations and communities as 'systems', with sociological studies analysing the behaviour of human beings largely in terms of the extent to which behaviour is incorporated, or can be incorporated, within designed systems of communication and control (Quarantelli and Dynes, 1977). In these views, 'systems' are seen to be collections of inter-related parts with specific purposes or functions, usually understood to operate within specific boundaries. The general assumption that social systems tend towards some equilibrium and not that parts should function to maintain the whole, typically underlies these approaches. With the influence of cybernetics, these systems are regarded as input-output systems and effectiveness of response has usually been evaluated in terms of the efficiency of organisational performance: in terms of the extent to which 'inputs' match 'outputs', supply matches demand and in terms of the accuracy and speed of communication. Judgements about recovery are generally made in terms of the rapidity with which the whole social system functions normally again.

Implicit in this approach is the assumption that the disaster agent or the environmental hazard is external to the social system. In many studies (for example, Killian, 1954; Fritz, 1961; Barton, 1969) the disaster has been regarded quite explicitly as an event

isolated in time and opposite to normal social processes: a sudden, external interruption.

Now, while this view recognises that the nature and effects of the impact of a natural hazard are shaped by social forces, it employs a consensus model of society, based upon the assumptions that goals and values of the whole society or system can be specified and that there is a general acceptance amongst members of the society of these goals and values. The relationship between individuals and social structure is non-problematic in this account; normally individuals occupy social positions and perform social roles and so contribute to the efficient (smooth) functioning of the social system. Disaster disrupts this 'normal' and efficient functioning by preventing individuals from fulfilling their normal roles. The experience of disaster is regarded as a collective one with variations conceptualised in terms of the single dimension of role performance. A consensus model of disaster society further assumes that a cognitive consensus exists with regard to the threat from the environment; that there is only one account of events.

One notable response to this tradition of disaster research has come from the Sozialwissenschaftliches Institut für Katastrophen und Unfallforschung (Social Science Institute for Disaster and Accident Research) in West Germany. In a paper published some years ago (Clausen *et al.*, 1978) the concept of disaster is examined in terms of the distribution of knowledge in class-based society. Disasters, they argue, are the result of the deliberate, uneven distribution of knowledge which occurs in class societies. Those in power (the dominant class) bring their point of view to bear upon others, and the distribution of knowledge (about hazards) is at least inhibited, if not deliberately distributed unevenly, via established social



processes. Hence, appropriate disaster action is not easily performed by many since they do not have sufficient knowledge of their circumstances. Clausen et al. (1978) reject a consensus model of societies in disaster and criticise previous approaches to the sociology of disaster because in these, disasters were construed as sudden breaks in or disturbances to the continuity of normal events. These types of analyses, Clausen et al. (1978) assert, lead to a defensive and politically conservative approach to the problem of disaster - an approach which emphasised the return to 'normality'; the reinstatement of society as it was. What they propose instead is a phenomenological Marxian analysis of disaster, wherein the emergence of differential definitions of disasters based upon class divisions can be studied. Because they see the evolution of disasters as being propelled and characterised by social antagonisms, the theory of historical and dialectical materialism is seen to be relevant to the understanding of disaster events and this implies, for them, that the analysis of disasters should begin with an analysis of the mode of production of the society in question. However, Clausen et al. (1978) fail to clarify sufficiently the application of this perspective on disasters and, more importantly, their conception of 'class' is not altogether clear. Thus, some important questions are left hanging in the balance.

Their assertion that class analysis can be used to explain the evolutionary processes of disasters is accompanied by other more contentious claims. The first is that knowledge (including disaster-relevant knowledge) is distributed (or withheld) on the basis of class divisions in society. By this they mean that members of the dominant class by virtue of their power in the economic order, are able to construct definitions of the real world and utilise these as

instruments of domination. Clausen et al. (1978) see this knowledge possessed by the dominant class as being imposed as ideology upon the less powerful. They assert that:

disaster action is not easily performed by many because previous social processes have, in regard to individuals, classes or groups, destroyed or inhibited knowledge or deliberately distributed it unevenly (Clausen et al., 1978:64).

This suggests useful lines of enquiry. However, their contention that the 'knowledge' of the dominant class in capitalist society is imposed as ideology upon the less powerful (my emphasis) suggests an overly simplistic conception of the link between knowledge and power in any society.

Then, as an outcome of this line of thinking, the authors suggest that it might be quite appropriate and realistic in disaster to speak of "an antagonistic disaster society with disaster beneficiaries and disaster victims" (Clausen et al., 1978). This division, they argue, parallels the differentiated distribution of knowledge amongst class groupings. Again, this idea (not fully developed in their paper) suggests an all too simple division of an (antagonistic) disaster society. Consideration of empirical evidence from around the world would lead one to reject the contention put by Clausen et al. (1978) that loss, in disaster, is determined by class position. Indeed, such contentions have caused some authors to reject out of hand the value of any type of class analysis of disaster situations (see comments by Wettenhall in Murray, 1979).

These problems in Clausen et al.'s (1978) paper and the lack of clarity about their conception of 'class', undermine the value of their work. They have suggested that conflict (rather than consensus) is the organising principle in disaster societies; that a class analysis provides a key to understanding who suffers loss in disasters

in modern capitalist societies; and that knowledge is a critical component of power which affects the allocation of resources in such societies. These suggestions can, however, be utilised to formulate a more satisfactory alternative to traditional disaster research. First, however, a review of the alternative tradition of natural hazards research is necessary.

### Natural Hazards Research

Developments in the field of natural hazards research offer a different approach. Here, an ecological perspective is firmly established. The relationships between humans and their environment are central and, importantly, this perspective recognises that environmental hazards have a dual cause - human activity and nature. The interaction of humans and nature is, in natural hazards research, conceptualised broadly in terms of inter-system adjustments between two separate systems - the human use system and the natural events system (Kates, 1970). More specifically, a conceptual framework of 'adjustment-perception' - referring to the rational adjustments which people make to their perceived environment - is applied to investigate the adaptive behaviour of individual users of hazardous environments (Hewitt and Burton, 1971). This approach combines an ecological framework with a behavioural model of 'bounded rationality' (Kates, 1970).

According to this model, adaptive behaviour in hazardous regions results from accurate perception and adequate knowledge of the hazard and effective decision-making whereby individuals evaluate possible strategies for adjustment to the environment in terms of their costs and feasibility. On this basis, it is posited, they arrive at a satisfactory minimum or optimal level of adjustment. Analyses based upon this model (for example, Burchill et al., 1979) have focussed

heavily on the processes of searching for and adopting or rejecting particular adjustments. The study of these processes entails a description of decision-makers' (individual householders, organisational personnel, community leaders, legislators) perceptions of the hazard and their possible adjustments.

Such analyses have generally treated adjustments as if they can be made on an individual and/or small-scale community level and have failed to examine some of the external limits placed upon adjustment by, for example, legislation, local government practices, labour markets, land and housing markets, the distribution of other commodities and the processes of communication or information distribution. Similarly, differences in class position and power have not seriously been examined for the effects they may have on the individual adjustment process. The adjustment-perception paradigm is based, like most disaster research, upon a consensus model of the social world. The social world is assumed to be a stable, cohesive system. The economic, political and social structural determinants of behaviour have not been explicitly dealt with by the adjustment-perception approach though their importance has been recognised (White and Haas, 1975; Burton et al., 1978).

Westgate and O'Keefe (1975), two British geographers, were among the first to deal explicitly with the broader social, economic and political dimensions of hazard vulnerability or human exposure to hazards. They do so by challenging the notion that disasters are external to the social system and recommend quite strongly that disasters be regarded as part of the normal functioning of the social system:

It is essential to view disaster as an extreme within a series of non-extreme events, an extension of every-day life, where the latter is as important to an understanding of disaster as the disaster manifestation itself (Westgate and O'Keefe, 1975:57).

Westgate and O'Keefe (1975) assert that disaster events occur at the interface between the natural environment and the human group; between an extreme physical and natural phenomenon and a vulnerable human group. Disaster events are manifestations of this interaction. This approach, then, places their work firmly in an ecological framework. However, they emphasise that vulnerability should not simply be seen as the level of 'unpreparedness' of a community for the impact of a hazard but as a broader concept which entails a recognition that individuals and societies are exposed to a wide range of problems and that their capacities to deal with these problems vary widely. The authors define 'vulnerability' as 'the incapacity of a community to deal with unfavourable elements (the hazardousness) of a physical environment, an environment which provides economic resources for their community or wider society'. Westgate and O'Keefe's (1975) discussion, by reference to the differences in risks borne by people in Third World countries in comparison to those in the First World, implies that in a general sense, the benefits and risks of living in a particular environment or location are not evenly distributed amongst different groups in any society. However, they do not deal explicitly with the possible bases of this inequality.

There have been more recent developments in natural hazards research also, which have responded to omissions in the traditional approach and have indicated some change in direction. Marston (1984), adopting a political economy perspective, outlines some advantages of this perspective in comparison with the established adjustment-perception approach:

The key difference between the traditional approach and the political economy approach is that what is implicit in the former is theoretically and empirically explicit in the latter. Whereas the traditional approach suggests that social variables are important, political economy

specifically attempts to define and analyse those social variables, such as economic system and governmental organization, which influence vulnerability (Marston, 1984:9).

However, although the political economy approach offers a dimension of social structural analysis not incorporated in previous research and does provide an adequate framework for the analysis of structural constraints upon human adjustment to hazards, its application to the analysis of natural hazards has involved the abandonment (albeit temporarily) of the focus on individual (household) practices present in the adjustment-perception model. As a consequence, the approach, from a political economy perspective, does not adequately deal with the question of human agency at the micro-level of the household. The capacity of households, as social actors, to act independently of particular social structures is, on the whole, not fleshed out. Questions about how people oppose structural constraints are still not adequately dealt with; nor are questions about how people reproduce structures (including constraints) through their actions. In particular, although the political economy perspective of natural hazards recognises that government laws and practices (political forces) and economic forces such as the profit motive and market competition are strongly related and that they influence people's behaviour, important questions such as how, in practice, private home ownership and concepts of individualism, or ideas about private, individual responsibility, operate in the context of wider political and economic forces to affect disaster vulnerability are largely left unanswered. Applications of a political economy approach to the study of natural hazards have offered a critical perspective not apparent in either the earlier, adjustment-perception tradition of natural hazards research or disaster research. However, as a response to the adjustment-perception paradigm, they have echoed a long-standing

debate in sociological theory concerning the relationships between human agents and social structures.

### New Directions

In practice, it may be difficult to devise a method of analysis which deals adequately with both structure and human agency but an analytical model which explicitly acknowledges both dimensions of the social world should produce a fuller account of the interplay of social practices and social structure. Such a model, foreshadowed in this thesis, emerges from the omissions of past research and responds to four sets of questions thrown up by the Flood Study. The following questions were left unanswered by the conventional analysis employed in the Flood Study.

Who (which people, in which positions) understood the nature of the hazard, its potential for damage and expected frequency? This set of questions centred around the question of who decides how the flood plain can be or will be used. For most residents of the flood plain, their use of it was 'taken for granted' and not questioned.

Why were there so few town planning restrictions on residential occupation of the flood plain? The recognition that the catastrophe which emerged was not an inevitable outcome of riverine flooding but that particular uses of the flood plain had contributed to the potential for catastrophe raised questions about which particular practices had increased this potential and how.

How were the benefits and costs (for individuals as well as for 'the community') of residential use of the flood plain assessed? Since the outcome of river and creek flooding in the areas concerned was predictable, why was the event which was both publicly and privately acknowledged to be a disaster 'allowed' to occur?

What were the processes by which a dominant, public account of the flood and its aftermath was sustained? The apparent discrepancy between public accounts of the flooding and recovery and private experience drew attention to the possibility that several accounts of what was happening, not one, might be possible.

Now these concerns link directly with those expressed by Clausen et al. (1978), Westgate and O'Keefe (1975) and Marston (1984), and with the debate over the extent to which structural arrangements determine what social actors do and how social actors may act independently or in opposition to social structures. In recognition of these important connections between theoretical and practical concerns, the analytical model proposed here utilises the insights of these recent analyses and proceeds firstly, to attempt to clarify the concept of 'class', a method of class analysis and the dimensions of the structure-agency connection. This is done in order to understand the ways in which the natural environment is incorporated in and by social structures and processes. This will help in understanding how vulnerability to a hazardous environment is socially produced. The approach taken in clarifying these concepts is somewhat eclectic but it begins with the following assumptions:

- (1) that the production of goods and services and the reproduction of society and of individuals (biologically) are central activities in all human societies;
- (2) the way that the production of goods and services is organised significantly determines the system of distribution of resources in society;
- (3) that when some (or all) of the forces of production are privately owned, conflicts of interest are implicit in the process and the organisation of production and hence of distribution;



- (4) that the processes and organisation of production and reproduction do not simply determine cultural and political practices but that the latter can have important influences upon the former.

#### A Conceptual Framework for the Analysis of Disaster

One of the major difficulties with class analyses results from a confusion between 'class' as a mode of social organisation which may or may not generate 'classes' or class groups and 'class' as class position or a description of where an individual is situated in relation to this mode of organisation. This confusion of a generative concept on the one hand, with a categorical one on the other, gives rise to problems such as those in Clausen et al.'s (1978) analysis and to much discussion and debate within the discipline of sociology (Connell, 1983a, 1983b; Cutler et al., 1977; Habermas, 1979; Giddens, 1981, 1984; Wright, 1976, 1980; Kelley and McAllister, 1983a, 1983b).

In capitalist societies (i.e. societies organised around the private ownership of the means of production), classes in Marxian terms are groupings formed around the opposing interests of capital (owners of the means of production) and labour (non-owners of the means of production) or in Weberian terms around different market capacities. In both of these schemas, 'class' is theorised first and foremost as a generative and relational concept concerned primarily with understanding the forces producing social groupings (the organisation of production or the relations of production for Marx and the organisation of the market - production and exchange - for Weber). They do not set out to delineate the categories or discrete groups of people produced, as is done by stratification researchers (Runciman, 1974; Parkin, 1972; Lenski, 1966; Encel, 1970). In the Marxian scheme, in the last analysis there are only two class groupings

(forces representing opposing interests) - the capitalist class and the proletariat. In Weberian terms there are only four main class groupings (representing different market capacities) - the propertied class, the intelligentsia (a managerial class), the traditional petty bourgeoisie and the working class. However, neither of these analyses necessarily implies that in any society at any particular point in history only two (from Marx) or four (from Weber) class positions or locations exist. Rather, the implication is that there are really only two or four positions from which transactions in the sphere of production (or in the market place) can take place. Thus, a generative theory of class leads one to question how, in capitalist societies, various groupings in society (business persons and trade unionists, blacks and whites, men and women, 'helpers' and 'victims') are connected to the class system.

Applying such a concept to the analysis of disaster, then, involves looking for ways in which disaster groupings ('helpers' and 'victims', for example) are connected, through ideas and social practices, to positions in the class structure. It does not necessarily involve, as Clausen et al.'s (1978) analysis seems to suggest, looking for ways in which the bourgeoisie, as a category, win and the proletariat, as a category, lose in disasters. A class analysis of natural disaster involves asking questions about how natural disaster is connected to the maintenance (or destruction) of an antagonistic system of private property (the class structure). How and why classes emerge - or do not - as categories of actors in disaster, are matters for empirical investigation. Even when class groups do not emerge, the fact that in capitalist societies antagonistic relations between capital and labour are built into the system of production, forces one to ask why they do not form.

Hence, in a class analysis of disaster, attention will be focussed upon:

- (1) how vulnerability to natural disaster (or the risk of injury to persons and damage to property) and people's ability to withstand its effects, is constituted through the incorporation of the natural environment into the capitalist system of social organisation;
- (2) how groupings which form in the disaster (such as 'victims' and 'helpers') are connected to the class structure;
- (3) how vulnerability - the negative aspect of incorporation of the natural environment into the system of social organisation - is 'managed' through cultural, political and economic practices which can contain potential class conflict; and
- (4) how patterns of recovery from disaster are related to particular forms of vulnerability constituted in a capitalist system of social organisation.

It should be noted at this point that, in accordance with the basic assumptions outlined above (Page 31), political and cultural practices are not seen necessarily to have their essence in the economy. Also, the production of knowledge as a cultural practice is not seen as necessarily ideologically oppressive. Practices within each sphere - the economic, political and cultural - are seen as being constrained and facilitated by practices within the other spheres of social action. The economic sphere is seen to be basic only in the sense that life in any form cannot proceed without the act of production and in this sense, disruption of or challenges to the system of production are seen as more fundamental than, for example, challenges to the political system or the dominant culture (unless these lead to or arise from challenges to the system of production which, of course, they may).

Connections amongst the economic, political and cultural dimensions of social organisation occur at the level of everyday social processes. Everyday practices, both formal and informal, are carried out because they 'make sense'. They are the logical connections made by social actors at all levels. There may be several possible (and possibly conflicting) interpretations of everyday practices. The question arises as to how it is that one interpretation of a disaster and not other possible interpretations provides a basis for action that 'makes sense' (i.e. works sufficiently well as a basis for action for most people). These are essentially empirical questions but they require a brief theoretical consideration of knowledge and power, as processes, and their connection to social structures.

#### Knowledge, Power and Social Structures

Knowledge and power are inextricably bound together and both are inherent in all social relations and social relationships. Michel Foucault (1969, 1975, 1980) has recognised this in developing the concept 'power-knowledge'. For Foucault, everyday knowledge is generated within specific regimes of power and at the same time it comes to be a resource for power. For Foucault, power is a complex strategic relation in a given society (Foucault, 1980) and any particular strategy is constituted on the basis of particular knowledge - not because of its capacity to establish a reign of ideological mystification but because certain 'knowledges of men [sic]' have the capacity to define certain fields of empirical truth, and thus to establish what Foucault calls a 'regime of truth':

There can be no possible exercise of power except through the production of truth ... we must speak the truth; we are constrained or condemned to confess or to discover the truth. Power never ceases its interrogation, its

inquisition, its registration of truth; it institutionalises, professionalises and rewards its pursuit (Foucault, 1980:93-94).

The value of this line of thinking lies in three key ideas - that power is a strategy inherent in all social relations, that power is inextricably bound up with knowledge and that power has both coercive (constraining) characteristics and productive (facilitative) characteristics. According to Foucault's view, then, a major task for sociological investigation is to specify the practices which constitute power (and knowledge), and further, to identify both the positive, productive or facilitative aspects of a particular strategic relation and its negative, coercive or constraining characteristics.

On this conception of power-knowledge, the structural aspects of power are a matter for investigation in each particular instance. According to Foucault, the social-historical connections between one situation and another occur through discourse (the communication of ideas), practice and effects (especially, for Foucault, unintended effects). His account does not suggest that various strategies of power are always constituted in terms of discrete discourses and practices and outside the effects of other strategies of power. However, Foucault's account does emphasise the importance of deriving a relevant conceptual framework (for example, class analysis) from observation of what is happening in the real world and it does assert that the link between human agency and (enduring) social structure occurs because social actors repeatedly use social structures (language, educational institutions, welfare agencies, the family, work) in order to conduct their lives. In doing so, they remake or reconstitute these structures. Further, although Foucault's account does not deny 'class' as the most important strategic relation in capitalist societies, it allows the possibility that other ideas and actions, which do not necessarily have their essence in class

structures (for example, gender, bureaucracy) may be implicated in effects or outcomes observed.

This conceptualisation of the structure-agency dynamic informs this analysis of disaster including the application of a generative conceptualisation of class to the analysis. It is used to explore the economic, cultural and political dimensions of disaster. The analysis, as a class analysis, focuses specifically on the issues of vulnerability and social organisation in disaster outlined above on Page 34 and, in giving cognisance to the relevance of Foucaultian concepts for analysing the structure-agency dynamic, the analysis is organised around two types of question about each of these focal issues - "What did people know about their situation at the time and how did they talk about what they knew?" and "What did people do on the basis of their knowledge?"

Thus, the earlier questions, formulated within a conceptual framework of class analysis, are transformed in the following ways:

The first question about vulnerability, on Page 34, now becomes -

(1a) Was the potential for catastrophe understood (and talked about) as an outcome of the particular way(s) the natural environment had been incorporated into the (capitalist) system of social organisation?

(1b) What did people do to establish the particular relationship between the natural environment and the system of social organisation or what specific social practices constituted the potential for catastrophe and were these class practices?

Question 2 about the formation of social groups in disaster is now transformed into -

(2a) Were the disaster groupings, that is, those which formed at the time of impact, understood and talked about as class groupings?

(2b) What did people do to form these groupings and in what ways did their actions connect these groupings to the class structure?

The third question about the management of vulnerability now leads to -

(3a) What and whose ideas and talk about the catastrophe became dominant and did these ideas contain the inherent potential for opposition?

(3b) What and whose actions contained the potential for opposition to the (class) system of social organisation through which vulnerabilities were created?

And the final question about patterns of recovery now becomes -

(4a) How was recovery understood and talked about? Was recovery understood in terms of the restoration of private property and the pre-flood society-environment relationship?

(4b) What actions did people take to achieve recovery and how were these actions formulated from the particular positions of vulnerability, constituted via the (capitalist) system of social organisation?

These, then, are the questions around which the research evidence, presented in the chapters which follow, is organised and for which an attempt has been made to formulate answers. Chapter 3 is directly concerned with the first set of questions about the constitution of patterns of vulnerability whilst Chapter 4 deals with both the second and third sets of questions about the emergence of a dominant account of the disaster and of disaster groupings and the effects of these for the containment of the potential for opposition to the system. Chapter 5 attends to the questions about the processes of recovery and underlying patterns of vulnerability. The conclusions to these chapters return specifically to these questions.

In addition to answering these questions directly, this line of enquiry has the potential to answer other questions which were left, unanswerable, by conventional analysis, those questions about the distribution of knowledge about the hazard, questions about flood-plain management, occupation of the flood-plain and the assessment of risk and the question of possible competing definitions of what was really going on.



## CHAPTER 3

## THE VULNERABILITY OF FLOOD-PLAIN RESIDENTS

Introduction

Questions about the vulnerability of flood-plain residents are dealt with in this chapter; questions about how the potential for catastrophe was understood and talked about and questions about what aspects of social-economic and political organisation created a potential for catastrophe. Investigating the nature of vulnerability in the Moreton Region was an important and fundamental step in the development of this thesis. 'Vulnerability' is a key concept, for the nature of vulnerability, or more particularly, the bases of different forms of vulnerability in a particular setting must first be comprehended before their effects and management can be understood. As it is used here, 'vulnerability', as a conceptual tool, focuses attention upon the links between the social-economic and political organisation of the human use of the natural environment, and the social-economic and political organisation of extreme conditions of the natural environment.

The Concept of Vulnerability

Following Westgate and O'Keefe (1975), whose definition of 'vulnerability' has been discussed in Chapter 2, the term 'vulnerability' refers here to people's incapacity to deal with unfavourable elements of a natural physical environment, an environment which provides them with essential needs and economic resources such as residential land. The incapacity of people to deal with extreme, unfavourable conditions in the natural environment in which they live may arise from different sources. For example, the extreme adversity of the natural environment may become overwhelming.

People may not have the social or economic resources to bear the personal and/or financial costs of living in the hazardous environment, or those at risk may suffer because they do not have the political clout to command useful resources for dealing with the environment. As it has been theorised in this analysis, vulnerability is seen to be a social experience (i.e. one shared by individuals) conditioned by specific patterns of economic, social and political organisation; a relationship between people (or units such as families or households) and their environment which can only be understood by reference to the social context or formation within which it is situated. From this perspective, vulnerability is analysed in terms of three major dimensions - the social-environmental, the social-economic and the political:

- (1) The social-environmental refers to the social definition of the flood hazard, including the levels of perception, knowledge and experience of it. It encompasses the likelihood or predicted frequency of flooding, the density of population in the area likely to be affected by flooding and the likely depth and duration of flooding which describe the physical dimensions or hazardousness of an environment for its users. Hazard perception can be distinguished from hazard knowledge insofar as the former entails an awareness of what the impact of the hazard would mean in terms of recognition of warning, the making of preparations both prior to and at the time of impact, and re-adjustment after impact. The latter entails, quite simply, the possession of information about the existence of the hazard and its likely dimensions.
- (2) The social-economic refers to those factors such as labour market position, household organisation, age and gender, which structure (provide or limit) access to particular, relevant resources.

(3) The political dimension entails the policies and practices of the state (here regarded as the formal institutions of the legislative, executive and administrative wings of government, the judiciary, police and armed forces and all organisations coming under their direct control). Protective legislation such as land use control and insurance and State counter-disaster plans, which determine official response in the areas of reconstruction and rehabilitation are examples of what comprises the political dimension of vulnerability.

Establishing the manner in which any particular form of vulnerability is constituted requires at least an investigation of these three dimensions. Here they are considered in turn, in a general sense, although it is argued that these dimensions operate together to constitute particular (and varying) forms of vulnerability.

#### The Social-Environmental Dimension

The frequency of major river flooding in the Brisbane River basin shown for the period 1841-1974 is illustrated in Figure 3.1. It can be seen that four floods in excess of the 1974 level have occurred over a period of one hundred and thirty-three years. Two of these occurred in the 1840s and two in 1893, when the previous great flood disaster hit the city of Brisbane. The chances of floods in the future can be calculated by reference to the frequency with which these floods have occurred in the past. However, although reliable probability estimates of flood risk can be made, prediction of flooding in the relatively short term is not possible because, although the path of an extreme weather pattern such as a cyclone can be tracked, its course or duration and its potential for producing

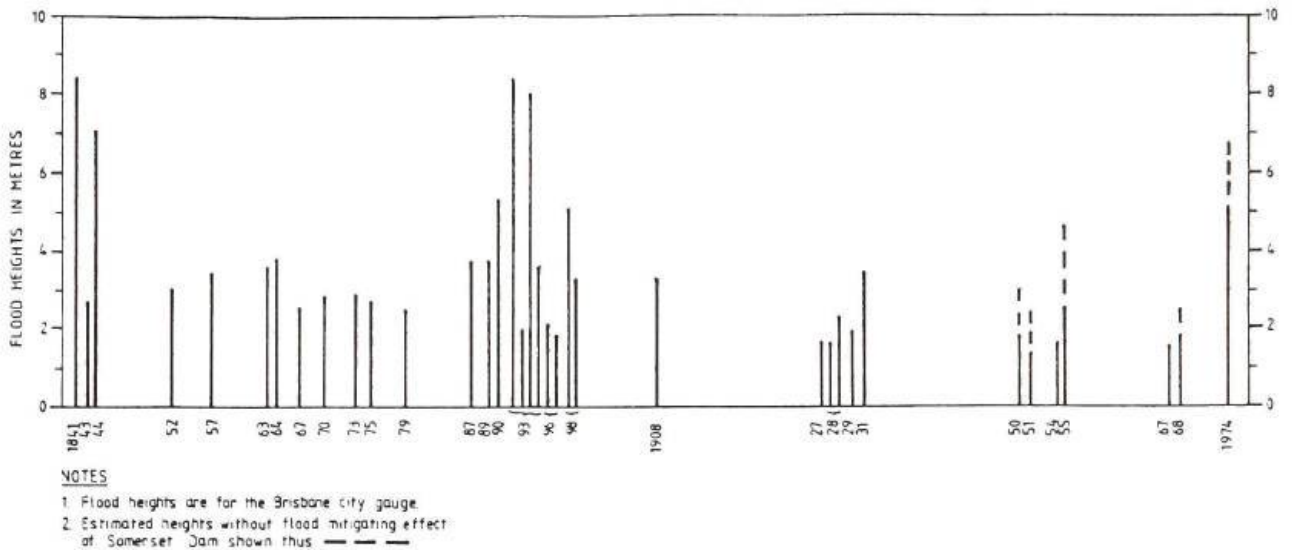


Figure 3.1: Major floods in the Brisbane River Basin 1841-1974.

rain depressions cannot be predicted. Thus, flooding in the Moreton region is regarded as a 'sudden onset' phenomenon and the inability to predict flooding in the short term was a major factor in producing the interpretation of flooding in the Moreton region as a sudden, unexpected and uncontrollable event. The known estimates of risk, though discussed publicly in the aftermath of the floods, never became a significant element in the management of vulnerability because they were previously not widely known and were not incorporated in the public and dominant definition of what was happening at the time of the floods. What was happening was defined, and subsequently dealt with, as a sudden, unexpected event.

It should also be noted that three different types of flooding can occur in the Moreton Region. Direct river flooding, flash flooding in creeks and backwater flooding differ not only in the frequency with which they are expected but also in the speed of onset,

duration and locality. In the case of river flooding, which is a low frequency event, the peak usually occurs within two or three days of the river first reaching flood level. Also, in the Brisbane metropolitan area, there is a flood gradient or slope of flood waters. This has the effect of complicating the interpretation of flood warning messages, since a rise of particular dimensions at one point in the river, for example at the Port Office - where the principal flood measurements are taken - can indicate a greater or lesser rise at other points in the metropolitan area. Areas in Brisbane particularly subject to river flooding are Jindalee, Chelmer and Graceville, Fairfield and Yeronga, Toowong and Milton.

Secondly, flash flooding in creeks occurs more frequently and usually occurs in a number of creeks simultaneously, though under certain weather conditions the flooding may be quite localised. Most creeks in the Brisbane metropolitan area and in the Ipswich area respond very rapidly to excessive rainfall, and some have flooded frequently. A notable example is the Enoggera Creek/Breakfast Creek system, which affects the Windsor area. To some people whose homes or places of employment were in certain parts of Windsor, the experience of the great flood of January 1974 was by no means new, but the level of flooding experienced then was excessive.

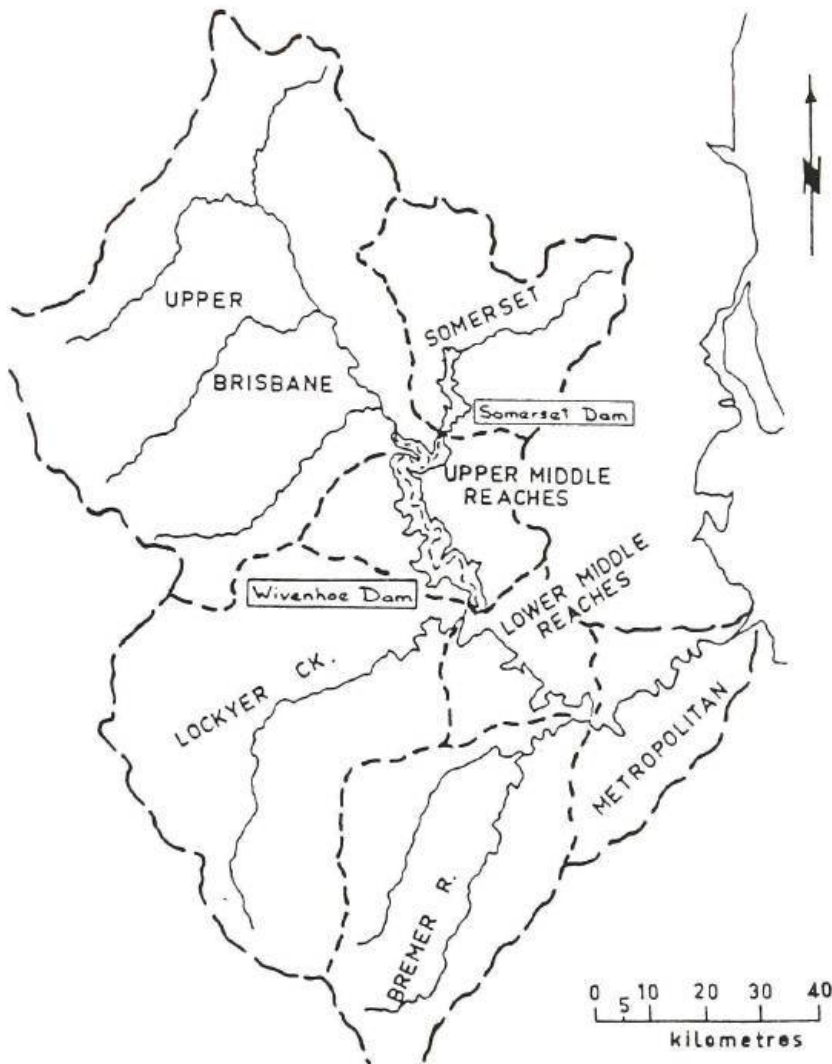
The third type of flooding, backwater flooding, occurs when backwaters from river flooding raise the level of the tributaries to the point where they overflow their banks. Some areas are susceptible to 'double flooding'. That is, they may be flooded first as a result of heavy run-off from heavy rainfall in the catchment area of their own particular tributary, and subsequently by backwaters from the river. For example, the waters of the Brisbane River in flood may back up into the Bremer River. The Bremer would then back up into its

tributaries, thus adding to the flooding in the low-lying areas along the banks of tributaries.

Therefore, when flooding occurs in the cities of Brisbane and Ipswich, the potential for damage is considerable. There has been some recognition among technical experts (and to some extent by the general public) that human activity has increased the flood risk in the city of Brisbane, notably by the construction of more and more buildings on the flood plains. However, neither the Brisbane City Council nor the Ipswich City Council had imposed town planning regulations to prevent the erection, or to require the removal of, dwellings in high-risk areas of the flood plain. There have been, instead, attempts on the part of the authorities (mainly the State government) to reduce the likelihood of flooding through major construction works aimed at controlling river levels. These are consistent with an Australia-wide tendency to depend upon large-scale technological adjustments as one of the major forms of adjustment to flood hazards. This widespread tendency serves to indicate the strength of the pervasive belief in the efficacy of human control over nature and the propensity for calculated risk-taking. In the Moreton region, Somerset Dam was the most important of these major construction works, although some minor flood mitigation work was completed along Enoggera and Breakfast Creeks after the 1974 floods.

A very full and clear account of the operation of Somerset Dam is contained in a paper by Cossins (1974). It becomes clear that the dam, which is located about 8 kilometres from the junction of the Brisbane River and one of its major tributaries, the Stanley River (Figure 3.2), achieves flood mitigation by withholding the flow of the Stanley as far as is practicable from entering the middle reaches of the Brisbane River when the water level there and further downstream

is at peak heights. For floods up to a certain magnitude in the Stanley River, Somerset Dam can absorb the whole peak flow, but when there are excessively heavy falls of rain upstream from the dam (such as occurred in 1893, long before the dam was constructed), it can provide only partial control of the flood waters. It must also be remembered that the Somerset Dam can only affect the flow of water



Source: Institution of Engineers, Australia, Queensland Division, Proceedings of Symposium, January 1974 Floods, Moreton Region, August 1974, p.169.

Figure 3.2: Brisbane River Catchment.

from the Stanley River into the Brisbane River, and that flooding in the Brisbane River is the outcome of rainfall over the whole catchment area. In 1974, the heaviest falls occurred in the lower parts of the Brisbane River catchment area and in the catchment of the Bremer River, thus greatly increasing the flow of water in the Brisbane River and its tributaries well downstream from the dam and quite outside the influence of the dam. Figure 3.1 shows the estimated heights that floods would have reached without the mitigating effect of the dam and the variability in the extent to which it has served as a control is apparent. Cossins's (1974) account illustrated that expert opinion clearly recognised the limitations of the dam. Among the general public, however, if any thought at all was given to the matter before January 1974, there appears to have been the illusion that Somerset Dam had a far greater capacity than it actually had to prevent major river flooding.

The majority of people living in the flood plain had given little thought to the possibility of their homes being flooded. The 1974 post-flood survey revealed this very clearly. Only 6 per cent of respondents said that they knew flooding was likely to be a problem in their area when they moved there. Only 12 per cent said they had thought of the possibility of flooding and many of these had dismissed it as unlikely or unbelievable. Seventy-six per cent said they had never thought of the possibility of a flood - a fact which reflects not only the infrequency of river flooding but also the limited distribution and consequent low level of knowledge about the hazard amongst householders living on the flood plain.

There existed (and indeed continues to exist) a sharp contrast between the levels of knowledge and awareness of the hazard among



technical experts on the one hand and occupants of the flood plain on the other hand. There have been few pressures on professional groups, specialist bodies or local government authorities, to release information. The flood problem in the Moreton Region has not, on the whole, been a political issue in the narrow sense of the word. Its 'management' has occurred almost wholly within government bureaucracies and the issue has rarely entered the public political arena. Local governments, though willing and able to give information on request, had not prior to 1974 publicised flood risks in threatened areas. This lack of emphasis, in the end, comes unwittingly to serve the interests of urban property owners and developers who would want to maximise their gains on or at least maintain the value of investments in land and housing. However, this limited distribution of knowledge of the hazard contributes to environmental vulnerability.

This is not to suggest a conspiracy by property owning interests against those living in flood-prone areas; they were, to some extent, one and the same group, a fact which is illustrated and discussed later in this chapter (see Figure 3.9). According to the 1974 Flood Study data, some 89.3 per cent of houses included in the 1974 Flood Study were owner-occupied. Moreover, apart from the more recently developed areas such as Jindalee, flood-prone areas were not subdivided by large-scale developers who might be regarded as beneficiaries in commercial land sales. The extent of private ownership is emphasised here, however, in recognition of the double-edged nature of the relationship between humans and the natural environment when land is commodified. To reduce vulnerability by distributing information about the hazard, so as to increase knowledge and awareness, would directly threaten property values in flood-prone areas (at least in the short-term). In a highly privatised urban

economy, most property owners would be unwilling, and many unable, to financially tolerate a drop in property values. To attempt to reduce vulnerability by circulating information or publicising the risk, without further government intervention to protect the market (for example through insurance schemes), would not have been consistent with the short-term economic interests of property-owning flood affected people.

To summarise then, knowledge of the hazard was not widespread, and detailed knowledge of its dimensions was limited to experts, mainly those employed in local or State government departments. Management of the hazard was highly bureaucratised (and hence removed, for the most part, from the political arena) and few demands had been placed upon experts by flood-plain residents (mainly owner-occupiers), to provide and circulate information about the hazard.

With resulting low levels of knowledge amongst most flood-plain residents, a poor perception of the hazard and its dimensions would consequently be expected as a common characteristic. Any differences in the social-environmental dimension of vulnerability, then, would be more likely to be a function of differences in the hazard dimensions in particular areas - differences such as magnitude (peak height), speed of onset, duration and importantly frequency - factors which differ for different types of flooding.

### The Social-Economic Dimension

The social-economic dimension of vulnerability refers quite specifically to people's access to relevant resources to allow them to adjust to or recover from a hazard. In discussing this dimension, the focus is upon the patterns of social and economic organisation which

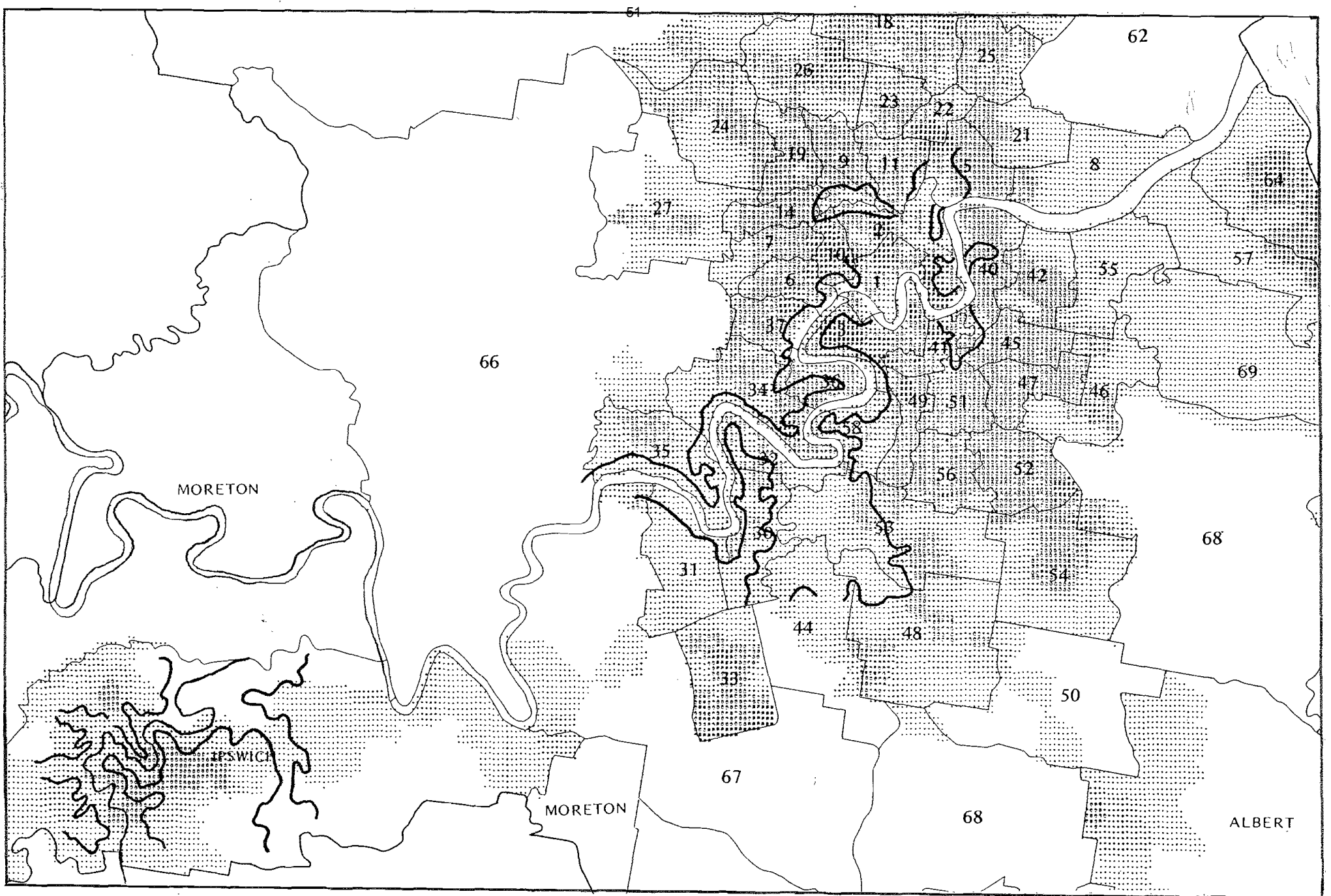
affect individuals' access to resources (goods and services) relevant for adjustment or recovery. The production and exchange (access to) goods and services occur both within the formal economy, where goods and services are acquired by payment in the market and outside the formal economy where production as well as distribution takes place within the household and informal networks - centred for instance around the extended family, residential area, church or groups of friends. Here, an attempt is made to take these informal modes of production and exchange as well as the formal mode into account in assessing different forms of vulnerability.

Very little specific data are available from the Flood Study on patterns of social and economic organisation in Brisbane and Ipswich and so these are examined here in terms of available data on occupations, education and income groupings, household structure and home ownership of flood-affected persons. An attempt is also made to take age and, later, gender into account as structural factors which might produce variations in forms of vulnerability.

Although it is evident that there was little variation in levels of knowledge of the hazard amongst flood-plain residents, it would appear that there were notable variations in their socio-economic characteristics. Figures 3.3 to 3.9<sup>1</sup> present mapped distributions of relevant socio-economic characteristics for the Brisbane and Ipswich areas overlaid with estimates of the 1974 flood lines.

---

<sup>1</sup>These figures are constructed on the basis of computer maps in McDonald, G.T. *et al.* (1976) and the Flood Map of Brisbane and Suburbs, prepared by the Queensland Surveyor-General's Department (pre-1974).

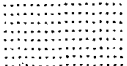
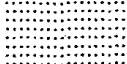





POPULATION DENSITY

Index to Statistical Areas

1.	City	35.	Kenmore
2.	North City	36.	St. Lucia
3.	South City	37.	Toowong
5.	Ascot	40.	Balmoral
6.	Fernberg	41.	East Brisbane
7.	Ithaca	42.	Morningside
8.	Meeandah	44.	Archerfield
9.	Newmarket	45.	Camp Hill
10.	Normanby	46.	Carina
11.	Windsor	47.	Chatsworth
14.	Ashgrove	48.	Cooper's Plains
15.	Aspley	49.	Ekibin
16.	Bald Hills	50.	Fruitgrove
17.	Banyo	51.	Greenslopes
18.	Chermside	52.	Holland Park
19.	Enoggera	53.	Moorooka
20.	Geebung	54.	Mount Gravatt
21.	Hendra	55.	Murarrie
22.	Kalinga	56.	Tarragindi
23.	Kedron	57.	Wynnum West
24.	Mitchelton	58.	Yeronga
25.	Nundah	61.	Boondall
26.	Stafford	62.	Nudgee
27.	The Gap	63.	Sandgate
30.	Corinda	64.	Wynnum
31.	Darra	66.	Western
32.	Graceville	67.	South Western
33.	Inala	68.	South Eastern
34.	Indooroopilly	69.	Eastern

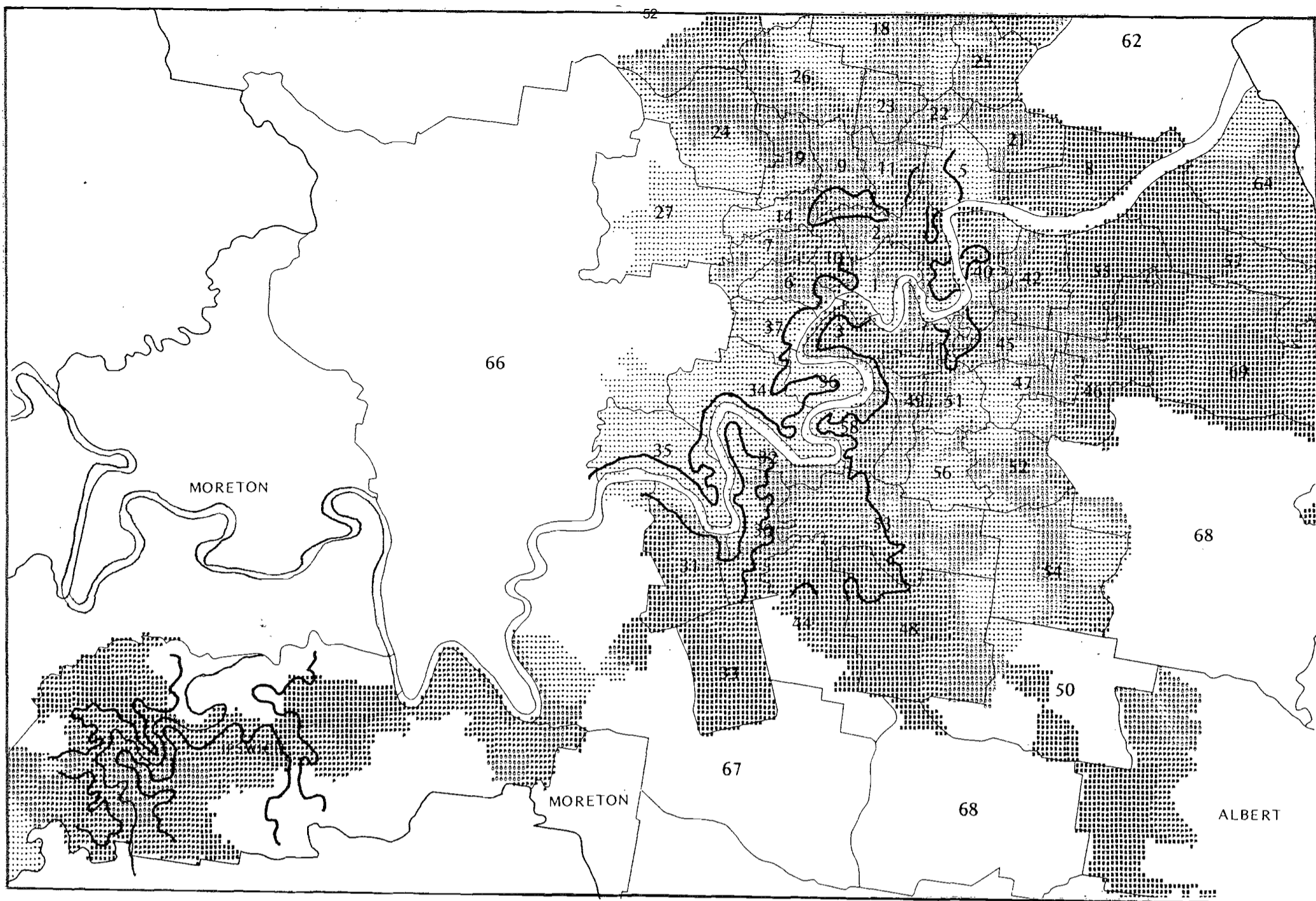
Code

	13 - 1000
	1000 - 2000
	2000 - 4000
	4000 - 6000
	6000 - 23,423

Definition

'Population density' refers to the number of persons per square kilometre.  
(McDonald et al, 1976: 86)

Figure 3.3: Population density.

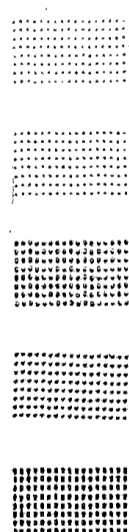


MALE LOWER BLUE COLLAR WORKERS

Index to Statistical Areas

1. City	35. Kenmore
2. North City	36. St. Lucia
3. South City	37. Toowong
5. Ascot	40. Balmoral
6. Fernberg	41. East Brisbane
7. Ithaca	42. Morningside
8. Meeandah	44. Archerfield
9. Newmarket	45. Camp Hill
10. Normanby	46. Carina
11. Windsor	47. Chatsworth
14. Ashgrove	48. Cooper's Plains
15. Aspley	49. Ekibin
16. Bald Hills	50. Fruitgrove
17. Banyo	51. Greenslopes
18. Chermside	52. Holland Park
19. Enoggera	53. Moorooka
20. Geebung	54. Mount Gravatt
21. Hendra	55. Murarrie
22. Kalinga	56. Tarragindi
23. Kedron	57. Wynnum West
24. Mitchelton	58. Yeronga
25. Nundah	61. Boondall
26. Stafford	62. Nudgee
27. The Gap	63. Sandgate
30. Corinda	64. Wynnum
31. Darra	66. Western
32. Graceville	67. South Western
33. Inala	68. South Eastern
34. Indooroopilly	69. Eastern

Code

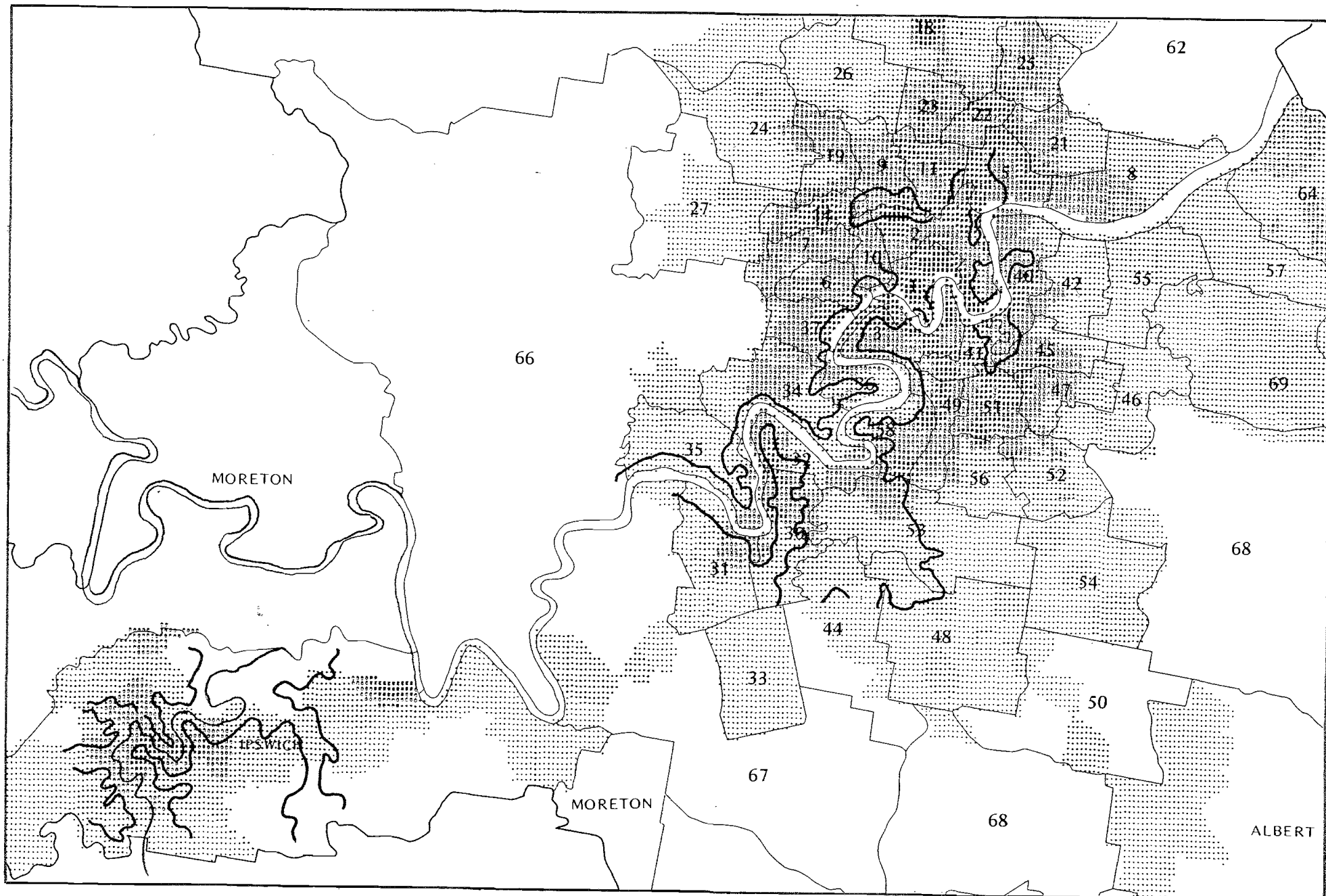


0.17 - 20.00 per cent lower blue collar workers.
20.00 - 30.00 per cent lower blue collar workers.
30.00 - 40.00 per cent lower blue collar workers.
40.00 - 50.00 per cent lower blue collar workers.
50.00 - 74.29 per cent lower blue collar workers.

Definition

'Male lower blue collar worker' means males engaged in Australian Bureau of Statistics Census Occupation Codes 505, 515-530, 560-631, 642-656, 668-672, 687-688, 711-736, 743-758, 820-821, 830. (McDonald et al, 1976: 12)

Figure 3.4: Male lower blue collar workers.

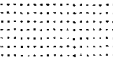
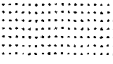

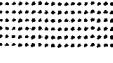



## 65 YEARS AND OVER AGE GROUP

Indes to Statistical Areas

1. City	35. Kenmore
2. North City	36. St. Lucia
3. South City	37. Toowong
5. Ascot	40. Balmoral
6. Fernberg	41. East Brisbane
7. Ithaca	42. Morningside
8. Meeandah	44. Archerfield
9. Newmarket	45. Camp Hill
10. Normanby	46. Carina
11. Windsor	47. Chatsworth
14. Ashgrove	48. Cooper's Plains
15. Aspley	49. Ekibin
16. Bald Hills	50. Fruitgrove
17. Banyo	51. Greenslopes
18. Chermside	52. Holland Park
19. Enoggera	53. Moorooka
20. Geebung	54. Mount Gravatt
21. Hendra	55. Murarrie
22. Kalinga	56. Tarragindi
23. Kedron	57. Wynnum West
24. Mitchelton	58. Yeronga
25. Nundah	61. Boondall
26. Stafford	62. Nudgee
27. The Gap	63. Sandgate
30. Corinda	64. Wynnum
31. Darra	66. Western
32. Graceville	67. South Western
33. Inala	68. South Eastern
34. Indooroopilly	69. Eastern

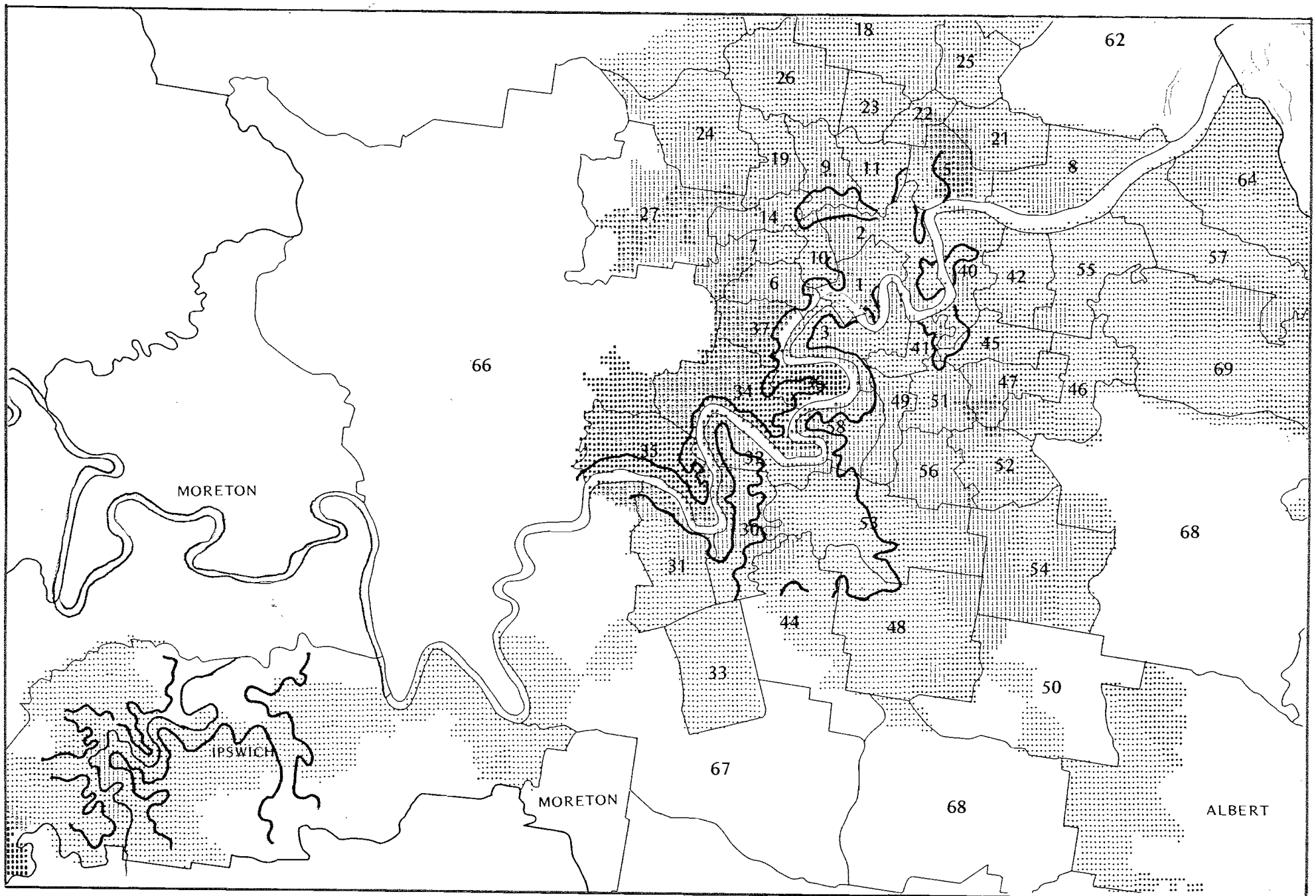
Code

	0.00 - 5.00 per cent over 65 years.
	5.00 - 10.00 per cent over 65 years.
	10.00 - 15.00 per cent over 65 years.
	15.00 - 20.00 per cent over 65 years.
	20.00 - 51.19 per cent over 65 years.

Definition

'65 years and over age group' means all persons aged 65 years and over.  
(McDonald et al, 1976: 48)

Figure 3.5: 65 years and over age group.


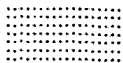






## UNIVERSITY GRADUATES

Index to Statistical Areas

1. City	35. Kenmore
2. North City	36. St. Lucia
3. South City	37. Toowong
5. Ascot	40. Balmoral
6. Fernberg	41. East Brisbane
7. Ithaca	42. Morningside
8. Meeandah	44. Archerfield
9. Newmarket	45. Camp Hill
10. Normanby	46. Carina
11. Windsor	47. Chatsworth
14. Ashgrove	48. Cooper's Plains
15. Aspley	49. Ekibin
16. Bald Hills	50. Fruitgrove
17. Banyo	51. Greenslopes
18. Chermside	52. Holland Park
19. Enoggera	53. Moorooka
20. Geebung	54. Mount Gravatt
21. Hendra	55. Murarrie
22. Kalinga	56. Tarragindi
23. Kedron	57. Wynnum West
24. Mitchelton	58. Yeronga
25. Nundah	61. Boondall
26. Stafford	62. Nudgee
27. The Gap	63. Sandgate
30. Corinda	64. Wynnum
31. Darra	66. Western
32. Graceville	67. South Western
33. Inala	68. South Eastern
34. Indooroopilly	69. Eastern

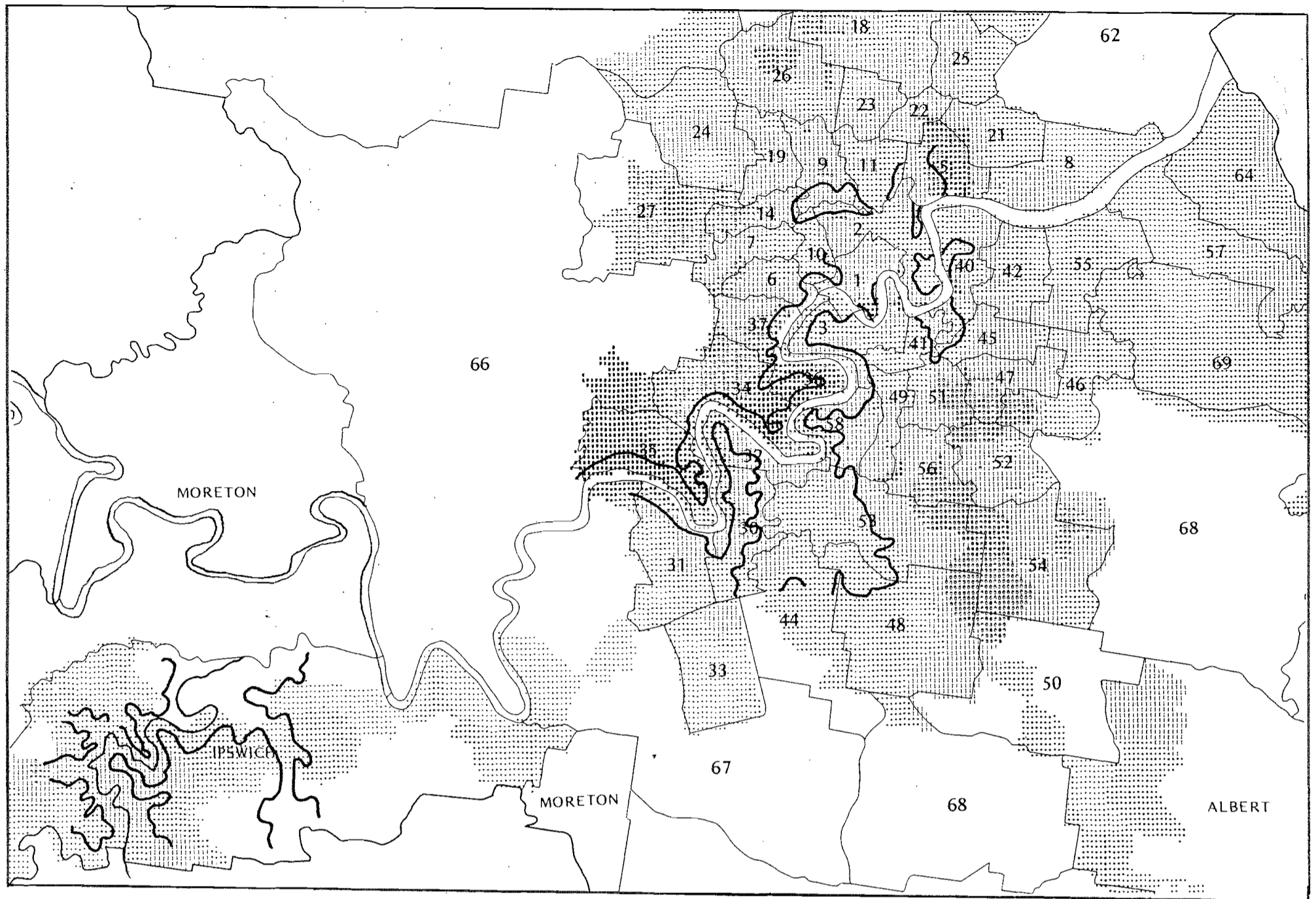
Code

	0.00 - 1.00 per cent university graduates.
	1.00 - 2.00 per cent university graduates.
	2.00 - 5.00 per cent university graduates.
	5.00 - 10.00 per cent university graduates.
	10.00 - 20.00 per cent university graduates.
	20.00 - 42.89 per cent university graduates.

Definition

'University graduates' means people over the age of 22 years who have obtained Bachelor or Higher University Degrees.  
(McDonald et al, 1976: 36)

Figure 3.6: University graduates.

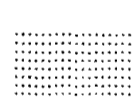
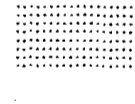
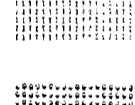
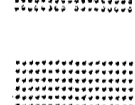

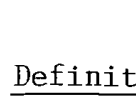


## UPPER WHITE COLLAR WORKERS

Index to Statistical Areas

1.	City	35.	Kenmore
2.	North City	36.	St. Lucia
3.	South City	37.	Toowong
5.	Ascot	40.	Balmoral
6.	Fernberg	41.	East Brisbane
7.	Ithaca	42.	Morningside
8.	Meeandah	44.	Archerfield
9.	Newmarket	45.	Camp Hill
10.	Normanby	46.	Carina
11.	Windsor	47.	Chatsworth
14.	Ashgrove	48.	Cooper's Plains
15.	Aspley	49.	Ekibin
16.	Bald Hills	50.	Fruitgrove
17.	Banyo	51.	Greenslopes
18.	Chermside	52.	Holland Park
19.	Enoggera	53.	Moorooka
20.	Geebung	54.	Mount Gravatt
21.	Hendra	55.	Murarrie
22.	Kalinga	56.	Tarragindi
23.	Kedron	57.	Wynnum West
24.	Mithchelton	58.	Yeronga
25.	Nundah	61.	Boondall
26.	Stafford	62.	Nudgee
27.	The Gap	63.	Sandgate
30.	Corinda	64.	Wynnum
31.	Darra	66.	Western
32.	Graceville	67.	South Western
33.	Inala	68.	South Eastern
34.	Indooroopilly	69.	Eastern

Code

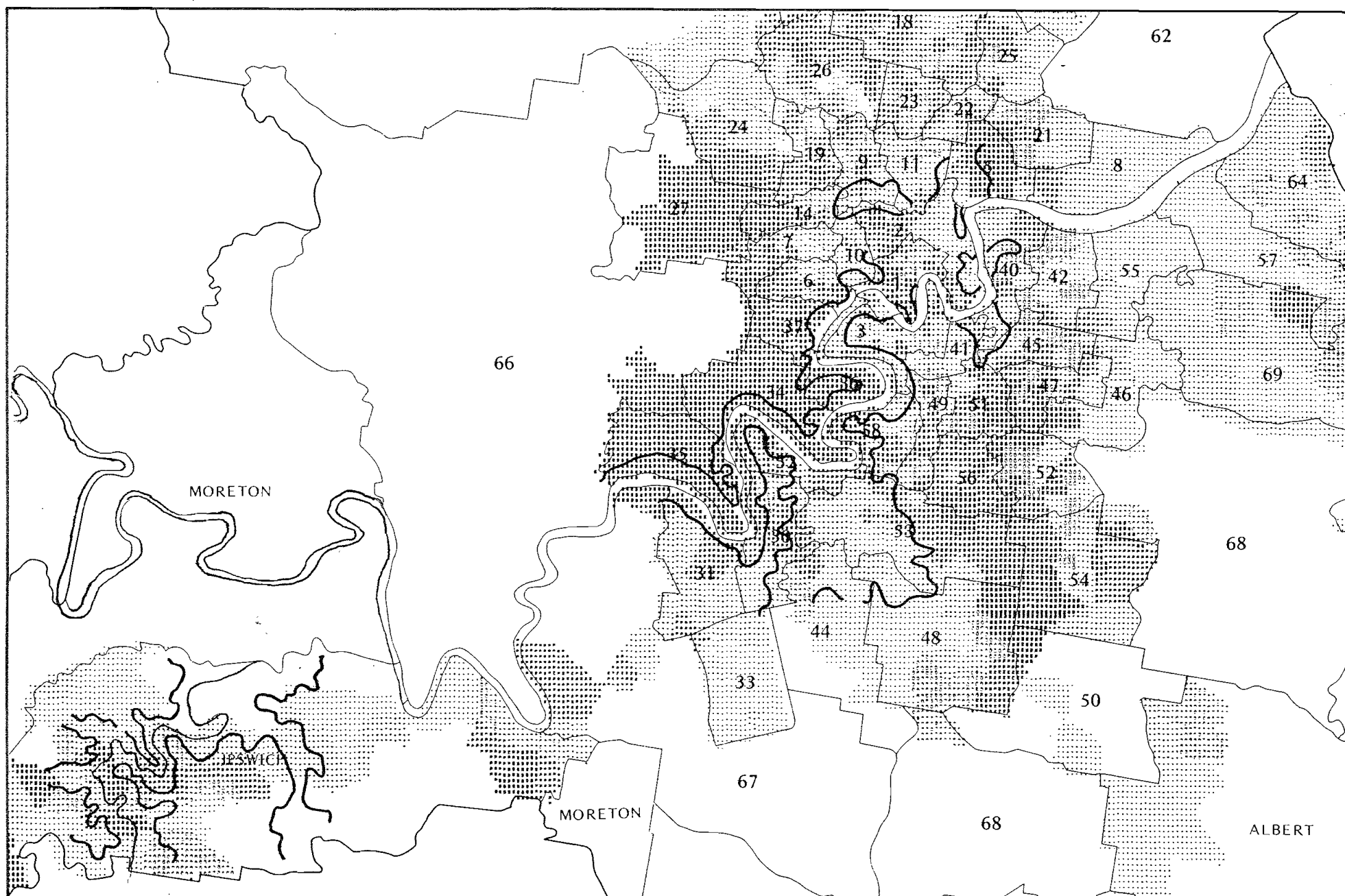
	0.00 - 5.00 per cent upper white collar workers.
	5.00 - 10.00 per cent upper white collar workers.
	10.00 - 20.00 per cent upper white collar workers.
	20.00 - 30.00 per cent upper white collar workers.
	30.00 - 40.00 per cent upper white collar workers.
	40.00 - 55.48 per cent upper white collar workers.

Definition

'Upper white collar workers' means male workers engaged in Census Occupation Codes 001-026, 035-050, 060-068, 075-118 and 150. These include 'professional, technical and related workers' with the exception of nurses, clergy and draftsmen /technicians and 'administrative, executive and managerial workers'. (McDonald et al, 1976:10)

Figure 3.7: Upper white collar workers.

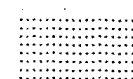




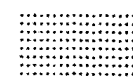
## SOCIO-ECONOMIC STATUS

Index to Statistical Areas

1.	City	35.	Kenmore
2.	North City	36.	St. Lucia
3.	South City	37.	Toowong
5.	Ascot	40.	Balmoral
6.	Fernberg	41.	East Brisbane
7.	Ithaca	42.	Morningside
8.	Meeandah	44.	Arcgerfield
9.	Newmarket	45.	Camo Hill
10.	Normanby	46.	Carina
11.	Windsor	47.	Chatsworth
14.	Ashgrove	48.	Cooper's Plains
15.	Aspley	49.	Ekibin
16.	Bald Hills	50.	Fruitgrove
17.	Banyo	51.	Greenslopes
18.	Chermside	52.	Holland Park
19.	Enoggera	53.	Moorooka
20.	Geebung	54.	Mount Gravatt
21.	Hendra	55.	Murarrie
22.	Kalinga	56.	Tarragindi
23.	Kedron	57.	Wynnum West
24.	Mitchelton	58.	Yeronga
25.	Nundah	61.	Boondall
26.	Stafford	62.	Nudgee
27.	The Gap	63.	Sandgate
30.	Corinda	64.	Wynnum
31.	Darra	66.	Western
32.	Graceville	67.	South Western
33.	Inala	68.	South Eastern
34.	Indooroopilly	69.	Eastern

Code

Lowest S.E.S. areas.

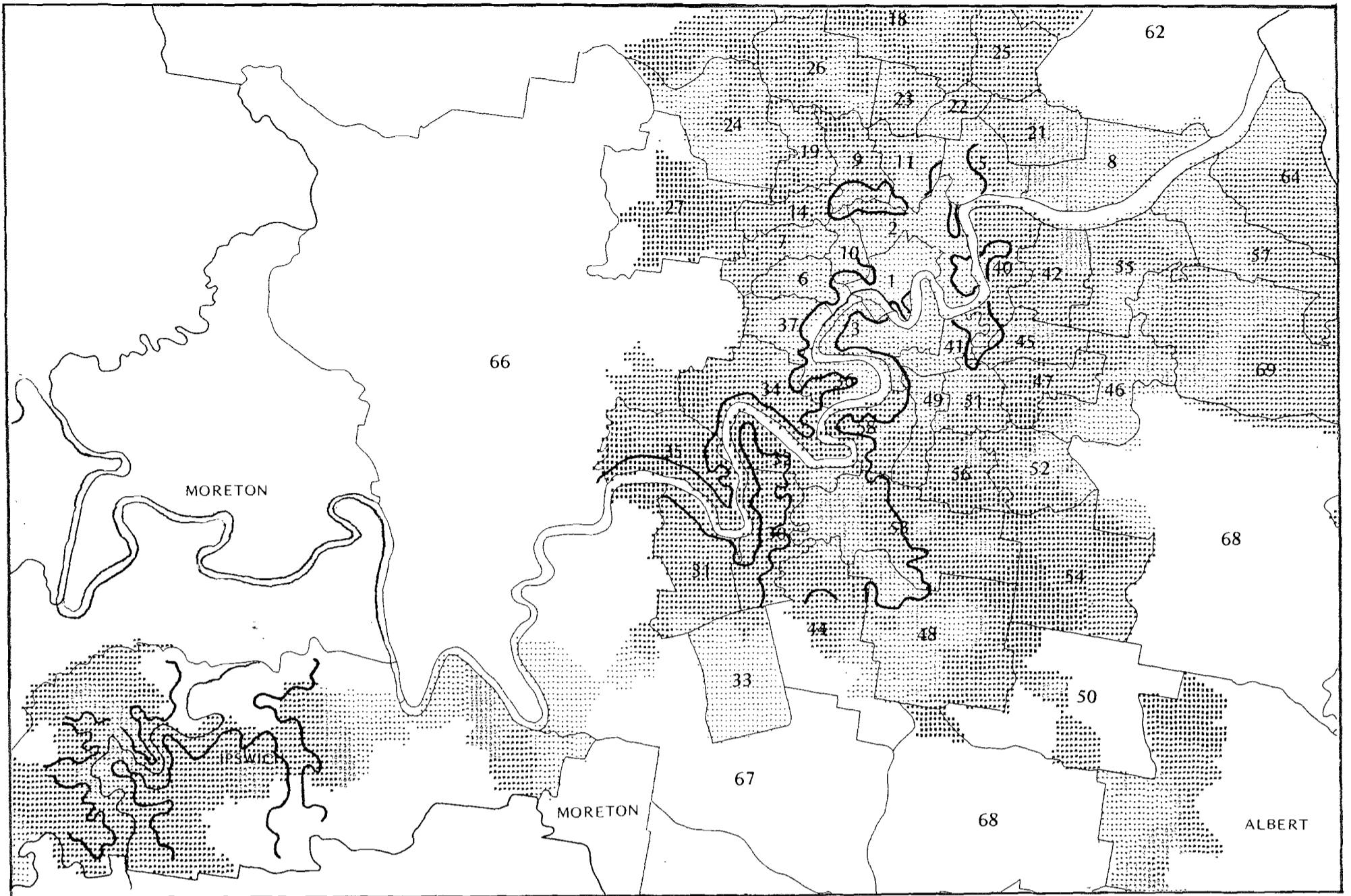


Highest S.E.S. areas.

Definition

'Socio-economic status' is one of five dimensions extracted by factor analysis of twenty-two social, economic and demographic variables. High positive loadings on the SES dimension are professional and technical workers, administrative and managerial workers and those over 15 years with tertiary education. High negative loadings are craftsmen and those employed in transport and communication industries.

(McDonald et al, 1976: 108,116)

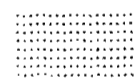


## OWNER OCCUPIED HOUSES

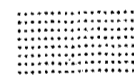
## Index to Statistical Areas

1.	City	35.	Kenmore
2.	North City	36.	St. Lucia
3.	South City	37.	Toowong
5.	Ascot	40.	Balmoral
6.	Fernberg	41.	East Brisbane
7.	Ithaca	42.	Morningside
8.	Meeandah	44.	Archerfield
9.	Newmarket	45.	Camp Hill
10.	Normanby	46.	Carina
11.	Windsor	47.	Chatsworth
14.	Ashgrove	48.	Cooper's Plains
15.	Aspley	49.	Ekibin
16.	Bald Hills	50.	Fruitgrove
17.	Banyo	51.	Greenslopes
18.	Chermside	52.	Holland Park
19.	Enoggera	53.	Moorooka
20.	Geebung	54.	Mount Gravatt
21.	Hendra	55.	Murarrie
22.	Kalinga	56.	Tarragindi
23.	Kedron	57.	Wynnum West
24.	Mitchelton	58.	Yeronga
25.	Nundah	61.	Boondall
26.	Stafford	62.	Nudgee
27.	The Gap	63.	Sandgate
30.	Corinda	64.	Wynnum
31.	Darra	66.	Western
32.	Graceville	67.	South Western
33.	Inala	68.	South Eastern
34.	Indooroopilly	69.	Eastern

## Code



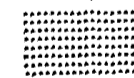
0.00 - 50.00 per cent owner occupied houses.



50.00 - 70.00 per cent owner occupied houses.



70.00 - 80.00 per cent owner occupied houses.



80.00 - 90.00 per cent owner occupied houses.



90.00 - 100 per cent owner occupied houses.

## Definition

'Owner occupied houses' means privately occupied houses either owned or being purchased, through mortgage or installment payments, by their occupants. (McDonald et al, 1976: 98)

Figure 3.9: Owner occupied houses.

On the basis of the information contained in these maps, a number of clear-cut general observations can be made. To begin with, although some low-lying areas are parklands, most of the 1974 flood plain was, and still is, occupied. Figure 3.3 indicates that some flood-prone areas were densely populated, with Figure 3.4 indicating that a substantial proportion of flood-plain occupants were low income earners. An area of particular interest, with a high concentration of male blue-collar workers, is the suburb of Rocklea, which is perennially prone to local flash flooding and backwater flooding from the Brisbane River.

Additional information from the Atlas of Population and Housing published by NATMAP (1979) on the basis of 1976 census data indicates that people living in other flood prone areas, notable Windsor, Buranda/Stones Corner, Hill End, Toowong, Rosalie and Fairfield, tended to have incomes of less than \$5,000 per year (1976). In most of these areas, this concentration of low incomes possibly coincides with the concentration of old-age pensioners since, as Figure 3.5 indicates, there is a concentration of persons 65 years of age and over in these areas. It should also be noted that comparative immobility, the relative absence of private transport and small household size (factors which might be considered to increase vulnerability in emergency situations) have been shown to be characteristics of areas with high concentrations of persons 65 years and over (McDonald et al., 1976).

Figures 3.6 and 3.7 indicate levels of education and income, with Figure 3.8 showing how widely the socio-economic characteristics of those in flood-prone areas differ. Figure 3.8 shows concentrations of high socio-economic status groups - mainly reflecting high proportions in these areas with high levels of education and high proportions in

professional, technical, administrative and managerial occupations - and concentrations of low socio-economic status groups in other areas - mainly reflecting high proportions of transport and communications workers and craftsmen. The existence of such differences suggests there will be differences in the social-economic dimension of vulnerability. There will be differences in responses to the hazard and in access to relevant resources available to enable adjustment. There will also be variations in the dependence upon household resources and occupational skills, implying there will be differences in patterns of adjustment and recovery. That is to say, it would not be expected, on the basis of these differences, that the experience of impact and the processes of recovery would be uniform experiences for all flood-prone residents.

Lastly, Figure 3.9 presents some interesting and important information. It indicates the prevalence of home-ownership in flood-prone areas. Although home ownership is clearly more common in some areas (e.g. the western suburbs) than in others (e.g. the inner city northern suburbs affected by creek and backwater flooding), home ownership can be recognised as a characteristic common to many flood-plain residents. Even in flood-prone areas where home ownership is least common (excluding the city), more than 50 per cent of houses are owner-occupied and, in most areas, more than 70 per cent is more typical. Therefore, notwithstanding other social and economic differences and the fact that vast differences existed in the market value of owner-occupied houses, it was very likely that most flood-plain residents would recognise that most others, like themselves, had had their 'own homes' damaged by flooding.

Social-economic vulnerability is clearly a complex matter, encompassing, as it does, a tension between the commonly shared social

characteristic of home ownership and, at the same time, vast differences in social and economic circumstances amongst residents of the flood plain.

#### The Political Dimension of Vulnerability

The mere existence of counter disaster plans at the formal organisational level can be considered a factor of some import in determining the forms of vulnerability of a population. Where formal organisations have resources, people and advanced plans to deal with emergency situations, this position constitutes some protection for those affected by such emergencies. The effectiveness of counter-disaster plans can, however, be assessed finally only by reference to their usefulness in the event of impact. Nonetheless, the suitability of any such pre-existing plans for a particular emergency can be assessed by reference to other known aspects of vulnerability in threatened areas. The most suitable plans will function in such a way as to directly reduce these other dimensions of vulnerability - the social-environmental and the social-economic. One would then expect effective counter disaster plans to:

- (1) reduce the severity of the hazard;
- (2) educate and inform both those at risk and organisations who accept responsibility for those at risk. In the event of an emergency the appropriate individual and contingent plans could then be undertaken prior to and during the emergency;
- (3) incorporate a welfare component so that the social-economic dimension of vulnerability can be reduced by appropriate measures undertaken prior to as well as during an emergency.

Before 1974, the political situation, in relation to disasters, in the Brisbane/Ipswich region was an interesting one. Some counter disaster plans did exist but it appears that they were non-specific, fragmentary, formulated for emergencies other than floods and/or were

poorly circulated even amongst those organisations and personnel implicated in them. They could better be described as sets of procedures to be adopted by individual government departments. The commitment of each of the three levels of government was broadly similar. In the event of an emergency, personnel, financial and material resources were to be supplied by or through government departments such as the Defence Department (Federal), Department of Social Security (Federal), Police Department (State), Department of Health (State), Department of Transport (State), etc. But programmes for the mobilisation and utilisation of these resources had not been developed and, in the absence of any pre-existing comprehensive counter-disaster plan, the complexities of a tri-level political structure (local, state, federal) created obstacles in these areas. This lack of pre-planning elicited the following response from the Executive Officer of the Queensland Disaster Welfare Committee (QDWC), Ms Anne Quinnet:

I hope ... that no welfare personnel in Australia ever again have to begin planning a disaster recovery programme during the impact phase of a natural disaster.

This statement is, in itself, almost sufficient comment on the institutional unpreparedness for the flood which hit the Brisbane/Ipswich region in January 1974, but the situation can be reviewed in more detail by considering each level of government in turn.

#### 1. The Federal Government

In the Australian context it is the State governments rather than the Federal government which hold the administrative responsibility for mitigating the effects of natural disasters (see Butler and Doessal, 1979). However, since 1939, the Federal government has allocated funds to affected State governments for natural disaster relief. By 1960, a definite policy of allocation of

such funds had emerged. The Australian government would match State government expenditure on the relief of personal distress and hardship and the restoration of public (not private) assets with a specific purpose grant. In particular circumstances, exceptions to this general policy have occurred so that more generous and/or suitable allocations could be made. The Tasmanian bush fires relief of 1967 was, prior to 1974, the most notable example of this. In that case, funds were made available to individuals for the restoration of private assets.

Whilst the Australian government provides these funds for natural disaster relief and while the business of administration is typically left to the State governments, the terms for the distribution of Australian government assistance are usually agreed to jointly between these two levels of government. Apart from financial assistance the Australian government has typically also made available other material resources (for example equipment), extended welfare services and seconded personnel through such departments as Defence, Transport, Social Security and Health.

The expectation prior to, and at the time of, the 1973/74 floods in Queensland was that the Australian government would provide financial support, material resources and personnel. But there was, at that time, no co-ordinated national counter-disaster plan and the implementation and exact structuring of these disaster relief measures depended to a very large extent upon the initiatives of the incumbent Prime Minister and his ministerial colleagues and, more generally, on the policies of the government of the day.

Some stress should be given to the fact that the mobilisation of Federal relief measures was not in any way conditional upon the implementation of hazard reduction programmes in the States. Thus, the Australian government policy, whilst having the potential to

alleviate personal costs in the event of impact, did nothing to reduce the environmental vulnerability of the population at risk. It amounted mainly to an assurance of state intervention to mitigate the effects of social-economic vulnerability - to compensate people for those material losses or damages for which they, themselves had insufficient means to replace or repair. Such a policy does not encourage preventive 'resistance' to the hazard but rather dependency on repair and rehabilitation after impact - a pattern which, it will be argued, contributes to the maintenance of existing forms of vulnerability.

## 2. The Queensland Government

The Queensland government apparently had pre-arranged counter-disaster plans from 1971 when the State Disaster Committee was formed. This Committee, established under the then Co-ordinator-General, Charles Barton, as chairperson, had allegedly evolved the following operational plan:

- Stage 1: Rescue, provision of temporary accommodation and other immediate welfare needs;
- Stage 2: Reconstruction to include physical and financial resources, the latter being handled by public servants selected for their experience in planning and administering fund allocation;
- Stage 3: Provision for the formation of a Committee for House Repair and Construction;
- Stage 4: Implementation of 'social work' activities to deal with needs arising from post-flood emotional stress.<sup>2</sup>

---

<sup>2</sup>A document outlining this plan was provided to Ms Heather Mugglestone who was conducting the organisational component of the original flood study. The exact source is not known to the present author.



Having noted this, it should be said, however, that there was no evidence at the time of the January 1974 emergency that such a plan was ever adopted. As in the case of the Federal government, the expectation prior to the 1974 floods was that the existing infrastructure of State government could be re-oriented and extended to meet the needs of the population in an emergency. Certainly, after the flooding of 1974, the State Departments of Health, Community Services and Transport, the Premier's Department, and the Treasury did respond in this manner. However, when any of the operations outlined in the State Disaster Committee plan occurred, they apparently did so as a result of ad-hoc decisions by those involved at the time of the emergency rather than as part of an overall plan.

The Civil Defence Organization (officially, though loosely, controlled by the Queensland Police Department) and the Police Department emergency operations room (described in Chapter 4) were the main areas of State government involvement in the early stages of the emergency. On the whole, the State government was seen publicly to be relatively inactive at this point and it became patently clear that the Civil Defence Organization was unprepared for a flood of the magnitude of the 1974 flood. This lack of preparedness is to some extent understandable in terms of the history of the organization. Civil Defence Organizations were set up in Australia in the 1950s in response to either real or imagined threats of enemy attack. They saw their functions as primarily related to civil defence in the event of military attack with a clear focus upon preparation for protecting a population from nuclear fallout. Thus, in January 1974 the Civil Defence Organization in Brisbane and Ipswich found itself without information on the dimensions of the flood hazard and having no boats at its disposal.

The consequences of not having an established, comprehensive and workable plan or of having one without any legislative base became clear as the flood hit. In 1974, delays occurred, dissatisfactions were expressed, conflicts emerged and vulnerable groups were left exposed to risk for unnecessarily lengthy periods of time. Also, the amount and terms of aid were heavily dependent upon decisions made by the governments in power.

### 3. Local Government

As controllers of water supply and related services in the respective urban areas, the Brisbane and Ipswich City Councils are clearly involved, at the preventive level, in the process of counter-disaster planning, at least in relation to flooding. The Brisbane City Council (BCC) also carries responsibility for the maintenance of Somerset Dam, the operation of which directly affects water levels in the Brisbane River. Additionally, the Works Departments of both councils play a continuing role in flood mitigation planning and implementation and in flood prediction and warning. In the event of a flood emergency, these departments have a key role in the translation of Bureau of Meteorology flood warnings so that areas and streets likely to be affected can be identified.

Over and above these responsibilities, the Brisbane City Council in 1973 had appointed its first 'Social Planning Officer'. Linked to this position was responsibility for community welfare in disaster/emergency situations. Thus, in the 1974 flood emergency, the Brisbane City Council was in a position to become involved in welfare relief through the Brisbane City Council Social Planning Officer, Mr David Ament, who played a key role in initiating response from the social work profession by calling for volunteers in the Brisbane area. The Brisbane City Council had, within its normal operational

structure, functions which could be extended in times of flood emergency and it was therefore capable of providing (and did in the event) assistance and relief in a variety of ways. The Brisbane City Council contingency measures for welfare assistance were, however, formulated independently of the State and Federal governments and events immediately following the 1974 floods illustrated the potential for rivalry among political parties and/or different levels of government.

Although political measures had the potential to reduce social-economic vulnerability, there were no plans directed at reducing environmental vulnerability, other than large-scale technological mitigation schemes which had been incorporated in water resource management in the region. The complexity of government in Australia and the potential for political party rivalry increased political vulnerability by complicating the process of relief planning and the implementation of relief measures, despite the existence, prior to the 1974 floods, of an operational plan for rescue and reconstruction in the event of disaster.

### Conclusion

Attention has been focussed in this chapter upon the sources or bases of people's incapacity to deal with extreme states of the natural environment in which they lived. This incapacity or vulnerability has been conceptualised as having at least three major dimensions - the social-environmental, the social-economic and the political. Each dimension has been treated in turn, although it has been emphasised that, in reality, anyone's vulnerability results from an interaction of these dimensions.

The question has been posed as to whether the potential for catastrophe was known (and talked about) as an outcome of particular

social practices in relation to the environment, practices constituted within a class system.

This examination of evidence about the hazard and its incorporation has illustrated that although the potential for damage and injury from flooding is a real and ever-present hazard, awareness and knowledge of even the environmental aspects of the hazard were limited. The hazard has been managed by government bureaucracies and, as a consequence, few had known even that extreme flooding was likely to be a problem, much less thought about how the potential for personal injury and property damage might have arisen. Prior knowledge of the hazardous environment which people occupied was absent, except among technical experts and bureaucrats. For the occupants of the flood-plain, awareness and knowledge of the natural environment were to emerge during the floods. Among technical experts, the situation was quite different. They did know the nature of the physical environment, and the potential for catastrophe had been stated in terms of the frequency and geographical extent of the hazard. This had been treated as a low-risk factor (in view of its infrequency) to be reduced further by large-scale technological mitigation schemes. The relationship of the social group and the natural environment was conceptualised by technical experts in terms of possibilities for technical dominance and there is little evidence to suggest that the character of this societal-environment relationship was ever critically examined nor that either the specifics of the social-economic dimension of risk or vulnerability, or government policies and plans for emergency relief were specifically referred to by these experts. Societal structure and particular social, economic and political practices were taken for granted and not examined in the assessment of risk or the potential for catastrophe.

So, whilst the occupants of the flood plain, for the most part, had no conception of their vulnerability, those with expert knowledge of the environment conceptualised the risk without reference to social practices and thus solely in terms of the likelihood of the occurrence of particular extremes of the natural environment; that is, in terms of the estimated frequency, extent, height and duration of flooding and broad estimates of the number (and possibly value) of buildings constructed in the flood plain.

Another indication of the way in which the natural environment and the social world were separated is the clear bureaucratic separation of environmental management and the formulation of emergency and relief policy. Consideration of the political dimension of vulnerability in this chapter revealed little evidence that specific hazards of the region had been taken into account in the formulation of protective emergency and relief policies and programmes. Indeed, it was revealed that the Civil Defence Organization was unprepared for a flood.

These points reveal also the answer to a second question related to that posed above, namely, what specific social practices constituted the potential for catastrophe and were these practices class-practices? The bureaucratic and specialised (separated) management of the environment and of emergency relief services are seen as key practices which conditioned the nature of vulnerability. The major effect of these was the unequal distribution of knowledge about the hazard. Other key practices identified were the operation of a system of land use regulations which did not restrict or impose proscriptive guidelines upon construction in large areas of the flood-plain; and the existence of government precedents for the

allocation of Federal funds in proportion to State government expenditure on personal relief and restoration of private assets which were not conditional upon hazard reduction programmes. These factors were coupled with a neglect on the part of commercial lending authorities to require insurance cover against flood damage for borrowers in the flood-plain and a high rate of private home ownership.

Now, whilst it is difficult on the basis of the empirical evidence gathered here, to link any of these practices directly to the class system, as class-practices, they can be seen as typical ones in a capitalist economy characterised by low levels of government intervention but with state provision and management of necessary infrastructure.

What this analysis of vulnerability suggests is not that one (or some) class(es) is/are vulnerable to the hazard (i.e. are losers and that other classes are beneficiaries) but that for some, their position in the class structure means that their share of the ordinary benefits of a capitalist economy (wealth, property, income) could offset the costs of exposure to risk which they experience in common with others in this hazardous environment. Others, who fail to benefit, or who benefit less, from the ordinary operations of the economy will be less able to bear the special costs of residing in the flood-plain.

The significance of widespread home ownership in this nexus cannot be overlooked. Even though the value of homes, as assets, varied greatly, private home ownership was an important common characteristic of those at risk, cutting across class divisions, and was thus an important element in the private acceptance of risk.

## CHAPTER 4

## THE EMERGENCY PERIOD: THE MANAGEMENT OF VULNERABILITY

Attention is now directed at how people responded to their vulnerability during what shall be referred to as the "emergency period". This is the period of the time between when the first threat of flooding became apparent and the time when most of the flood-affected population had returned to their usual occupations. Setting this emergency period aside for special analysis is not in any way intended to suggest that it is, in reality, separate from what went before or what followed. Indeed, what is being asserted here is that events prior to, during and after the emergency period are inextricably linked in an historical way, so that each should be seen as an outcome of former periods and a fore-runner of later periods. In this respect, this analysis differs from other disaster studies which conceptualise disasters as sudden breaks from, or interruptions to, a pre-emergency state. In other words, the starting point for this analysis of the time of the emergency is the recognition that what happened during the emergency was conditioned by the nature of the ongoing social-environmental, social-economic and political vulnerability of people in the flood-plain as it has been outlined in Chapter 3.

Also, it differs from conventional studies in that the progression from pre-emergency through emergency to post-emergency phases is not seen to be simply determined by an underlying sequence of events in the physical environment. This progression is viewed instead as the outcome of various social, economic and political forces which operate within - and upon - the physical environment. Furthermore, the 'management' of vulnerability before, during and

after the emergency period at both the individual (private) and collective (public) levels is seen to be political, in the broad sense of the word. That is to say, the 'management' of vulnerability is an outcome of strategies of power. A dynamic interplay of ideas and actions between the public and private spheres constitutes relations of power through which an emergency is constituted and at the same time, managed. This process will be examined here in reference to the 1974 floods through the documentation of interactions in two main areas: the way people interpreted the threat, which stems from the social-environmental aspect of vulnerability, and their responses to impact, which are indicative of the patterns of social-economic and political vulnerability.

It will be argued that, at the time of the 1974 floods, the management of vulnerability at both private and public levels occurred via strategies of power based upon specialised knowledge ('power-knowledge' in Foucault's terminology) of the environmental dimension of the hazard. The uneven distribution of knowledge of the hazard was the basis upon which a dominant public account of the threat and response emerged from the state via the mass media and other agencies. This dominant account, in which there were two principal actors, 'victims' and 'helpers', confronting the extremes of the natural environment, obscured variations in forms of vulnerability but, at the same time, enabled their management.

#### The Public Interpretation of the Threat

From mid-December 1973 to 24 January 1974, much of Queensland was subjected to unsettled weather patterns including extensive cyclonic depressions which produced very heavy falls of rain and resultant flooding in most rivers in the northern part of the state. Heavy summer rain and flooding (the 'Wet') in the tropical north were not



unusual, but few people in the south-eastern corner of Queensland would have given any serious thought to the possibility that they might share the experience of their fellow Queenslanders in the north. In the south-east, the actual period of threat (the time when the threat became apparent to the time of impact) was quite brief. On 24 January, the region came under the influence of a severe cyclonic depression bringing heavy falls of rain, and by the next day the catchment areas of the upper Brisbane and Bremer Rivers and Lockyer Creek were saturated. This was accompanied by significant run-off in all three catchment areas. On Saturday, 26 January at 7.00 a.m. the Australian Bureau of Meteorology issued the following warning:

Heavy rainfalls up to 127 mm at Moore were recorded in the 18 hours to 3 a.m. in the Upper Brisbane River, Lockyer Creek and Bremer River. Moderate to major flooding is expected today in these streams and increasing minor flooding is [expected] in the Brisbane River Middle Reaches. Moderate flooding is expected to increase in Ipswich today. A height of 14 feet is expected at the Brisbane Port Office gauge on the high tide at 12 noon today. This is similar to the flood peak of 1931. Moderate flooding will be experienced (Department of Science, Bureau of Meteorology, 1974:51).

This and other warnings were the first public statements about the threat<sup>1</sup> and they were issued to an audience whose knowledge of the flood hazard was absent or minimal. Couched apparently in everyday language (certainly familiar to the population), the terms used were, in fact, technical ones. They had quite specific meanings; "minor flooding", "moderate flooding" and "major flooding" are defined quite specifically in the following ways:

- minor flooding causes inconvenience such as closing of minor roads and submergence of low level bridges and makes the removal of river pumps necessary. The effect may be felt in the reach of the river in question in the vicinity of the gauge or at some distance upstream or downstream.

---

<sup>1</sup>The texts of major early warnings are included in Appendix B.

- moderate flooding causes inundation of low lying areas requiring the removal of stock and evacuation of houses. Main traffic bridges may be covered.
- major flooding causes inundation of large areas isolating towns and cities. Major disruption occurs to road and rail communications and evacuation of many houses is required (Department of Science, Bureau of Meteorology, 1974).

Data from the flood study (discussed in the next section) illustrate the difficulty most flood-affected people had in interpreting the warnings they received, and the effectiveness of the warning process was a matter of considerable concern in discussions about the performance of the Bureau of Meteorology after the flooding. These specific definitions and the locational reference points used in warnings were not known to the majority of the public in receipt of warnings. This problem of communicating effective messages of warning to a public unfamiliar with the threat, and uninformed in the language of meteorologists was recognised with a good deal of insight and a degree of anger by Mr G. Cossins at the Institute of Engineers, Australia, Queensland Division Symposium (August 1974) on the January 1974 Floods. He said:

Weather forecasts will not become more informative and reassuring to the public unless the public first accepts the responsibility for understanding the full implications contained in weather forecasts, including what can go wrong as well as what can go right. In turn the public must have some means of gaining this necessary understanding (Institute of Engineers, Australia, Queensland Division, 1974:34).

The implications of this problem of communicating effective warnings are taken up in the section which follows. What is more important at this point is to recognise that, irrespective of whether or not these messages were effective, in the sense that they enabled recipients to accurately assess their situation and take appropriate actions, these warnings had other effects. They were, as public statements, the first stage in the production of public knowledge

about the threat. Importantly, weather warnings describe only the synoptic dimensions of the threat and the expected flood heights at specific locations. They refer only to the short-term, they provide no interpretive information (apart from road reports in some instances) and contain no 'action' component - therefore there are no instructions offered to people about what to do. Thus, very early in the emergency period, the environmental dimension of the threat is emphasised along with its suddenness and immunity to human (at least individual) intervention.

#### Private Interpretations of the Threat

The 1974 flood study data on Brisbane and Ipswich indicate that most people had had no previous experience of flooding in their present location, and in the absence of prior knowledge of the hazard, they continued to assume that general warnings did not apply to them, at least until events demonstrated otherwise. As they became acutely aware of the dimensions of the threat and the speed with which flood waters were encroaching, they took the most effective actions they could. Most however, though resourceful, were not able to effectively protect their property against the flood.

What appears to have happened in most cases is that people in threatened areas began to express concern as they and their neighbours watched water levels rising beyond those to which they were accustomed (Table 4.1). Over half (57 per cent) of respondents interviewed in 1974 reported that rising water levels or a warning from a neighbour or friend was their first indication of flooding. Yet rising water levels were being interpreted by different people in different ways, for there was considerable variation in the point at which people began to think their home might be flooded (Table 4.2). Many reported thinking that their home would be flooded before water had entered

TABLE 4.1

## RESPONDENTS' FIRST INDICATION OF THE FLOOD

	n	%
Warned by a recognisable official	39	7.3
Neighbour or friend warned	60	11.3
Stranger warned	9	1.7
Radio or television warning heard	65	12.3
Watched water rising	243	45.8
Other warning	76	14.3
Didn't think house would be flooded	27	5.1
No answer	11	2.1

TABLE 4.2

## HEIGHT OF WATER WHEN RESPONDENT FIRST THOUGHT HOUSE MIGHT BE FLOODED

	n	%
Had not entered property	144	27.2
Had entered grounds only	117	22.1
Under house - no living space affected	114	21.5
Had entered downstairs rooms (high set house)	80	15.1
Had reached main floor level	25	4.7
Respondent didn't think house would be flooded	27	5.1
No answer/don't know	23	4.3

their property, but there were those who apparently had not begun to think in these terms even when flood waters had reached the main floor of their home.

There is no evidence to suggest that having received an official warning made any difference to the efforts made by potential victims

to protect their property. In most cases, an official warning came as one of several indicators of the threat. Those who received some official warning and those who did not had very similar reactions (Table 4.3).

TABLE 4.3

## OFFICIAL WARNING AND PRE-EVACUATION PREPARATIONS (BRISBANE ONLY)

Received Official Warning		Preparations made before leaving?		
		Not applicable	Yes	No
Not applicable	n	6	3	4
	% of total	1.3	0.6	0.9
	% of row	46	23	30
Yes	n	5	69	33
	% of total	1.2	16.0	7.6
	% of row	4.7	50.0	13.4
No	n	37	216	58
	% of total	8.6	50.0	13.4
	% of row	11.9	69.4	18.6

TABLE 4.4

## FURNITURE AND/OR POSSESSIONS REMOVED FROM HOUSE

(Number of Responses = 681)

	n (Responses)	%
Furniture and/or electrical appliances	133	25.1
Floor coverings and/or curtains	14	2.6
Kitchenware and/or food	13	2.5
Personal papers and valuables	64	12.1
Clothing, linen, bedding	140	26.4
Items of sentimental value	15	2.8
Other	6	1.1
Everything	41	7.1
No answer/does not apply	255	48.1

The majority of people who left their homes, did take action to protect their possessions. Most stacked belongings above the level they expected the flood waters would reach and took with them items of clothing, some bedding and linen, and small items of furniture (see Table 4.4).

Although the actions taken by flood-affected people to protect their property must be viewed as appropriate adaptive behaviour under the circumstances, it should be noted that evacuees listed amongst their major losses such things as soft furnishings, bedding, objects of sentimental value, tools, personal papers, business records - all items which are portable and very likely to have been saved if an accurate assessment of the threat could have been made.

Therefore, this widespread inability to interpret warnings resulted in ineffective adaptive behaviour by flood-affected people. This was no doubt a function of the gross lack of prior knowledge of how a flood would affect the area.<sup>2</sup> This, then, opened the way for the widespread acceptance of a public definition of the situation which stated that the region was suffering from stress produced by uncontrollable and somewhat haphazard forces in the environment; flood-affected people were seen to be victims of these forces.

#### The Public Response to the Emergency

Three spheres of public action directed at managing the effects of flooding have been selected for discussion because of the centrality and breadth of their influence in producing this public definition of the situation. These central institutional areas are:

- (1) the Police Department and related emergency service organisations such as civil defence;

---

<sup>2</sup>An investigation carried out in 1979 by Irish and Falconer (1979) in an area flooded in 1974 and again in 1979 illustrates the importance of familiarity with the hazard for effective warning.

- (2) the mass media; and
- (3) welfare services.

Counter-disaster actions in each of these areas in critical ways contributed to the public definition of the event as a 'collective stress' situation, as well as to the social production of public images of two main social groups involved in this definition - 'victims' on the one hand and 'helpers' on the other.

#### The Police Department

In response to warnings issued by the Bureau of Meteorology, the Police Department mobilised its emergency operations room. The function of this unit was to receive, monitor and disseminate reports on the flood situation. The operations room comprised senior police officers and liaison personnel for the Civil Defence Organization, the army, press and the Brisbane City Council (BCC). Within the operations room were detailed maps of flood prone and inundated areas together with maps indicating police locations, road conditions, transport and fuel availability and manpower resources. In the field, police were also involved in rescue and evacuation and it was the Police Department which assumed overall responsibility for the co-ordination of emergency services.

All of this was seen to be a normal extension of police functions and the necessity for a centralised, established authority (to oversee post-threat community action) went largely unquestioned. The benefits of a centralised authority are clear. The research literature on organisational effectiveness in disasters suggests that this is an effective way to achieve a necessary degree of co-ordination amongst a wide variety of organisations. It also enables standardisation of communications with the public through the provision of a centralised communications centre; and control of organisational activity and

converging masses (through the acceptance of the authority) might be maintained.

Although some researchers (Barton, 1969; Weller, 1972) have pointed to the way in which new authority relations develop in disaster situations, the less obvious, though no less significant, questions of the negative and long-term effects of established, formal authority relations have not been the subject of enquiry. Such effects are sociologically interesting because of the implications that they have for the development of the 'disaster' and the structuring of power relations in the long-term. The presence and involvement of an established authority, such as the police force, has the effect of reinforcing the legitimacy of the public definition of the situation received largely via the mass media. It comes to be seen as the 'official' view. Additionally, police efforts are seen as part of the concerted attempt to bring the disaster agent (the floods) under control and both publicly (especially through the media) and privately, the activities of a wide range of helpers were viewed as being, organisationally, associated with the police and Civil Defence. The following excerpts from the Courier-Mail and Sunday Mail illustrate the way in which helper activities of a wide variety were viewed, collectively in public communications:<sup>3</sup>

In yesterday's flooding the biggest ever emergency evacuation in Brisbane was mounted with police, civil defence authorities, the Army and Air Force combining to rescue more than 500 flood-bound residents.

It was Brisbane's Dunkirk.

Hundreds of small craft worked the flooded suburban streets carrying householders to high ground and safety.

RAAF Iroquois helicopters flew mercy missions in the metropolitan area.

They winched people from tree-tops near Bundamba and roof-tops at Inala and Blackstone (Sunday Mail, 27 January 1974).

---

<sup>3</sup>See News-sheets Numbers 1 to 6 in Appendix C for copies of the full text of these news articles.



Hundreds of exhausted emergency personnel - including police, the military and volunteers - worked throughout yesterday combatting the floods which have affected one-third of the city and claimed four lives (Courier-Mail, 28 January 1974).

The following cartoon illustrates this same aspect of public communication. In it, the good deeds of the three nondescript 'helpers' are associated visually with the directives and actions of Civil Defence and the RAAF (represented by the helicopter). Yet, as will be seen, these organisations played a relatively small role in helping flood-affected people; it was people known through informal ties (especially relatives and friends) who played the helper role.



"Of course we didn't have wireless or helicopters or motor boats in 1893, but people haven't changed!"

(Courier-Mail, 30 January 1974.)

In this way, these public agencies were seen to be in control of much private 'helper' activity. As a result, private 'helpers' gained

a status which allowed them access to a wider range of resources and public recognition for their actions. At the same time, through the mass media, the value of these official agencies was reaffirmed and their counter-disaster efforts endorsed.

### The Mass Media

Intertwined with these forces were the operations of the mass media. They functioned as public interpreters of the causes and the course<sup>4</sup> of the disaster and they utilised limited official accounts as the basis for the public definition of the emergency. The front page of the Sunday Mail of 27 January<sup>5</sup> "Great Flood Kills 3, Damage in Millions" typifies the ways in which official accounts (Bureau of Meteorology warnings and predictions and Police reports) included in the front-page article, were expanded to produce newspaper reports in the usual, dramatic style. The media effectively produced a definition of the disaster which was not only consistent with official accounts, but which also met the media's usual criteria of what is newsworthy - criteria such as drama, human interest, the exotic, proximity, and 'importance' (Mayer, 1979).

Although it is difficult to assess the effects of media discourse on either public or private actions, the capacity of the mass media to set the agenda for public discussion is widely accepted.<sup>6</sup> In the unfamiliar physical and social settings which occur following the impact of a natural hazard, the views and sentiments expressed in the media become part of the public account of the disaster.

---

<sup>4</sup>This formulation of the media's role is derived from Windschuttle (1981:96).

<sup>5</sup>See News-sheet Number 1 in Appendix C.

<sup>6</sup>For a summary discussion of the range of literature which supports this notion, see Mayer (1977), pp.132-157.

The main elements of this public account are evident in newspaper, radio and television coverage of the flooding. With respect to the processes of interpretation and definition of the disaster, radio and television could perhaps be considered to be of greater significance than newspapers. But an analysis of these is beyond the scope of the present research which can, at most, include a review of newspaper coverage - sufficient only to indicate some of the main elements of media treatment and to underline the significance of analysing media operations in disaster studies.

In the case of the Moreton region floods, newspapers reported the causes of the disaster chiefly in meteorological terms. For example, on 27 January, the Brisbane Sunday Mail carried the following article:

## HERE'S WHAT CAUSED IT

**THE downpour that caused Brisbane's massive floods yesterday resulted from the linking up of the monsoonal trough and the former Cyclone Wanda just north of the city.**

The 314 mm fall gave Brisbane its wettest day for 87 years, just 151 mm short of the record fall on January 21, 1887.

Brisbane Weather Bureau said the trough that had previously been

Cyclone Wanda joined up with the monsoonal trough over Brisbane early on Friday night.

"The combination is still affecting Brisbane's weather, but we don't expect rain anything like Friday night's again," a Weather Bureau forecaster said.

South of Brisbane yesterday, the trough caused further heavy falls in the Gold Coast hinterland, with Springbrook recording more than 100 mm in three hours.

Each day, similar articles focused upon meteorological developments, which were regarded as the primary causes of the disaster. These reports were well-validated by physical evidence and their validation, it would seem, enhanced the credibility of other reports less well supported by evidence. Some reports did suggest other causes of specific or additional flood problems; articles critical of the Brisbane City Council and State Government land use zoning methods suggested poor planning, implying that zoning was another 'cause' of the disaster. On another occasion, the opinion of a flood-affected engineer was reported and he publicly blamed the Brisbane City Council for a backwater-flooding problem in the Fairfield area. Other reports suggested that careless decision-making on the part of the Brisbane City Council had allowed works to proceed in spite of the fact that they may have aggravated the flood problem. The Windsor area, which was affected by Breakfast Creek, was one area referred to in this regard. But reports such as these remained for the most part unrelated to each other and none seriously challenged the planning principles guiding the use of the natural environment. Although several articles stated quite clearly the opinion that in specific areas, buildings should not have been constructed, these opinions were stated only when a specific scapegoat was apparent (for example, the Hooker Development Company in the suburb of Jindalee). There was no apparent public suggestion that these errors might have been part of a particular economic relationship, a relationship in which land is seen as a marketable commodity, location is a factor of urban wealth and in the final analysis, the costs of protecting a population from the one in 100 year flood are calculated as being too great in comparison with the benefits to the local economy. It was never seriously suggested that some general principles of planning

rather than the actions of individual developers should have been critically examined. Apparently, the newspapers and the public were satisfied when scapegoats had been found.

Furthermore, in public discussion of the causes of the disaster, reassurances were repeatedly offered that, with the proposed construction of Wivenhoe Dam, the flood problem in Brisbane would be minimised. Many people were led to believe that Wivenhoe Dam (in addition to Somerset Dam) could prevent the recurrence of floods of the magnitude of the 1974 flood. However, technical descriptions of the combined operations of these two dams suggest that flood mitigation is, in reality, not as simple a matter as media accounts would suggest (Cossins, 1974).

The public discussion of the causes of the disaster thus reinforced the view that the flood was a sudden, unpredictable, mostly unavoidable event, the causes of which were uncontrollable events which occurred in the physical environment. The social, economic and/or political uses of the flood-plain were not publicly discussed as relevant causes. In other words, the problem was not discussed publicly in terms of the obvious fact that if buildings had not been constructed on what was very clearly a flood plain, the disaster would not have occurred.

The public interpretation of the course of the disaster was consistent with this view. In the public arena of the mass media, flood experiences were aggregated and at times exaggerated. Unfamiliar experiences were categorised and interpreted by the mass media, probably more so by the broadcasting media than by newspapers.

It is instructive to review the content of some of the newspaper reports of the time, paying particular attention to the language used, the way that disaster myths were utilised and the methods by which the appropriate disaster roles which emerged were constructed.

- Courier-Mail 28.1.1974 City's Flood Fighters are Weary.  
It was Brisbane's Dunkirk.
- Courier-Mail 28.1.1974 Ipswich last night was reeling  
under the impact of the worst  
flood to strike the city since the  
1893 disaster ... At least 300  
houses in six suburbs have been  
abandoned, and have been badly  
inundated or destroyed by the  
relentless muddy torrents.
- Courier-Mail 29.1.1974 Watery Invasion of Jindalee.
- Courier-Mail 29.1.1974 The Brisbane River's massive  
floodwave early today began its  
surge through the city's  
already-ravaged areas and  
authorities warned that the  
disaster level would not fall  
until late this afternoon ... .
- The raging Brisbane River  
continued to rip the heart out of  
the near crippled city, tearing  
vessels from their moorings and  
washing into more than a dozen  
suburbs causing disruption to  
essential services.
- Courier-Mail 30.1.1974 Flood-savaged Brisbane was an  
incredible sight from the air  
yesterday. (Author's emphasis.)

These passages illustrate the use of images of invasion, combat, resistance and defeat. (Appendix C contains full copies of the articles from which these excerpts have been drawn.) Such images connote the impact of external forces and suggest, firstly, that the situation is an aberrant one, an abnormal event, and secondly that the forces which caused it are alien. The use of such language reproduced the already well-established view of the hazard as being external to the society; an extreme condition of the natural environment. In addition, prominent, if brief, coverage of dramas, such as when some Jindalee residents armed themselves because of fears of looting in flood damaged areas, lent support to persistent disaster myths which function to unite a community against the external threat of which

these additional (if imagined) threats are seen to be a part. As well, the public denouncement of such unacceptable behaviour in media reports projected expectations of altruism and philanthropy from those not directly affected (non-'victims'). As well as having practical outcomes, such reports emphasised the significance of the evolving images of the 'victim' and 'helper'.

#### 'Victims' and 'Helpers'

As these images of 'victim' and 'helper' emerged in public discourse, the expectations attached to these social roles became apparent. The expectations of powerlessness (defined in public discourse as helplessness) on the part of victims and the converse of a degree of control on the part of helpers, were particularly apparent.

Flood-affected people were continuously referred to as 'victims', a term synonymous with terms such as 'casualty', 'sufferer', 'martyr', 'fatality', 'patient', 'invalid' and 'target'. Stories appeared of people waking in the middle of the night and stepping into water inches deep, or of others falling asleep watching television and waking to find themselves floating around the living room. There were also reports of people having to leave their homes without having time to make any preparations to save their possessions because of lack of assistance. Though such stories did not depict typical examples of what was happening, they did serve to construct a public image of victims as bewildered, dependent, resourceless people, without possessions or home and in desperate need of help from others.

On the other hand, the 'helpers' were portrayed publicly as capable, sensible, resourceful and well-organised people, unhindered by emotional distress, but showing compassion for the 'victim'. The

cartoon reproduced on Page 74 also illustrates the projection of these public images.

The construction of these social roles produced both positive and negative effects. On the positive side, they offered a starting point for social interaction in an unfamiliar social and physical environment. They enabled those who assumed the victim role to gain resources for evacuation and rehabilitation, these being delivered, both informally and formally, by 'helpers'. A power strategy based upon the 'technology' (after Foucault, 1980), or specialised knowledge, of welfare (helping) was reproduced in the media. Active-passive, helpful-helpless, capable-incapable dichotomies were implicit in 'helper'-'victim' relations and through the association of 'helpers' with the state (a process discussed below), the formal structures of bureaucratic (state) control were reproduced. The legitimate 'victims' were expected to obtain resources through the state where their real needs could be assessed through declarations of damage, financial assets and income.

#### The Welfare Response

The significance of the welfare response lies in the fact that through their advocacy role, social work professionals attempted to establish the rights of victims and to intervene to ensure adequate compensation. However, whilst a great many hours were spent and a heavy professional commitment was in force, welfare workers (both at the professional and volunteer levels) accepted, reinforced and reproduced the popular image of the 'victim' as helpless and resourceless. It was in this sphere that relations of power based upon the 'technology' or specialised knowledge of helping were constituted.



In The Queensland Flood Report (Chamberlain et al., 1981) it was reported that social workers at relief centres<sup>7</sup> saw the following as important needs or problems of flood-affected people:

anxieties and frustrations associated with financial losses caused by the flood and their implications for ongoing commitments;

reactive depression arising from delays experienced in respect of applications for financial relief;

chronic depression, especially amongst the elderly;

marital tensions, whether pre-dating, caused, or exacerbated by the disaster impact, and the after-effects in a disruptive social environment;

physiological and neurological reactions, including high blood pressure, development of nervous tics, irritability, fatigue and decreased ability to cope with normal social relationships and environments, let alone additional stress;

pre-flood psychoses and alcoholism aggravated by the flood aftermath environment; and

family withdrawal from neighbours, particularly where the amount of flood relief grants differed (Chamberlain et al., 1981:125).

These early perceptions of the needs of flood-affected people are consistent with expectations of behaviour under stressful conditions and were based largely upon the practical experience of those social workers who operated out of relief centres. These people, the Flood Study data suggest, were likely to encounter high proportions of seriously affected people. Social workers' perceptions of the needs of flood-affected people were not, in these early stages, based upon reports of previous research or from data collected on this flood, as both sorts of information took some time to acquire and the social workers did not have this time available. The resultant image of over-stressed and (therefore) disabled victims, which was projected publicly onto all victims was consistent with the image of 'victims'

---

<sup>7</sup>'Relief centre' was defined for the flood study as "any physical location (premises) used as a basis of service delivery of a range of relief activities - whether material, financial or counselling oriented" (Chamberlain et al., 1981:115).

generated elsewhere in the public arena but not entirely consistent with survey data about the needs and resourcefulness of the majority of flood-affected householders.

The survey data suggested that public sources of help may have been underutilised, not because flood affected people were unable to function well enough under stress, but because they were able to turn to private sources they were able to summon assistance from people within their own social network. Moreover, almost half the 1974 Flood Study sample reported that they did not seek assistance from emergency relief centres. Some went to the centres for food and grocery items soon after evacuation and about one-tenth received clothes (Table 4.5) but as few as 3 per cent of respondents said they had returned to a relief centre for assistance with problems they experienced while in temporary accommodation.

TABLE 4.5

## PURPOSE OF CONTACT WITH RELIEF CENTRE(S)

(Number of Responses = 554)

	n (Responses)	%
Bedding and blankets	18	3.4
Food and groceries	24	4.5
Clothing	63	11.9
Social welfare assistance/fund applications	104	19.6
Accommodation	29	5.5
Assistance or equipment for clean-up	18	3.4
Other	29	5.5
No contact with relief centre	258	48.7
No answer/don't know	11	2.1

However, the help that flood-affected people acknowledged immediately after the floods from the Salvation Army, members of

church organisations, service clubs and 'strangers' (not from relief centres) was probably perceived as part of relief-centre activity. 1974 Flood Study respondents were not at all clear about the affiliations of 'strangers' who came to help and many had only contacted a relief centre for application for financial assistance. However, high levels of satisfaction with services received at relief centres were recorded. The data in Table 4.6 illustrate this overall satisfaction. The patterns of response illustrated in Table 4.6 and Table 4.5 (where it is shown that the most common reason for contact with a relief centre was to obtain applications for financial assistance) suggest that other helping activity may have been perceived as being connected with or organised from relief centres which were operated under the auspices of the State Government or the Brisbane City Council.

TABLE 4.6

REPORTED SATISFACTION WITH SERVICES RECEIVED AT RELIEF CENTRES  
(BRISBANE ONLY)

	n	%
N.A.	11	2.6
Satisfied	210	48.7
Non-committal	5	1.1
Dissatisfied	4	0.9
No contact with relief centre	201	46.6

Although much help was given outside the auspices of the relief centres and the centres were in reality heavily dependent upon volunteer labour (Table 4.7), they were perceived as foci for assistance. Thus, private, independent effort was apparently perceived as part of an overall public response. No distinction was

TABLE 4.7

FREQUENCY WITH WHICH TYPES OF RELIEF CENTRE WORKERS  
MENTIONED BY ORGANISATIONAL STUDY RESPONDENTS

	% (n = 80)
Church people	44
University of Queensland staff	9
Social workers	7
Housewives	7
Meals on Wheels workers	6
Civil Defence workers	3
City Council staff	3
Tradesmen	3
QDWC workers	1
Teachers	1
Others (could not specify)	14
No answer	2

Source: Chamberlain et al. (1981).

made between the help given by relief centre workers and the help given by other volunteers.

For most people the most likely reason for contact with a relief centre was to obtain application forms for financial assistance. This fact is significant because, were it not for the financial assistance provided to flood affected households by the State Government and by public contribution, few could have recovered economically. State Government grants were proportionate to damage incurred and were limited by the application of a means test which was imposed by the State Government. The State Government saw its responsibility solely as enabling flood-affected people to be sufficiently sheltered, clothed and fed to allow them to resume their usual occupations as quickly as possible:

the Government cannot be expected to refurnish homes, but only to ensure that people at least have the essentials (Statement by the Premier of Queensland, Mr Bjelke-Petersen, Courier-Mail, January 30th, 1974).

This view was quite common and consistent with policies and precedents. Flood-affected people, along with the Premier, saw government financial assistance as a form of relief, not compensation. In relation to the financial costs borne by flood-affected people themselves, the extent of governmental assistance was considerable. Doessel and Butler (1979) have estimated that 46 per cent of the total costs of damage to residential properties was covered by the Government whilst private insurance and public philanthropy together covered only about 25 per cent.

Government assistance was clearly a necessary resource enabling people to manage the effects of vulnerability. But the process of government assistance produced other effects. Firstly, application for financial assistance not only confirmed the 'victim' status of the flood-affected applicant but it also officially defined the 'victim'. Secondly, the constitution of government assistance as relief, not compensation, reproduced the public definition of the disaster as the result of forces external to the society. Unlike insurance where financial aid is provided in proportion to the damage incurred (compensation) and which presupposes knowledge of the risk and the involvement of the claimant in establishing in advance the extent of their financial liability, government assistance was proportionate also to the financial means of the individual household to effect its own recovery. Prior knowledge of the risk of preventive actions were not at all relevant. Clearly, none of the federal, state or local levels of government accepted responsibility or blame for damages because these were not seen to be calculable in advance. Thirdly,

because local relief centres<sup>8</sup> were used to distribute and collect application forms for financial assistance, the organisation of financial assistance was conjoined with the mobilisation and organisation of welfare workers (both professional and volunteer). This constituted, then, evidence of a large-scale response, and the counter-disaster effort of the state was generally seen to be effective overall. There is no suggestion here that individual flood-affected households were all satisfied with their lot. However, dissatisfaction about the 'unfairness' of financial aid remained fragmented and was often directed at other flood-affected households rather than at the principles and processes of allocation.

In summary then, the public response to impact involved the 'conversion', by association, of much private helping activity into public action. This had the effect of separating the publicly defined 'helper' and 'victim' roles by associating 'help' with the public sphere. 'Pro-victim' welfare activity reinforced the helper/victim dichotomy with social workers, even as advocates, failing to challenge the powerlessness inherent in the victim role.

### The Private Response

Private responses to the threat, though mostly independent of actions in the public sphere, were nonetheless constituted in important ways by the government response and the effects of the public and private responses were mutually reinforcing.

What is most obvious about private responses to the flooding is the independence of the actions taken by flood-affected people, something which contrasts sharply with their dependency upon public

---

<sup>8</sup>Centres for the processing of applications for financial assistance were not always in the same premises used for other relief activities but were located close by at central points within the suburbs.

knowledge for interpretation of the threat. The Flood Study data illustrate that, in taking actions in response to the flooding, very few flood-affected people 'conformed' to the publicly constructed image of the flood 'victim'. The data show, for instance, that the most salient response to the threat of flooding was to evacuate and that in this regard, most people decided independently, without direction, to leave their homes. Many left on foot, carrying possessions with them. Others left in boats, cars or trucks, mostly on their own (see Table 4.8). They went mainly to the homes of neighbours, friends or relatives living close by. If friends or relatives did not live close by, the evacuees were most likely to go to relatives living further away (see Figure 4.9). Some 70 per cent of respondents reported going immediately to relatives, friends or neighbours. They arranged their own post-evacuation accommodation and took into account factors such as their compatibility with their prospective hosts and their proximity to their own home (see Table 4.10). Only 9.8 per cent of respondents went to a relief centre for immediate post-evacuation accommodation (Table 4.9) and only 6.6 per cent said that they were directed by emergency personnel to their immediate post-evacuation accommodation (Table 4.10).

TABLE 4.8

## METHOD OF EVACUATION

	n	%
On foot by own initiative	178	33.6
Swam out on own	13	2.4
By car, truck or boat - own or arranged by respondent/householder	243	45.8
On foot or by vehicle, with assistance from emergency personnel	59	11.1
Other	3	0.6
No answer/does not apply	65	12.2

TABLE 4.9

## IMMEDIATE POST-EVACUATION ACCOMMODATION

	n	%
Relief centre	52	9.8
Relatives' home	185	34.9
Home of friends or neighbours	191	36.0
Private accommodation with strangers	22	4.1
Rented accommodation	4	0.7
Other	17	3.2
No answer/does not apply	59	11.1

TABLE 4.10

## REASONS FOR GOING TO POST-EVACUATION ACCOMMODATION

	n	%
Closest unaffected house	19	3.6
Close to area	71	13.4
First offer/invitation from:		
neighbours	53	10.0
friends	54	10.2
relatives	85	16.0
strangers	40	7.5
Attractiveness of going to:		
neighbours	13	2.4
friends	57	10.7
relatives	130	24.5
Directed to accommodation by emergency personnel	35	6.6
Only place to go	53	10.0
Other	16	3.0
No answer/does not apply	71	13.4

Also, a comparatively small proportion (11 per cent) of evacuees surveyed in 1974 acknowledged any other assistance, during evacuation, from emergency personnel, that is, people they recognised as acting in some official capacity. On the whole, emergency personnel appear,



from householders' reports, to have played a small role in evacuation and provision of shelter. At the same time, over half (59 per cent) acknowledged the presence in their area of Civil Defence personnel, police and/or members of other voluntary organisations at the time of their evacuation and very few respondents proffered criticisms or suggestions for the improvement of the performance of these emergency organisations (see Table 4.11). This uncritical appraisal of this public effort and the general pattern of satisfaction with evacuation procedures (Table 4.12) suggest that flood-affected people may have

TABLE 4.11

## SUGGESTIONS FOR IMPROVEMENTS IN EMERGENCY OPERATIONS

(Column Percentages)

(Number of Responses = 530)

	Police % (of Res- pondents)	Civil Defence % (of Res- pondents)	Army % (of Res- pondents)
N.A.	15	13	17
No suggestions, D.K.	64	64	71
Satisfied	3	2	4
Better preparations/earlier involvement	1	15	2
Improve overall organization and co-ordination	4	8	2
More manpower/equipment	4	5	2
Improve methods of:			
(i) warning	5	2	1
(ii) evacuation	1	0	1
(iii) clean-up	1	0	1
Should be better informed	1	2	0
Need for identification	0	1	0
Other	1	0	0

TABLE 4.12

## SATISFACTION/DISSATISFACTION WITH EVACUATION

	n	%
N.A.	26	4.9
Satisfied with evacuation	325	61.3
Dissatisfied:		
insufficient warning	42	7.9
lack of organisation	30	5.7
lack of assistance	50	9.4
instructions to evacuate too late	11	2.1
instructed not to evacuate	2	0.3
other	23	4.3
Satisfied with some reservations	9	1.7
Not at home at time of evacuation	12	2.3

derived considerable emotional support from the presence of 'help' in their area, even though this help played very little part in their actions because assistance was, at this time, mostly obtained directly by flood-affected people from relatives and friends.

When people returned to their homes to begin the task of cleaning up (generally within about five days of the flood peak), assistance from the Salvation Army, members of church organizations, service clubs and 'strangers' was considerable. Still, flood-affected people were highly dependent upon private sources of help (relatives and friends particularly) and it was these people who proved most helpful (Tables 4.13 and 4.14).

These data suggest that flood-affected people actively utilized private sources as opposed to public sources of help and independently applied themselves to preparations for evacuation. In contrast to their dependency upon public knowledge for their interpretation of the event, these flood-affected people were for the most part very independent in their actions; a reality not reflected in the 'popular

TABLE 4.13

## PEOPLE WHO HELPED DURING CLEAN-UP (BRISBANE ONLY)

(Number of Responses = 666)

	n (Responses)	% (of Res- pondents)
Friends	219	50.8
Neighbours	83	19.3
Relatives other than household members	212	49.2
Organizations	137	31.8
Strangers	85	19.7
Help offered but not needed	1	0.2
No answer/does not apply	66	15.3

TABLE 4.14

## PEOPLE FOUND MOST HELPFUL DURING CLEAN-UP (BRISBANE ONLY)

(Number of Responses = 462)

	n (Responses)	% (of Res- pondents)
Household members only	8	1.9
Friends	95	22.0
Neighbours	34	7.9
Relatives other than household members	119	27.6
Organizations	35	8.1
Strangers	19	4.4
All helpful	57	13.2
No answer/No help required	95	22.0

image' of victims as helpless and resourceless. One might have expected some challenge to the popular image on this basis except that flood 'victims' were keenly aware that, in spite of their resourcefulness and independence, they were dependent upon the state not only for knowledge but also for financial assistance.

Most flood-affected households were in need of some financial aid for recovery and rehabilitation. There were two main sources of such aid - public appeals such as the Brisbane Lord Mayor's Fund and the Ipswich Disaster Relief Fund and two State Government funds, Reconstruction and Personal Hardship and Distress. Seventy-four per cent of respondents in the 1975 survey had received some assistance from the public appeals with 45 per cent receiving State Reconstruction grants and 51 per cent receiving Personal Hardship and Distress grants. The reported amounts of money received from each of these sources varied between \$300 and \$1,000 from the public appeals, between \$1,000 and \$5,000<sup>9</sup> from the State Government Reconstruction Fund and \$300-\$1,000 in the form of personal relief from the State Government. Some 38.2 per cent of 1975 respondents also indicated that they had received amounts (usually less than \$500) from voluntary organisations. These figures clearly suggest that the main sources of financial assistance were direct government grants or grants from public appeals administered by (local) government. These data are consistent with those compiled by Butler and Doessel (1979) and discussed above in connection with the public welfare response. Many flood-affected people were dependent upon this government assistance (some very much so) to effect housing recovery.

Thus, it has been shown how both the knowledge necessary to interpret the extraordinary situation and the supplementary finance necessary to facilitate recovery were delivered by the state.

### Conclusion

The examination of the nature of vulnerability undertaken in Chapter 3 led to the conclusion that bureaucratic management of the

---

<sup>9</sup>Several reported grants in this category were between \$5,000 and \$10,000 and one over \$10,000 was also reported.

environment and bureaucratic specialisation leading to separation of the management of the natural environment and the management of the effects of extreme states of that environment for the human group using it were key practices in the constitution of vulnerability. So too were the calculation of risk in broad terms by technical experts and the absence of awareness and knowledge of the hazard among people living in the flood-plain, most of whom were private home owners or buyers. These practices were seen to be consistent with a world-view in which the natural environment and the social world were separated and people's vulnerability to the flood hazard was conceptualised only in terms of an environmental dimension, in terms of the likelihood of extreme environmental events causing damage or injury to estimated numbers of properties and people.

Now, an investigation of the emergency which arose in the Moreton region in January 1974, has demonstrated how these key ideas and practices carried over into the management of the effects of the patterns of vulnerability produced within this framework. It has been shown how, because of their lack of knowledge of the hazard and its dimensions, directly affected householders were generally unable to interpret environmental warning signs. Their lack of previous knowledge and experience meant that they were, in many cases, unable to make sufficient and appropriate preparation. However, meteorological accounts, delivered and utilised by the mass media, supplied for flood-affected people and others a definition of the situation. These meteorological accounts, in part because of their official nature, became the foundation for a dominant and public account upon which flood-affected people were dependent. This public account, entailing as it did, a separation of the natural environment from the social world, was acceptable. The extreme force of the

natural environment was perceived as an attack upon a more or less helpless social group, causing disruption to a smoothly running society. The prior bureaucratisation of knowledge about and management of the environment led to a ready acceptance of this dominant account. It 'made sense' in the absence of prior knowledge of the hazardous natural environment. Discussion of other causes of the catastrophe was never sustained. Publicly, attention was never focussed upon social-economic or political processes entailed in vulnerability to the hazard.

This public account, communicated mainly through the mass media, was reflected and reinforced in other public talk, where those affected by flooding were referred to as 'flood-victims', a term implying that their common assailant was the natural environment - the flood. 'Victims' and 'helpers' were seen to be the key social actors in this setting.

These groupings of 'victims' and 'helpers' which formed during the emergency can also be seen to have been constituted by bureaucratic control during the emergency and the consequent uneven distribution of knowledge (including, in this case, welfare knowledge which is essentially about access to resources).

Welfare administrators recognised social and economic differences among 'victims', a contrast to the homogeneous public image of victims. This recognition was indicated clearly by means tests upon application for financial assistance and in the stated terms of reference of welfare bodies such as the Queensland Disaster Welfare Committee (QDWC). However, recognition of aspects of the social-economic dimension of vulnerability was not linked conceptually with other dimensions as a basis for action. Highly vulnerable groups were seen and treated as flood-victims with 'special needs', not as

groups who had experienced greater risk. In spite of the recognition of these 'special needs' which enabled a response to them, separating them from the effects of other dimensions of vulnerability reinforced the popular (and public) image of flood affected people as victims of the natural environment.

'Helpers' were also seen, in popular imagery, as a homogeneous group which came to be associated with the activities of the state. The ways in which private helping activity and the provision of personnel and resources by the state (local, State and Federal Governments) were conglomerated in public talk have also been discussed. The effect was that, even where flood affected people most valued the help and support they obtained privately, they acknowledged a large-scale state response to their needs. A crucial factor in this acknowledgement was the need of flood-affected people, mostly private home owners or buyers, for state financial assistance for the restoration of their private assets. The dependence of private property owners upon state financial assistance was clearly an important nexus in the processes which contained the potential for opposition to the system of social organisation.

## CHAPTER 5

## VULNERABILITY AND RECOVERY

Introduction

Bureaucratic management of the natural environment and the consequent uneven distribution of knowledge of the hazard, the separation of the management of the natural environment and the management of emergency and welfare programmes and the consequent emphasis upon the environmental dimension of the hazard with relative obscurity of its social-economic and political dimensions have been identified as key processes in the constitution of vulnerability and in its management. So, too, have the emergence, in the aftermath of the flooding, of a dominant (and relevant) account of the (environmental) causes and course of the emergency and the formulation of social roles of 'victim' and 'helper' in the context of this dominant account. The essential structure of this complex set of relationships is seen to have been reproduced in the dependence of private home owners upon state financial assistance for the restoration of private assets. At the same time, there has been a presentation of evidence of variations in patterns of vulnerability and of independent and resourceful behaviour on the part of flood-affected people in the emergency.

Now this chapter focuses upon the outcomes of this complex set of practices. It is primarily concerned with that period of time after the flooding had abated, when human activity was focussed mainly upon rehabilitation and recovery and not upon immediate protection as it had been in the preceding days. Care must be taken not to obscure the links between this period and the events and circumstances which preceded it. Thus, the thrust of the analysis is to investigate the



processes of recovery in the post-emergency period; the outcomes of vulnerability and its management.

The post-emergency period probably began, for most people, around the end of January 1974. By Thursday, January 31st, the worst was evidently over. For the first time in days the river height at the Brisbane Post Office was below 3 metres and the immediate threat of further flooding had gone. Attention was beginning to turn away from the flood itself and focus on repercussions, particularly the financial costs of recovery. Government departments, both at the federal and state level, had mobilized resources. By the 1st February, cleaning up was well underway and, publicly, the crisis period was seen to be over. By the end of the second week in February 1974, many of the relief centres had closed, most shops and businesses had resumed operation and many flood-affected people had returned to their jobs. About 4,500 cheques had been paid by the Brisbane Lord Mayor's Disaster Relief Fund and over 1,700 claims for assistance from State Government relief funds had been handled at the Ipswich Court House. A Federal-State co-ordinating committee was established to deal with questions of financial compensation for flood-damage to houses and it was announced that the Federal and State Governments would set up a scheme for providing financial assistance for small businesses affected by the flood.

Although some of the organisational activities aimed at alleviating flood problems were to carry on for some considerable time (some for more than a year), by the middle of February 1974, the general pattern of life in Brisbane and Ipswich had begun, once more to resemble the typical. This was despite the fact that some people were still badly affected.

Only 14 per cent of those interviewed in the follow-up survey in 1975 reported that their homes had been restored to their pre-flood condition within a month of the flooding. Thirty per cent of primary wage earners (that is, a male wage earner, with or without a spouse, or a female wage earner, without a spouse) in the follow-up survey did not return to their usual occupations until more than three weeks after the flooding. For married women employees, the proportions were higher. In 40 per cent of households it was reported that married women did not resume their normal occupation until more than three weeks after the flood, with a considerable number not answering the question, probably because they saw cleaning-up, repair and restoration activities as part of the normal work of housewives. Thirty-six per cent of follow-up respondents said they were still in temporary accommodation two weeks after the flood, and nearly half of these (17 per cent of all respondents) did not return to their homes until more than a month after the flood.

Clearly, in spite of the apparent end of the emergency, many people remained acutely affected by the impact of the floods and the processes of recovery were to go on for some time.

#### Vulnerability, Impact and Recovery

The strategy adopted here to understand the processes of recovery is to compare the situations and experiences of those who indicated satisfactory recovery and those who appeared not to have achieved recovery some 14 months after the flood. No attempt is made at this stage to define 'recovery' precisely. Broadly speaking, it is regarded as a set of social practices which are directed towards the resumption of acceptable patterns and standards of living (the perceptions of which may vary). An effort is made to discover what

'recovery' is and how it is produced by examining the patterns of response to questions which either include a direct reference to 'recovery' or measure the extent and speed of return to usual activities and standards of living.

Initially, the focus of inquiry into 'recovery' was broad and many factors were considered for their possible influence on the processes and outcomes of recovery. Two main sets of variables need to be considered: those which measure vulnerability and those which measure impact (the immediate consequences of the flooding).

Overall, vulnerability to a hazard for any individual, household or community is a product of people's position in relation to the natural environment, their access to social and economic resources which are useful in their interaction with the natural (hazardous) environment and their capacity to command and benefit from public resources useful for adaptation or response to the natural (hazardous) environment.

As it has been conceptualised here, vulnerability has three main dimensions and these have been measured in terms of the following variables.

- (i) The environmental dimension has been measured in terms of:
  - ◆ Peak height of flood water in respondent's home. This measures the severity of the hazard.
- (ii) The social-economic dimension in terms of:
  - ◆ Age of household head and of spouse (where this applies).
  - ◆ Occupation of household head and of spouse (where this applies).
  - ◆ Household structure.
  - ◆ Home ownership (rental or owner occupation).
  - ◆ Combined income of household head and spouse.

(iii) And the political dimension by:

- ◆ Receipt of an official warning.
- ◆ Evacuation assistance.
- ◆ Financial and other emergency relief: for example, food, clothing, household items and other short-term provisions.

'Impact' refers to the negative or harmful effects which we expect to occur when resources or strategies for minimising the harmful effects of environmental usage are either insufficient, inappropriate or unable to be utilised. These have been measured in terms of the following variables:

- ◆ damage to residence (a five-item scale) (see Appendix D).
- ◆ reported emotional strain experienced by household members.
- ◆ length of time in temporary accommodation.
- ◆ length of time taken off from the normal occupation by the primary wage earner and spouse (where this applies).

The extent of recovery has, in turn, been measured by three main items, one a self-report item on whether or not the respondents felt they had recovered from the flood at the time of the follow-up study and also by two items measuring the extent of home restoration or material recovery - one a report on the condition of the respondent's home at the time of the follow-up study relative to its pre-flood condition and the second a report on the speed of home restoration.

In general, it was expected that high levels of vulnerability would be associated with high levels of impact and low levels of recovery. Preventive or interventive management strategies to reduce vulnerability and/or its effects would thus be expected to show effects in reducing injury to persons and damage to property and increasing the level of recovery. It has already been suggested, however, that prevention and intervention are complex matters which

reflect the complexity of vulnerability. The three dimensions of vulnerability - the social-environmental, social-economic and political - are not separate but interact with one another and this produces a variety of outcomes. Furthermore, where there is a good deal of variation in patterns of vulnerability, as was the case in Brisbane and Ipswich, devising an effective overall strategy of intervention with equitable effects could be problematic and the differential effects of relief may further increase the complexity of recovery processes.

An analysis of the emergency period revealed that the management of vulnerability involved intervention (vis-a-vis preventive) strategies based upon a public definition of the flood as an uncontrollable accident. Differences in vulnerability were obscured as the public documentation of the causes and course of the 'disaster' emphasised the commonality of victims' experiences and the public definition of a 'victim' and a 'helper' role provided a social structure for mobilising and distributing resources.

It has been argued (in Chapter 4) that the effectiveness of formal intervention strategies was, however, highly dependent upon individual (private) effort by flood-affected householders and those people who came privately to assist them. The extent of individual effort will again be the focus of interest in analysing the processes of recovery. The extent to which gender divisions, which usually structured (i.e. segregated) the workforce, produced a domestic labour force for recovery is another relevant concern. The analysis begins, however, with an interrogation of the data from the 1975 follow-up survey, in an effort to discern which, if any, of the aspects of vulnerability outlined above, were associated with recovery (or conversely, with non-recovery).

### The Analysis of Recovery

It will be recalled that 262 households - a stratified random sample of households surveyed in 1974 from seven areas were re-surveyed in April-May 1975. Numbers of households surveyed in each area for 1974 and 1975 have been presented in Table 1.1 (Page 12).

At the time of the follow-up survey, 23 per cent of respondents said that they felt they had not recovered from the 1974 flood. The first step in the analysis of the follow-up data was, then, to discern a profile of differences between the circumstances and experiences of those in this group and those who felt that they had recovered. Items from the interview schedule indicating vulnerability and impact were considered for their usefulness in distinguishing between these two groups of people. What are presented here are the results of a systematic two-way contingency analysis. This unsophisticated analytical approach has been adopted because of the nature of the available data and because of the difficulty in interpreting the results of more sophisticated techniques when some assumptions of these techniques are necessarily violated.

The nature of the flood study data is such that only a limited number of techniques for statistical analysis can legitimately and usefully be applied. The most sophisticated level of measurement of any variable is a limited ordinal scale (7 to 10 categories) with most variables being measured discretely in nominal categories. The dependent variable of most interest, 'self-reported recovery', is classified in a dichotomous way ('recovered' versus 'non-recovered'). Thus, in all cases, one is dealing with discrete not continuous measures.

This has led to limitations in statistical analyses. Highly skewed distributions on independent variables of interest and an

unbalanced distribution of the major dependent variable, 'self-reported recovery', suggest 'non-normality', which is a problem for multivariate analyses. Relatively small sample size ( $n = 262$ ) in relation to the number of independent variables has further constrained and complicated the use of some multivariate regression techniques since some solutions to the problem of skewness are only appropriate if sample size is large in relation to the number of variables in the analysis. These conditions of small sample size and unbalanced distributions also prevent the use of categorical regression techniques which cannot tolerate the small cell sizes produced in multivariate breakdowns of small samples.

After careful consideration of these factors and an exploratory use of discriminant analysis, the position adopted here is that (bivariate) contingency analysis is more informative than misapplied multivariate techniques or modified multivariate analyses.

The results of a series of such bivariate analyses are presented in Figure 5.1 which summarises the most salient relationships between 'vulnerability', 'impact' and 'recovery' as indicated by the measures listed above. It is the result of systematic two-way cross-tabulations amongst these variables. The analysis began by looking first at the relationships between each of the 'vulnerability' variables and the 'self-reported recovery' variable (the dependent variable); then at the relationships between 'impact' variables and 'self-reported recovery'. The third step was an examination of the relationship between each of the variables measuring 'material recovery' and the 'self-reported recovery' variable. Similarly, the 'material recovery' variables were treated as dependent variables and the relationships between each of these and each of the 'impact'

variables and 'vulnerability' variables were examined. Finally, the relationship between 'impact' and 'vulnerability' was assessed by treating each of the 'impact' variables as a dependent variable and examining their relationship with each of the 'vulnerability' variables. Only relationships which are statistically significant at least at  $p = 0.05$  level are recorded and the figures in the diagram are the value of Cramer's V, a measure of association which serves to indicate the relative strength of each relationship. Cramer's V is used here in preference to lambda which, although capable of interpretation in terms of a proportionate reduction in error, would be depressed because of the pattern of modal categories of the dependent variable in most cross-tabulations. Those variables with a statistically significant relationship to any of the dependent variables of interest can be traced by reading the diagram leftwards from the position of the dependent variable. For example, 'self-reported recovery' is significantly associated with 'recovery speed', 'post-flood condition of home', 'time spent in temporary accommodation', 'the experience of emotional strain', 'period of time away from work' and 'peak height of flood water'.

For the purpose of this analysis, the responses for each variable have been collapsed and recoded into one of two categories dividing respondents according to whether they fall into the major categories of particular interest, for example, 'over 45 years' or not; 'white-collar occupation' or not; 'received more than \$1,000 for house restoration' or not; 'away from their normal occupation for more than three weeks' or not. The cut-off points for this pattern of categorisation were decided on the basis of prior analysis of the distributions on independent and dependent variables. The relationships between these final categories and the original coding



categories is documented in Appendix E. The object was to reduce the incidence of small cell sizes to ensure the validity of the chi-square test and to provide a feasible basis for the comparison of the relative risk of non-recovery for various groups.

Figure 5.1 does not represent a causal model. It presents a pattern of statistically significant contingent relationships among those variables specified above as indicators of vulnerability, impact and recovery; variables which are theoretically of interest. Arrows in the diagram serve to identify which variable was logically treated as a dependent variable, although some variables can clearly be conceptualised as temporal and effective antecedents to others. Generally, 'vulnerability' precedes 'impact' which precedes 'material recovery'. However, the chronological relationship between 'material recovery' and 'self-reported recovery' is less easily conceptualised and, in this same sense, the validity of the measures of 'political vulnerability' is questionable. These complexities are taken into account in discussion of relationships apparent in the diagram.

#### Recovery, House Restoration and Emotional Strain

Attending initially to the strongest measured relationship depicted in Figure 5.1 and focussing on self-reported recovery, it can be seen that recovery is most clearly associated with poor post-flood condition of the home and the experience of emotional strain. A weaker relationship exists between post-flood condition of the home and emotional strain with post-flood condition of the home and restoration speed being more strongly associated. This pattern of association suggests the possibility of two dimensions of recovery - a personal dimension, indicated by the association between emotional strain and self-reported recovery and a material dimension, indicated by the association between post-flood condition of the home and

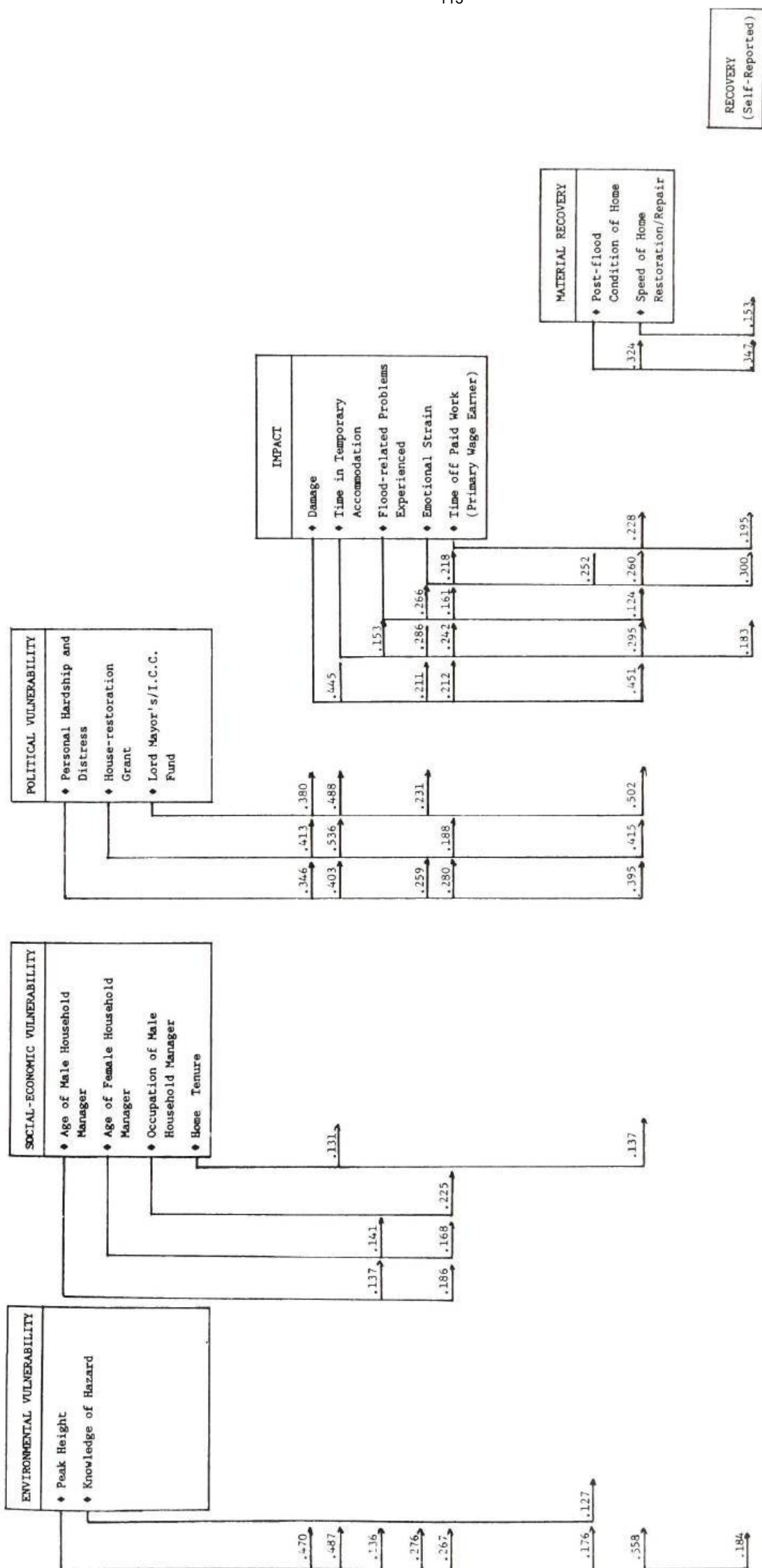


Figure 5.1: Vulnerability, Impact and Recovery - Patterns of Association.\*

\*Numbers in the table are for values of Cramer's V.

All relationships recorded are significant at  $p = 0.05$  or less.

self-reported recovery. That these may constitute separate dimensions is also suggested by the weaker level of association between emotional strain and post-flood condition of the home.

#### Personal Recovery

To explore, for a moment, the personal dimension, it can be noted that emotional strain is also significantly though not strongly associated with the following variables: longer lengths of time in temporary accommodation, receipt of more than \$100 for personal hardship and distress, experiencing flood-related personal or health problems, longer periods off work and more severe damage to the home. In turn, some of these factors can be seen to be inter-related. Those who received notable amounts of financial assistance (house restoration grants, grants for personal hardship and distress, and/or emergency relief from the Brisbane Lord Mayor's Fund or the Ipswich City Council Fund) were also more likely to have experienced severe damage. So too were these people more likely to have spent longer periods in temporary accommodation and damage was quite strongly related to the peak height of flood waters. In brief, emotional strain would seem to be directly tied to the extent of impact or disruption to routine activities associated with the flood, while self-reported recovery is associated with less environmental and personal disruption, less chance of emotional strain and greater likelihood of having the flood-affected home in the same or an improved condition after the flood.

Pointing to the connection between the experience of emotional strain and self-reported non-recovery should not be taken to imply that the emotional strain experienced by many flood-affected people necessarily hindered material recovery. The relationship between the post-flood condition of the home and emotional strain is relatively weak and flood-affected people themselves most often reported that

emotional strain did not affect their ability to do the things necessary to repair or replace their possessions. Certainly those in the non-recovered group were more likely than others to report that emotional strain did affect their ability to 'cope' with the tasks in hand, however, most, in spite of the associated emotional strain, did what was necessary to clean and repair their homes or organise others to do so. Although some, at the time of the follow-up study, were still in the process of repairing homes, the majority (even in the non-recovered group) either had been or expected to be able to restore their homes to a standard at least comparable to pre-flood condition. This and other data on private (individual household) effort in rehabilitation make it difficult to argue that emotional strain hindered recovery as some commentators claimed. It seems rather more likely that long delays in material recovery, in spite of much individual effort spent in restoration or the organisation of repair work, may have, on the contrary, contributed to emotional strain. At the same time independence between two dimensions of recovery - the personal and the material - is suggested by the fact that emotional strain is more strongly associated with self-reported non-recovery than it is with either of the material recovery variables (post-flood condition of the home and speed of restoration).

#### Material Recovery

Turning now to the dimension of material recovery, a relatively weak link between recovery speed and self-reported recovery and a stronger relationship between post-flood housing condition and self-reported recovery suggests that the length of time taken to restore the home is a less critical factor in recovery than the actual achievement of restoration. The fact that having more financial assistance is associated with slower restoration speed possibly accounts for the fact that longer restoration periods were not

strongly associated with self-reported non-recovery since financial assistance could be a factor in the eventual achievement of a satisfactory housing condition. The lack of an (apparent) association between post-flood housing condition and variables measuring financial assistance suggests an equitable distribution and full compensation through financial assistance and/or a capability on the part of flood-affected people to 'take up the slack' with individual effort, using and managing effectively the range of resources available to them, including their own financial resources, the labour of household members and the assistance of other private helpers.

The absence of a significant association between the two variables, severity of damage and peak height and post-flood housing condition, also suggests that, one way or another, most people were able or expected to find the resources they required to restore their homes. An examination of the extent of individual effort, the combination of individual effort with trade work and the uses of financial assistance for restoration reveals a variety of patterns of utilisation of resources for restoration.

#### Occupation and Recovery

From the analysis summarised in Figure 5.1, neither the occupational group (white collar/blue collar) of the primary wage earner nor of his/her spouse (where relevant) was significantly related to recovery. Yet, a comparison of differences in the occupational composition of the group doing some repairs themselves, with the group who had all repairs carried out by tradeworkers, indicates that there were, in the first group, higher proportions of male income earners who were managers and skilled workers and of women who were housewives. Since, as Table 5.2 illustrates, the proportions of households where men were skilled workers (a blue-collar group) and

women were housewives were also noticeably higher in the recovered group compared to the non-recovered group, this raises questions about the nature of the relationship between occupational positions and resources (including skills) and the processes of recovery.

Addressing such questions, Table 5.3 presents patterns of difference among occupational groupings with regard to household and tradework contributions to material recovery, financial assistance and self-reported recovery. Proportions rather than percentages are presented since the numbers in some cells are small and to conceptualise them as percentages would therefore be misleading. The clearest pattern evident is the higher proportions of 'blue-collar' workers (skilled, semi-skilled and unskilled occupational groups) who were involved in major repair work on their homes. Their household contributions to repair (particularly that of skilled workers) contrast most sharply with that of clerical and sales workers who, although having a similar recovery rate to the 'blue-collar' groups, were far less likely to have supplemented the work of employed tradeworkers with their own labour.

Managers appear as an interesting group of household workers who were heavily involved in repair work but less likely than other groups to be directly involved in major repair work. This could in part be a reflection of a lower frequency of severe flooding (above main floor level) amongst this group - an interpretation which is supported somewhat by the relatively lower proportion of this group receiving more than \$1,000 as a grant for house restoration and fewer, compared to other groups, who employed tradeworkers for major repair work.

TABLE 5.1

DIFFERENCES IN OCCUPATIONAL COMPOSITION OF HOUSEHOLDS  
DOING SOME REPAIRS THEMSELVES AND HOUSEHOLDS HAVING ALL REPAIRS  
CARRIED OUT BY TRADEWORKERS\*

	Some Repairs Done by Household Members n = 77 %	All Repairs Done by Tradeworkers n = 139 %
(Male) managers	18.2	7.9
(Male) skilled workers	32.4	21.6
(Female) Houseworkers	79.2	66.9

\*Differences for other occupational groupings were not significant at  $p = 0.05$  or less.

TABLE 5.2

OCCUPATIONAL GROUPINGS AND RECOVERY RATES

	Recovered n = 198 %	Non-recovered n = 64 %
(Male) Clerical and Sales Workers	18.7	8.2
(Male) Skilled Workers	30.3	21.3
(Male) Miscellaneous Workers/ Pensioners	16.2	27.9
(Female) Houseworkers	79.3**	67.3**

\*\*These figures are a percentage of those households where a second household manager was present and occupation was recorded.

TABLE 5.3

## RECOVERY PATTERNS AND OCCUPATIONAL GROUPINGS

Occupational Group and Frequency	Number of Households in Group where Repairs were Carried out	Proportion** doing some Repairs Themselves	Proportion doing major Repairs Themselves	Proportion having some Repairs done by Tradespeople	Proportion having major Repairs done by Tradespeople	Proportion where Homes were Flooded above Main Floor Level	Proportion who Received some Financial Aid for House Restoration	Proportion who Received more than \$1,000 for House Restoration	Proportion who Reported having Recovered
No answer	2	0	0	1.0	1.0	1.0	0	0	0.5
Professional	20	0.25	0.2	1.0	0.9	0.85	0.5	0.4	0.7
Managers	25	0.56	0.16	0.76	0.56	0.72	0.32	0.32	0.64
Clerical & Sales	36	0.22	0.08	0.86	0.72	0.80	0.64	0.56	0.86
Skilled	73	0.45	0.3	0.89	0.80	0.89	0.67	0.58	0.80
Semi-skilled	9	0.33	0.22	0.89	0.67	0.89	0.56	0.56	0.88
Unskilled	19	0.42	0.28	0.76	0.67	0.95	0.57	0.48	0.74
Miscellaneous	42	0.23	0.16	0.81	0.70	0.88	0.46	0.39	0.62
Housewife	8	0.37	0.12	0.87	0.75	1.0	0.5	0.37	0.5

\*\*Proportions are of numbers in each occupational group where repairs to the home were carried out, i.e. the denominator in proportion calculations is the figure in Column 2 for each occupational group.



Examination of the category of miscellaneous occupations which includes pensioners (of all categories) and retired non-pensioners, suggests another distinct pattern. A relatively high proportion of this group experienced severe flooding but a low proportion received financial assistance for house restoration whilst at the same time a fairly high proportion employed tradeworkers for major repair work (see Table 5.3). This suggests that among these people the contribution of personal, financial resources along with or instead of their labour was an aspect of recovery.

#### Gender, Occupation and Recovery

The possibility, suggested by the data in Table 5.3, that occupational or labour market-position partly shapes the recovery process is further strengthened when one investigates whether housewives made a contribution to the recovery process as domestic labourers. Table 5.4 compares the proportions of married women who were housewives in groups which differ with regard to the household contribution to home repairs. The difference in the proportions of housewives in the group who carried out some repairs themselves compared with the group who did no repairs themselves is significant at  $p = 0.05$  level. The overall pattern in the table (the higher proportions of housewives in those categories of people who carried out some repairs themselves) suggests that housewives made a specific, direct and/or supportive contribution both to what have been called here 'minor' and 'major' repairs. Minor repairs include such work as redecorating the interior and exterior of the home - painting, mending or making of drapes, repairing and refurbishing floor coverings and wall tiles. 'Major' repairs involve repairing and/or replacing joinery, floor coverings, electrical or plumbing work and structural repairs. It is possible that the main direct contribution of housewives was in the area of minor repairs and that their

TABLE 5.4

## PROPORTIONS OF HOUSEHOLDS WITH HOUSEWIVES

	Total Follow-up Sample %	Some Repairs Done by Household Members %	Major Repairs Done by Household Members %	No Repairs Done by Household Members %
Proportions with Housewives	76.0	84.0	82.5	73.0

contribution in the area of major repairs involved supportive domestic labour enabling their husbands to engage in household labour using their relevant job skills to carry out major repair work - conventionally men's work. This particular division of labour is, however, difficult to demonstrate from the available data, although the prevalence of households where men were blue-collar workers and women were housewives (not employed) among those involved in major repair work is suggestive of such a division of labour.

The importance of the contribution made by married women in particular to the processes of recovery is further suggested by comparing the proportions of housewives (not employed) in the households specified in Table 5.4 with the labour force participation rates of married women in Queensland and Australia for February 1974. The figures in Table 5.5 show that labour force participation rates for married women in Queensland and Australia were higher than those for flood-affected women in Brisbane and Ipswich (refer Table 5.4) and, as a corollary, that the domestic labour force among flood-affected households was larger. According to ABS data, most (98 per cent) married women not in the labour force in Queensland in February 1974 'kept house' (ABS, 1975). Overall, then, these data lend weight to the view that women made an important and particular

TABLE 5.5

LABOUR FORCE PARTICIPATION RATES OF MARRIED WOMEN,  
FEBRUARY 1974, QUEENSLAND AND AUSTRALIA

	Queensland*	Australia**
	%	%
Participation Rate	31.6	40.4
Not in Labour Force	68.4	59.6

Source: \*The Labour Force, Queensland, Australian Bureau of Statistics, August 1975, p.4.

\*\*The Labour Force, Australia, Australian Bureau of Statistics, 1978, Cat. No. 6204.0, p.36.

contribution to material recovery, either by repairing their homes, assisting their husbands in the repair of their homes, cleaning up, general household management and/or the maintenance of household/family relationships, thus enabling other family members (if not the housewife) to resume their normal occupations within quite short periods of time after the flooding, something which the contingency analysis depicted in Figure 5.1, suggest may have contributed in some way to an overall feeling of personal recovery.

The association between the labour market position of married women (paid workers or housewives) and self-reported recovery was also examined. Table 5.6 indicates that there was a noticeable difference in the recovery rates of women in paid employment and women in the housewife only groups (69 per cent compared with 81 per cent) but a chi-square test of independence indicates that the relationship between labour force status and recovery is not statistically significant at  $p = 0.05$ .

TABLE 5.6

## LABOUR FORCE STATUS AND RECOVERY

	Recovered	Non-recovered	
<hr/>			
Paid Working Women			
n	36	16	52
% of row	9.2	31.0	
Housewife			
n	146	35	181
% of row	80.7	19.3	
	182	51	233
<hr/>			

This pattern, although suggesting the importance of domestic labour as a resource for material recovery, also supports the view that different resources were used in different ways to achieve recovery because, although housewives clearly made a definite contribution to material recovery, the absence of a full-time 'housewife' in the family or household did not markedly affect the achievement of an overall feeling of recovery.

This investigation of the relevance of occupational position to recovery has demonstrated that although recovery, either material or personal, is evidently not directly associated with occupational position, when the processes of recovery are examined in more detail, the patterns appear different for different occupational groups. Thus, the relevance of occupational skills and occupational position in patterning recovery is suggested. The data presented suggest that the unpaid manual labour of skilled, semi-skilled and unskilled men and the unpaid domestic labour of women are of particular importance. The analysis has suggested that although occupation apparently makes no difference to self-reported recovery rates, labour market position and gender (to the extent that it influences the labour market

position of women), structure the processes of recovery. That is to say, differences are apparent among those in different positions in the labour market with regard to access to, and utilisation of, different resources used to restore (and in some cases improve) the condition of the home, which is evidently a key factor in overall recovery. A similar pattern of revealed differences in experiences of recovery has been documented by Bolin (1986) who compared the recovery experiences of black and white families in a US city, and discovered that, for each group, different factors best predicted economic and emotional recovery.

#### Age and Recovery

There is also some evidence that the processes of recovery among households of older people (whose age affects their labour market position) differed from the experience in other households (see Table 5.7). However, the labour market position of the elderly would not seem to account fully for this difference.

Table 5.7 presents information which parallels that presented in Table 5.3 with respect to occupation. One of its most salient aspects is the comparatively higher level of involvement of primary income earners over 45 years of age in major repair work. Although this may be in part related to occupation (since 36 per cent of the 46-60 year age group in the follow-up sample were skilled workers), an independent effect of age on involvement in repair work is still suggested. This is because skilled workers in the 46-60 year group were nearly three times more likely than those in the 30-45 year group to have been involved in major repair work and two-thirds of all primary income earners who did major repair work themselves were over 45 years of age. As mentioned above, this higher level of involvement may reflect a strategy to compensate for the lower likelihood of receiving house restoration grants (see columns 7 and 8 in Table 5.7).

The overall pattern for the over-60 years age group is also of interest. A comparatively low proportion were involved in only minor repair work (0.06), with a comparatively high proportion (0.22) involved in major repairs. Moreover, similar proportions (to other age groups) employed tradeworkers and lower proportions received house restoration grants. It would appear that this group in the older age bracket, was likely to tackle expensive repairs themselves, with people preferring to invest their own time and labour and not always their money - a pattern which probably reflects the common concern of those on fixed and usually low incomes to have enough money 'put aside' for their everyday and regular needs. However, for the over-60 years age group, it appears that this investment of personal resources in major repairs did not reduce the chances of having one's home in worse condition some fourteen months after the flood than it had been pre-flood. This contrasts with the situation for those 60 years and under. For these age groups, participation in major repair work did reduce the chances of not having the home restored to at least its pre-flood condition. Table 5.8 illustrates this pattern. Again proportions are presented because of the small numbers involved.

Further analysis also reveals that, amongst those whose homes needed repairs, those elderly who were less likely to have improved the condition of their home were also more likely than the 30-45 year age group to report that they had recovered, even when they regarded the post-flood condition of their home as worse than its pre-flood condition. Along with a preparedness to expend considerable personal effort and time on their recovery, these elderly appear to have accepted their inability to restore their homes to their pre-flood condition; they have accepted their vulnerability which entails acceptance that vulnerability and impact are essentially private

TABLE 5.7

## RECOVERY PATTERNS AND AGE GROUPINGS

Age Group and Frequency	Number of Households in Group where Repairs were Carried out	Proportion** doing some Repairs Themselves	Proportion doing major Repairs Themselves	Proportion having some Repairs done by Tradespeople	Proportion having major Repairs done by Tradespeople	Proportion where Homes were Flooded above Main Floor Level	Proportion who Received some Financial Aid for House Restoration	Proportion who Received more than \$1,000 for House Restoration	Proportion who Reported having Recovered
Not applicable									
4	4	0.50	0.0	1.0	0.50	1.0	0.25	0.25	0.25
18-29 years	28	0.21	0.12	0.93	0.78	0.86	0.64	0.53	0.85
30-45 years	64	0.41	0.19	0.87	0.75	0.80	0.67	0.56	0.75
46-60 years	70	0.41	0.26	0.84	0.73	0.93	0.48	0.46	0.76
More than 60 years	50	0.28	0.22	0.84	0.74	0.84	0.46	0.38	0.64

\*\*Proportions are of numbers in each age group where repairs to the home were carried out, i.e. the denominator in proportion calculations is the figure in Column 2 for each occupational group.

matters. The data presented above suggest that this acceptance has occurred in a context where vulnerability is in part a function of the economic position of the elderly in Australian society (predominantly having low, fixed incomes and some assets).

### Conclusion

This chapter began with questions about the nature of recovery and its relationship to vulnerability (conceptualised as having three dimensions) and impact (measured in terms of damage to the home, emotional strain and personal disruption of flood-affected people). In summary, analysis has suggested two dimensions of recovery - a personal dimension and a material one - with the actual achievement of material recovery appearing as a more important influence on self-reported recovery than the speed of its achievement. It has also indicated that some aspects of environmental vulnerability, particularly the peak height of flood waters, affected recovery by increasing damage and time spent in temporary accommodation, ultimately reducing the speed of home restoration. Aspects of social-economic vulnerability which were shown initially not to be strongly related to the outcome of recovery processes, have been subsequently shown to shape different patterns for achieving recovery. Labour market position, gender and age evidently structured patterns of utilisation of available resources and hence they structured patterns of recovery. However, because these factors are not clearly associated with different rates of the actual achievement of recovery, their relevance was not apparent - 'victims' could be seen, and indeed were seen, in the dominant public account, as having had a common experience caused by the extremes of the natural environment. Had these differences become apparent, social action based upon labour market, gender and age divisions may well have



emerged and challenged the way in which the environment was incorporated into the social system. Such a challenge would have constituted a challenge to the (capitalist) system through which the natural environment was incorporated, with the benefits and risks of using the natural environment being unevenly distributed. As such it could have constituted class action. Such a challenge did not, however, emerge, because the relevance of these divisions, based upon labour market position, gender and age, was not apparent.

The reduction of political vulnerability through the redistribution of resources by the state, in the form of financial assistance for personal hardship and house restoration, was also shown, once again, to have been a particularly important intervention strategy enabling recovery and hence contributing to the containment of opposition and the absence of protest. This strategy of redistributing resources was a directly relevant and appropriate method of ensuring that those with too few personal, social or economic resources were able to manage the effects of their vulnerability. However, it can also be seen as a way of obscuring the very differences in access to resources which are its raison d'être. Such differences in access to resources in any capitalist economy are derived, at least in part, from differences in class position. However, if they are not apparent, the structural arrangements through which they have been produced will not be apparent. Class divisions, labour market divisions, gender divisions, age divisions or the interactions of these and other factors may enable or limit access to resources. But, unless these arrangements are recognised as the bases of social differences, they will be unlikely bases of social conflict leading to political action against the system organised around them.

Potential conflict over the causes of the catastrophe in the Moreton Region, and over the uneven distribution of disruptive effects, was counteracted not only by the provision of state organised financial assistance, but also by the investment of household labour in restoring privately owned residential property. Both of these factors were verified by this analysis of recovery as important post-impact intervention strategies. Yet, neither strategy altered the underlying pattern of vulnerability; a pattern which, we have seen, can be understood by reference to the particular social-economic and political organisation of the environment in this modern capitalist society. These strategies, instead, reproduced two fundamental (perhaps paradoxical) aspects of vulnerability in the Moreton Region - (i) a dependency upon the state for bureaucratic management of vulnerability, mainly through bureaucratic management of the environment and organisation of relief; and (ii) the privatisation of the environment through private home ownership, a mode of environmental incorporation which entailed an acceptance by householders that the effects of vulnerability were essentially private concerns. Former patterns were reproduced through intervention (both public or formal and private). The (capitalist) system through which they were constituted was stabilised, as the status quo.

## CHAPTER 6

CONCLUSION: THE SOCIAL ORGANISATION OF VULNERABILITY,  
IMPACT AND RECOVERY

What was the nature of vulnerability to flooding in the Moreton Region in 1974? What were its dimensions? How did it differ for different groups in the flood-plain? How were particular patterns of vulnerability sustained? What was the relationship between vulnerability and recovery?

The enquiry began with these questions and to them it now returns. The aim of this final chapter is to review the patterns and outcomes of the enquiry (its genealogy if you will) and to return once more to these principal themes established at the outset. The relevance and workability of the study will also be demonstrated by relating the insights gained to the practical field of hazard management and by indicating new directions and relevant fields for related enquiry.

Summary: The Nature of the Enquiry

The thesis developed through a conceptual framework based on a class analysis of human agency and natural disaster. Such a conceptual framework translated the opening questions stated above into others, formulated from a class perspective. These questions were, in turn, modified in recognition of the relevance of a Foucaultian framework focusing upon the emergence of strategies of power through discourse, action and effects. Thus, the presentation of evidence in Chapters 3, 4 and 5 has been organised around questions about what people knew and talked about and what people did in both the public and private spheres.

The enquiry, though based largely upon the analysis of numerical data, is properly regarded as an exercise in grounded theory. It has involved a 'tripping back and forth' between data and theory (Glaser and Strauss, 1976), although these processes are not always apparent in this statement of the enquiry. This thesis does not represent adequately the doubling back which occurred at each stage in the process of theorising because of the necessity in the end to present a clear account focussing on the outcomes of enquiry. However, the simultaneity of the processes of selection and re-categorisation of data and their analysis, and the intermeshing of these processes will have been evident in the previous chapters. In the same way, theoretical sampling decisions, decisions about where to turn next in developing an explanation of what was really going on, have been articulated in the organisation of chapters and their sections. The conceptual framework was developed through frequent literature searches, carried out within a framework of grounded theorising. A phenomenological perspective has been maintained in the search for sociological concepts because it has, at all times, been guided by the need to 'make sense' of the data by fitting the sociological concept to the data and to everyday accounts and not the reverse. Concepts have been included in the analytical framework only after their relevance has been verified by reference to analytical notes made throughout the research and by reference again to the available data. This strategy provides one of the bases for linking substantive to formal theory.

The use, from time to time, of tests of statistical significance and statistical measures of strength of variable association in the analysis of numerical data may also lay this analysis open to the charge of theoretical insensitivity for it has been argued by the

advocates of grounded theory and indeed by most phenomenologists that such tests can often distract the theorist from substantively significant associations. The position taken here is that statistical measures and tests of significance are always useful devices in the description of numerical data and do not necessarily imply a positivist methodology. They have been used in conjunction with other analytical tools so as to minimise that risk of missing substantively significant relationships because they do serve, when used with caution, as standardised procedures for comparison with data on other social settings and/or from other substantive areas, thus providing another albeit limited basis for the development of formal grounded theory. The limited use of these statistical procedures has added to, not replaced, other descriptions, and variable analysis has not been substituted for grounded explanation aimed at understanding the social processes which constitute the links which have been revealed in variable analysis.

The task now is to consolidate the elements of a substantive theory which have been produced and to demonstrate their value. What follows summarises the findings presented in earlier chapters, evaluates their significance and points to new directions for the further development of grounded theory.

#### The Social Organisation of Vulnerability, Impact and Recovery

In this analysis, vulnerability was conceptualised as a personal, privatised experience constituted through economic, social and political organisation and was considered in terms of three major interactive dimensions - the social-environmental, the social-economic and the political. It became evident that management of the natural environment was highly bureaucratised and removed from the public political arena. Measures taken by the state to mitigate and protect

the region from extreme conditions of the natural environment maintained a hazardous relationship by emphasising the protective capacity of large-scale technological mitigation schemes and assuming the availability of emergency financial relief for repair and rehabilitation. As a consequence of the bureaucratic management of the environment, low levels of perception and knowledge of the hazard existed among flood-plain residents. With low levels of perception and an absence of knowledge of the hazard, there was also an absence of political action, for not even a common environmental interest was recognised, prior to the flood. That is to say, prior to the flood, most flood-plain residents had not recognised that they shared the risk of damage to their homes and injury to themselves as a result of severe flooding. Therefore, they had, neither personally nor collectively, taken political action aimed at reducing their vulnerability.

Whilst the lack of awareness, knowledge and experience of the hazardousness of the environment was common to most flood-plain residents, there were differences in the social and economic characteristics of these people. Variations in education, occupation (indicating variations in income levels), and age, for instance, suggested some variation in access to resources available in the formal economy and hence some variation in the nature and level of dependence upon household labour and resources (the informal economy) in the event of impact. These patterns of difference, indicated early from census data, appeared also in the flood survey data. Occupation, age and another factor, gender, were revealed, through analysis, as factors structuring the experience of impact and recovery. The ideological and practical significance of widespread private home

ownership was also recognised, for it was an important common characteristic of those at risk, cutting across other differences, and an important element in the private acceptance of risk. Though there were differences among flood-affected people in access to relevant resources and resultant differences in patterns of recovery, householders overwhelmingly accepted the need for a heavy private investment of resources, either their labour or personal finances, to ensure the repair of their own homes and ultimately their personal recovery.

With regard to the political dimension of vulnerability, it has been noted that the implementation and structure of disaster relief, forthcoming from the federal, state and local governments, depended to a very large extent upon the initiatives of incumbent politicians - particularly at the federal level (with a Labor government in power at the time) and state level (with a National-Liberal Party Coalition government) where some inter-party rivalry complicated the implementation of relief measures. The relief measures introduced stabilised rather than reduced vulnerability, because they emphasised repair and rehabilitation after impact rather than specialised preventive and/or adaptive measures. An emphasis upon the possibility for repair and rehabilitation after impact is consistent with risk-taking rather than prevention. In the Moreton Region, public (and official) confidence in the potential availability of government and private funds for post-impact repair and rehabilitation allowed private risk-taking by householders in the flood-plain to occur. When the flooding occurred, it was demonstrated that public financial relief was available for the restoration of private assets and for immediate personal rehabilitation, and that governments would continue to invest in large-scale mitigation schemes. This demonstration

enabled householders to continue to accept the risk they had been largely unaware of prior to the floods (and which they understood would be reduced by further, large-scale mitigation schemes).

The management of the effects of vulnerability in the emergency was viewed as a political process and was seen as an outcome of strategies of power operating between the formal/public level and the level of the household. It has been argued that the uneven pattern of distribution of knowledge of the hazard was the basis for the development of a public (and dominant) account of the emergency and state control over the response to the flooding. This public account offered an interpretation of the emergency as a situation in which the community was suffering from stress caused by uncontrollable and haphazard forces in the natural environment. Flood-affected people were seen as the victims of these forces. A widespread inability to interpret warnings due to lack of prior knowledge resulted in ineffective responsive behaviour and a widespread acceptance of this publicly-constructed definition of the situation. In the process of management of the effects of vulnerability, two main groupings emerged, the victims (of the natural environment) - the unorganised, helpless flood-plain occupants - and helpers - the facilitators and some-time agents of the state, who had access to bureaucratically distributed resources. These disaster groupings, formed in response to environmental conditions, cut across and obscured other social groupings. Limited case studies of the Police Department, mass media and welfare agencies indicated how the public response to the threat was constituted as combat against and eventual victory over external forces. These case studies also illustrated the complex processes by which much private helping activity came to be seen, in the dominant, public account, as public helper action. In reality, however, the



situation was not like this. An overview of public and private responses has illustrated that householders in the flood-plain sought and gained most help (other than financial) from friends and relatives, and at all stages of recovery, their own labour was an indispensable resource. What also became apparent from the study of public and private responses to the flooding, was the way in which they were mutually constituted via a dependency of householders (based on an unequal distribution of knowledge prior to the floods of 1974) upon knowledge which was publicly distributed at the time of the flooding, for interpretation of what was going on. Public and private responses were also mutually constituted by householders' dependency upon state administered sources of financial assistance. The inherent potential for opposition by flood-affected people to the system of social organisation which entailed their vulnerability was thus not realised.

Though the public and private responses to the flooding were mutually constituted, a study of the processes of recovery revealed that flood-affected householders defined recovery only partly in the terms in which it was publicly recognised; in terms of the resumption of business and commerce, transport and other essential services and the return to work. The process of recovery for householders appeared to have two dimensions - housing or material restoration and personal or emotional recovery - the two, of course being inter-related and structured, only in part, by the public definition of recovery. Both material and personal recovery required considerable personal effort and household labour, particularly on the part of women as housewives and those in retirement (both groups did not participate as workers in the formal economy) and of those blue-collar workers whose job skills were relevant to the repair and rebuilding of flood-damaged homes (and

whose participation as workers in the informal, household economy was something they did in addition to their participation in the formal economy - a double commitment to labour). Material recovery (and through it, personal recovery) also depended, in most cases, upon financial aid from the state. Thus, household recovery was evidently constituted through labour market position, gender relations in households, age relations in the system of social organisation and a dependence upon state administered financial aid.

This understanding of the Moreton Region floods of 1974 has developed through an enquiry into the activities and operations of the state, the distribution and organisation of environmental and disaster knowledge, the organisation and distribution of labour market skills, and gender and age relations in the recovery process. It was primarily through these structures and not directly via the class structure, that the distribution of environmental benefits and losses and the maintenance (or stabilisation) of patterns of vulnerability occurred. Class groupings did not emerge as disaster groupings, because although the catastrophe arose out of particular ways in which the natural environment was incorporated into the social formation (one which, as a capitalist system, functions primarily in the interests of capital), the hazard was never recognised or interpreted as one derived from particular social, economic or political arrangements. That is, it was not perceived as a social, economic or political issue. It was interpreted as an environmental hazard, unexpected and not preventable by human (technological) means. Some would have held that it was 'an act of God'. In this context, disaster groupings formed not around class positions, which were obscured, but as a response to perceived external, environmental forces of attack. The dominant, hegemonic account of the catastrophe which obscured class differences amongst victims was acceptable to

them because it 'made sense' to a group who, in spite of their social and economic differences were predominantly private home-owners/buyers who shared, by and large, an ignorance of the hazard and its dimensions. They would, more than likely, have found unacceptable any other account which recognised the extent to which the catastrophe was an outcome of particular political, social and economic practices (including the pattern of land tenure). Such an account might have presented a challenge, at some stage, to their right to own small parcels of private property in the flood zone, or at least threatened the value of the economic and social investment they had made in their 'own home'. Thus, private home ownership, both as an ideology and as a practice, was an important structural arrangement through which vulnerability, impact and recovery were constituted. Paradoxically, the private acceptance of responsibility for recovery from the effects of vulnerability by home-owners was complemented by a dependency upon the state for bureaucratic management of the hazardous use of the environment and the bureaucratic organisation of financial relief. It was via this strange complex of dependency and privatisation of responsibility that reactive, interventive strategies for the management of the effects of vulnerability, rather than preventive strategies aimed at reducing vulnerability, were accepted and reproduced.

This analysis does not imply that the structures mentioned were the only structures through which hazard, impact and recovery were constituted. What it does indicate, however, is that the understanding of a society in disaster is usefully predicated upon an understanding of that society itself rather than, as many early studies would have it, upon the characteristics and dimensions of the extreme environmental conditions which will have catastrophic effects in that society.

### The Significance of the Analysis: Towards Substantive Theory

What then are the social and theoretical implications of this analysis? Of what relevance are the insights gained and what workable 'solutions' or actions are implied?

The analysis has produced, through various levels of abstraction, an integrated description of the social setting at the time of the floods of January 1974 in the Moreton region of South-east Queensland. Six main elements of an emerging substantive theory can be discerned.

- ◆ Hazards in the natural environment are socially, economically and politically produced. That is, environmental conditions become hazardous because of particular social, economic and political arrangements. Thus vulnerability to natural hazards has, as well as an environmental dimension, at least two other dimensions - the social-economic and the political.
- ◆ Vulnerability to natural hazards and the impact of natural hazards are processes which are constituted and managed via the same social structures; the same social arrangements which condition patterns of vulnerability are utilised and hence reproduced in managing the effects of that vulnerability. In the Moreton Region, as this study has shown, bureaucratic management of the environment, bureaucratic control over environmental knowledge along with private home ownership were important structural arrangements which both constituted the vulnerability of flood-plain residents and enabled its management in the aftermath of the floods (and thus the recovery of those affected). The dualism of such structures means that changes in the way in which a natural environment is incorporated into a system of social organisation are unlikely to occur as a response to impact, because making such changes would entail a challenge to the very structures which enable recovery.

- ◆ A genuine restructuring of patterns of vulnerability implies a restructuring of the system of social organisation and not merely of the natural environment. Such a restructuring would entail fundamental changes to the pattern of social organisation, particularly in social-economic arrangements and in the structural bases of inequality through which the effects of hazard are distributed and controlled.
- ◆ Making such fundamental changes does not necessarily imply destruction (or overthrow) of the system of social organisation but does imply ideological shifts leading to: (1) a preparedness to reformulate basic values (such as the profit motive and private property in capitalist societies) and the processes of evaluation and decision which are based upon them (for example, cost-benefit analyses and urban management models); (2) a preparedness to restructure conventional modes of social organisation, for example, methods of bureaucratic management, and, in particular, bureaucratic and/or professional ways of organising and controlling expertise; and (3) the specific protection of the rights and circumstances of groups made most vulnerable within the system of social organisation, that is, those at greatest overall risk.

### Conclusion

These propositions imply, in turn, some possibilities for action in the social setting and suggest useful directions for further comparative analysis:

Flood-plain planning and management procedures could encompass a search for and explication of the negative or constraining elements (the risks) which are entailed within the positive elements (the

benefits) of proposed, or existing, schemes. This does not mean simply identifying the risks which can be weighed up and possibly balanced out, overall, against the benefits. It means searching for risks which cannot be avoided so long as the benefits are enjoyed. Furthermore, it means investigating the particular ways in which the distributions of risks and benefits are related; developing a keen understanding of who benefits and who takes or bears the risks. Such an approach would provide a basis for the development of progressive arrangements capable of responding not simply to the 'needs' of a system of social and economic organisation, that is, to dominant economic and political interests, but also to needs which are best met via changes in the pattern of social and economic organisation which incorporates the natural environment. This assumes, of course, a preparedness and/or a demand to reformulate planning procedures. It also implies, to some degree, a shift from an interventive or reactive management model to a preventive management model. That is, some challenge is needed to the power-knowledge of experts, embedded as it is, in the system of social organisation. Encouraging or enabling the participation of hazard-affected people in policy formulation could increase the likelihood of policies being responsive to their needs and it could create opportunities and structures, at the practical level, for citizen education and the acceptance of management policy by directly affected citizens.

On another front, the scope of flood-plain mapping could include social impact studies which map not only the environmental dimension of risk, but also the vulnerability of the population in terms of social-economic and political factors which past research has shown to be relevant. This would provide a more realistic and humane basis for the assessment of strategies for reducing the vulnerability of

specific groups. However, to be an effective basis for flood-plain management policies, such vulnerability-mapping would need to be carried out regularly, taking account of changes in the social-economic characteristics of households (and individuals) in the flood-plain, as well as changes in social-economic and political structures, new initiatives in environmental use and management, and the implications of environmental changes which have occurred.

More broadly, this analysis has indicated, firstly, the value of more detailed investigations of the relationship between the distribution of negative and positive effects of the social use of the natural environment and of investigations of strategies for the containment of potential conflict arising from particular human uses of the natural environment. In this analysis, vulnerability has been conceptualised mainly in terms of negative effects and their distribution. A detailed analysis of the positive effects (and who benefits) has not been undertaken within the scope of the present work, and the question of the relationship between the distribution of positive effects and the distribution of negative effects of social-environmental relations has not been dealt with directly. However, the significance of understanding the interactions of negative and positive effects has been clearly indicated.

A second line for further enquiry would be the investigation, by comparison, of the conditions under which fundamental changes in the social-environmental structure are likely to be demanded and to occur after impact, as happened for example, with the organisation of victims demanding housing after the September 1985 earthquakes in Mexico City. There, victims formed domestic shelter groups, their demands were co-ordinated, and they became politically organised. This resulted in the presentation of a list of demands for housing and

for the formulation of a new and acceptable housing policy for the destroyed space (Massalo, 1986; Rabell and Mier y Teran, 1986; Azuela de la Cueva, 1986; Ziccardi, 1986).

Thirdly, the conditions under which ideological shifts, which lead to changes in planning and management procedures and ultimately to changes in the social-environmental structure, are likely to occur is an area where comparative study could lead to further insights. Further studies of the content of mass media communications during disasters and more general discourse analysis to discern the emergence of language categories employed in the interpretation of events are clearly warranted. Although, in the tradition of disaster research, the functional efficiency of the mass media has often been of interest, the language of communication and its effects within specific sociocultural settings have not received the attention they warrant. However, this study has indicated how critical the nature of discourse on disaster can be in the structuring or conditioning of events.

Fourthly, the position of specific groups such as women and the aged, in disaster demands further enquiry through comparative study. This study has served to indicate, for example, the relevance of gender and age divisions in the process of recovery and Bolin's (1986) study of negro families in Texas indicated that in addition to socio-economic factors, which are of major importance in recovery from disaster, sociocultural factors also appear to play a part in differential patterns of recovery. Black and white families appeared, from Bolin's study, to be sensitive to different aspects of economic aid, social support and emotional support from family and kin in their recovery patterns. These studies not only indicate the importance of further investigation along these lines, but also the inadequacy of



environmental management models, which assess the balance of costs and benefits of using an environment, in an overall calculation of aggregate benefits and costs.

Substantively, these lines of enquiry connect this study to many other areas of sociological research apart from disaster research and natural hazards research within which the initial enquiry was situated. Welfare and the distribution of resources, social planning, technology and the environment, urban sociology, the sociology of women and feminist research, studies of the informal economy and studies of bureaucracy and democracy are among the most obvious related areas.

The study is also clearly related to more formal theoretical concerns such as those about the division of labour and control over resources (including knowledge); hegemonic control, the state and the constitution of power; conflict, containment and change, indeed, about the constitution of societies - basic social processes which underlie the issues and problems of a wide range of substantive areas.

## APPENDIX A

1. UNIVERSITY OF QUEENSLAND - FLOOD STUDY  
FIRST HOUSEHOLD SCHEDULE

Respondent No.  
Address

1. Which members of your household were at home when it looked as though you were going to be flooded? (Specify)
2. How far into your property did the water come at its peak?
 

Entered grounds	FOR FIRST TWO
Under house (i.e. where no rooms under house)	RESPONSES ASK ONLY
Entered downstairs rooms	QUESTIONS MARKED *
Over main upper level	
Don't know	
N.A.	

(Describe depth as R. indicates)

How long did the water remain at this level? (Specify)
- \*3. When did you first think you might be flooded? (Probe)
 

Day: Friday	Time: Morning
Saturday	Afternoon
Sunday	During the night
Monday	
Tuesday	

What height was the water in relation to your property then?

Had entered grounds  
Was under house  
Was to the main floor level  
Over main floor level  
Had not yet entered R's property

(Describe depth in inches/feet in relation to R's property)
- \*4. What made you think that you might be flooded? Did you have someone warn you? (P) Did you hear radio or television reports that indicated there would be flooding in your area? (P) Was it something you read in the newspapers? (P) Or was it something else? (Specify)
 

Someone warned (Specify)  
Radio reports (Specify - Radio station if possible)  
Television reports (Television channel if possible)  
Newspaper reports (Newspaper if possible)  
Other (Specify)

- \*5. Did you, at any stage, receive any official warning that your area was going to be flooded? Probe if YES: What height was the water then?
- Had not yet entered R's property  
 Had entered grounds  
 Was under house  
 Was to the main floor level  
 Over main floor level.
- \*6. Supposing you were responsible for warning the residents of a certain area that their area was going to be flooded, how would you go about it? Probe: What sort of information would be important? How would you go about getting the information to people? (Record response)
- \*7. Could you tell me briefly what kind of thoughts came to your mind once you realized that your area was going to be flooded? (Record comments)
- \*8. Did you move from your home during the flood?
- NO ASK 9  
 YES GO TO 12
- \*9. Did you make any preparations in case you had to move from your home, or take any precautions to protect any of your things? (Record comments)
- NO YES
- \*10. Were you asked to leave at any time?
- YES NO  
 If YES: Why did you stay? (Record reasons)
- \*11. Did you take any of your furniture or other possessions out of the house?
- YES NO  
 If YES: What did you take? (Record)
- Did you have any problems with storage?  
 GO TO 31
- \*12. How did you get out? (Specify)
- \*13. What level was the water then? (Specify depth or in relation to R's property. Use categories in Qs 3 and 5)
- \*14. Where exactly did you go?
- Relief centre (Specify)  
 House (Specify whose house and location of house)

- \*15. Did you have any special reasons for going there? (Record reason)
- IF R. WAS DIRECTED TO TEMPORARY ACCOMMODATION: Could you explain how this happened? (Record explanation)
- Probe: ALL RESPONDENTS
- And did all the members of your household go to the same place?
- Did anyone stay behind after other members of the household had been evacuated?
- YES NO
- IF YES: Who stayed? (Specify)
- Why did he/she/they stay? (Record reasons)
- How long after did he/she/they stay? (Specify)
- \*16. Did you stay at the one place all the time until you were able to return home or did you go somewhere else from there?
- IF R. WENT SOMEWHERE ELSE:
- Would you mind giving me the details of where you stayed and roughly how long you stayed there?
- | Place   | Length of Stay |
|---|----------------|
| CHECK: So that it was about (add second column above) weeks before you returned to your home? |                |
- \*17. Can you suggest any improvements which could have been made in the provision of emergency accommodation? (Record)
- \*18. Was your house left completely unattended at any stage?
- YES If YES: For how long? (Specify)  
GO TO 20
- NO ASK 19
- \*19. Who looked after your house during the family's absence? (Specify)
- \*20. There was much talk at the time of the floods and soon after about people's property being looted. Did you yourselves experience any of this?
- YES NO
- If YES:  
What sort of things were stolen from your property?  
Going back to the time before you moved from your home ...
- \*21. Did you make any preparations before leaving?
- YES ASK 22 (Record reason)
- NO GO TO 24
- \*22. What sort of things did you think of saving? (Specify)
- \*23. How did you go about trying to save these things? (Specify)

- \*24. Did you take any of your furniture or possessions out of the house?  
 NO GO TO 26  
 YES  
 If YES: What did you take? (Specify)  
 Where did you take it? (Specify)  
 Did you have any problems with storage? (Specify)
- \*25. Did you receive any assistance when you were fixing things to move out?  
 YES NO
- \*26. Did any member of your household return home after having evacuated, before you could do anything about cleaning up?  
 YES NO  
 If YES: (record reason)
- \*27. Are you living in your home again yet?  
 YES ASK 29  
 NO GO TO 29
28. When did you move back? Day/date (Specify)  
 GO TO 30
29. Are you going to move back?  
 YES NO  
 If YES: When do you think you will move back?  
 (Record)  
 If NO: Why not? (Record reason)
- \*30. Did you have any urgent needs or problems while you were away from home?  
 YES NO  
 If YES: What sort of problems were they? (Specify)  
 Were these needs met/problems solved?  
 YES NO  
 If YES: Who helped you in this respect?  
 QUESTION 31 FOLLOWS
31. Were you satisfied with the way in which the evacuation was carried out in your area?  
 YES NO  
 If NO: Why not? (Specify reasons)
- \*32. Was there any particular organization or group of people involved in helping to evacuate residents in your area?  
 (Specify)
- \*33. Can you suggest any improvements in the evacuation process which could have helped you? (Record)

- \*34. Was there an emergency relief centre set up in your area at the time of the flooding?  
IF YES: Where was that?  
IF R. ANSWERS: What services did it offer? (Specify)  
 Who was responsible for operating it? (Specify)
- \*35. Did you have any contact with any of the emergency relief centres?  
 YES NO  
 If YES: Which one? (Specify)  
 What was this for?  
 Were you satisfied with the service you received there?  
 YES NO  
 If NO: Why weren't you satisfied? (Record reasons)
- \*36. Can you suggest any improvements in the emergency relief centres which could have helped you? (Record any suggestions)
- \*37. Could you describe briefly the damage your house/property suffered as a result of the flood? RECORD STRUCTURAL DAMAGE ONLY
- \*38. Did the damage turn out to be more or less than you had first expected?  
 More  
 Less  
 About the same  
 Couldn't say  
 N.A.
- \*39. How long after the water had first come into the property were you able to start cleaning up?  
 Time:  
 Date:
- \*40. When you could start cleaning up your house/property, did you receive any help?  
 NO GO TO 44  
 YES ASK 41
- \*41. Who were the people who helped you? (Specify if necessary)  
 Friends  
 Neighbours  
 Relatives or other family members not in the household  
 (Specify which relatives)  
 Organizations (Specify)  
 Strangers - people R. did not know.
- \*42. In general, who would you say was most helpful to you?  
 (Record)
- \*43. Have you ever been helped in other circumstances by these same people?  
 YES NO  
 If YES: Specify the people and the type of assistance given in the past:

\*44. Do you know of any organizations which were giving assistance to people in this area during the time when they were cleaning up their properties, though you may not have obtained any assistance from them yourselves? (Record)

\*45. Do you feel you had enough expert advice on how best to go about cleaning up your property and other things?

YES

NO

No need for such advice

\*46. Was there any other type of assistance you could have done with that we have not already mentioned?

\*47. Let's talk now about some of the more formal organizations that were involved in various activities during the flood. We can discuss them in turn.

Name of Organization	Would you say they did an effective job?		Did you receive any personal assistance from this organization?		Have you any suggestions for them improving their performance?
----------------------	--	--	---	--	--

Civil Defence	Yes	No	Yes	No	(Record if any)
---------------	-----	----	-----	----	-----------------

Police	Yes	No	Yes	No	(Record if any)
--------	-----	----	-----	----	-----------------

Army	Yes	No	Yes	No	(Record if any)
------	-----	----	-----	----	-----------------

\*48. Could you describe briefly your feelings during the clean-up? (Record)

\*49. Looking back to cleaning-up, did you  
(a) Save things you later found had to be discarded?

YES NO GO TO (b)

If YES: What sort of things?

Why did you save them?

(b) Did you throw away things which you now feel could have been saved?

YES NO

If YES: What sort of things?

Why did you throw them away?

\*50. What were your major losses? (Specify)

\*51. What work was/is necessary on your house or property to

(i) Enable you to live in your home? (Specify)

(ii) Fully repair your home? (Specify)

\*52. Has your home been fully repaired yet?

YES NO

If YES: When were the repairs completed? (Specify)

If NO: When do you think the repairs will be completed? (Specify)

\*53. Who carried out/will carry out repairs on your home?

Person:           Type of Repair:  
(Specify)

Self or other  
  household member  
Family/relatives  
  outside household  
Neighbours  
Tradesmen  
Others (specify)

54. Have you paid or will you pay for the work to be done, (P)  
has it been done voluntarily, (P) or is it paid for by insurance  
or reconstruction funds?

Type of work:                   Amount:                   Paid by:

55. Have you had any difficulties about getting tradesmen to work on  
repairing your home, or getting expert advice on what you can do  
yourself?

YES                   NO  
If YES: (Specify)

56. Can you think of any improvements in services relating to home  
repairs which could have helped you or could still help you?  
(Record suggestions)

57. Did you apply for any sort of financial assistance?

YES                   ASK 58  
NO (Record reason) GO TO 64

58. I have here now a list of possible sources of financial  
assistance for flood victims. Would you mind filling out the  
table by answering the questions at the top of each column for  
each of the funds? HAND QUESTIONNAIRE TO R.

Name of Fund	Have you Applied to this	Date of Application	Have you received Financial Assistance from this Fund?	Amount received if any
--------------	--------------------------	---------------------	--	------------------------

Lord Mayor's Fund	Yes No (Circle)		Yes No (Circle)	
-------------------	--------------------	--	--------------------	--

State Government Relief Fund	Yes No (Circle)		Yes No (Circle)	
------------------------------	--------------------	--	--------------------	--

	Yes No (Circle)		Yes No (Circle)	
--	--------------------	--	--------------------	--



59. FOR RESPONDENTS WHO HAVE ALREADY RECEIVED SOME FINANCIAL ASSISTANCE:  
Do you feel that the money you have received is sufficient to cover your losses?  
YES NO  
GO TO 62
60. FOR RESPONDENTS WHO HAVE NOT ALREADY RECEIVED ANY FINANCIAL ASSISTANCE:  
Do you think you will get any financial assistance?  
NO GO TO 62  
YES  
If YES: How much do you think you might get? (Record estimate)
61. Do you think this will be enough to cover your losses?  
YES NO  
(Record any comments)
62. Would you say you were satisfied with the way in which financial assistance has been given?  
YES NO  
(Record any comments)
63. Can you make any suggestions for improving the way in which financial assistance has been or is being given? (Record suggestions)
- \*64. Do you have an insurance policy that covers you against flooding?  
YES ASK 65  
NO GO TO 66
- \*65. To what extent are you covered against flood damages?  
(Specify)  
GO TO 68
- \*66. Were you aware that you were not covered against flood damage?  
YES NO  
(Record any comments)
- \*67. Did you ever make an attempt to obtain flood insurance?  
YES NO  
If YES: What happened on that occasion?
- \*68. In general, what responsibilities do you think governments have in situations such as the recent floods? (Specify)
- \*69. Can you think of anything that the Federal Government has done by way of flood relief?  
YES NO  
If YES: (Record)

- \*70. Are you satisfied with the action that the Federal Government has taken?  
IF R. REQUIRES EXPLANATION OF FEDERAL GOVERNMENT ACTION, OUTLINE AND THEN RECORD ANSWER  
Satisfied Dissatisfied  
(Record any comments):
- \*71. What about the State Government, can you think of anything it has done by way of flood relief?  
YES NO  
If YES: (Record)
- \*72. And are you satisfied with the action that the State Government has taken?  
IF R. REQUIRES EXPLANATION OF STATE GOVERNMENT ACTION, OUTLINE AND THEN RECORD ANSWER  
Satisfied Dissatisfied  
(Record any comments):
- \*73. And now the Brisbane City Council, do you know what it has done for flood relief?  
YES NO  
If YES: (Record)
- \*74. Are you satisfied with what the City Council has done?  
IF R. REQUIRES EXPLANATION OF CITY COUNCIL ACTION, OUTLINE AND THEN RECORD ANSWER  
Satisfied Dissatisfied  
(Record any comments):
- \*75. Have you had to take time off work directly or indirectly as a result of the flood?  
YES ASK 76  
NO GO TO 79
- \*76. How long did you have off work? (Specify)
- \*77. Was it part of your holiday or recreation leave or was it special leave not affecting your holiday?  
Holiday/recreation leave  
Leave other than holiday/recreation leave.
- \*78. Did you suffer any loss of wages or income of any sort directly or indirectly because of the floods?  
YES NO  
If YES: Why was that? (Record)
- \*79. Have you ever been affected by flood before?  
YES ASK 80  
NO GO TO 83
- \*80. Was it here or somewhere else?  
Here  
Somewhere else  
Here and somewhere else.

- \*81. How many times has this happened to you?  
 Once before  
 2-5 times before  
 More than 5 times.
- \*82. Were the other occasions the same as this, worse than this, or not as bad?  
 Same  
 Worse  
 Not as bad.
- \*83. Had you ever thought about the possibility of your home being flooded?  
 YES NO  
 (Note any comments):
- \*84. When you moved to this house, did you make any check on the possibility of flooding in this area?  
 Made no check  
 Check made  
 If CHECK MADE: (Results in brief):
- \*85. Did you know that flooding was likely to be a problem when you decided to move there?  
 YES NO
- \*86. Do you remember hearing people discuss floods in this area since you have been living here?  
 Probe: Who was this?  
 How long ago?
- \*87. Do you know of anybody who had investigated the flood situation prior to the January flood?  
 Probe: Who  
 When?
- \*88. Do you think there will be another flood while you are living here? (Record comments)  
 YES NO
- \*89. Before the flood, had you ever thought about the kinds of precautions that might be taken against flood damage to your property?  
 Hadn't thought GO TO 92  
 Had thought ASK 90
- \*90. What kinds of precautions had you thought about, for the protection of your property? (Specify)
- \*91. Did you ever actually do anything about taking these precautions?  
 YES NO  
 If NO: (Record reason if any)

- \*92. Have you thought now since the flood of taking precautions to protect your property in the future?  
 YES ASK 93  
 NO GO TO 94
- \*93. What kinds of precautions had you thought you might take?  
 (Specify)
- \*94. If you were to live one hundred years, how many floods would you expect to happen here in your lifetime? (Record answer)  
 Probe: Why do you say that? (Record)
- \*95. Do you think there are any signs or particular ways of knowing that a flood will happen?  
 YES NO  
 (Record explanation)
- \*96. If you were worried about the possibility of the River/Creek flooding do you know anyone that you might call at any time for information? (Record answer)
- \*97. I would like to read to you several statements and ask your opinion as to whether you agree with each statement or disagree with it.
- A. Chances are that there will not be another flood for a long time.  
 Agree Disagree
- B. Planning only makes a person unhappy since your plans hardly ever work out anyhow.  
 Agree Disagree
- C. The only sure thing that you can say about floods is that if you wait long enough, you will always get a bigger one.  
 Agree Disagree
- D. When a man is born, the success he's going to have is already in the cards, so he might as well accept it and not fight against it.  
 Agree Disagree
- E. Floods, like trouble, come in threes.  
 Agree Disagree
- F. Nowadays, with the world conditions the way they are, the wise person lives for to-day and lets tomorrow take care of itself.  
 Agree Disagree
- G. A flood that will come to the 20 feet mark on the Port Office Gauge would occur on the average, only at rather long intervals of time, but it would occur in any year.  
 Agree Disagree

- \*98. Would there be an area around here where you are now living which you would say you belonged to and where you felt at home?  
 YES NO Don't know  
 If YES: Could you tell me the boundaries of this area?  
 (Use streets) (Specify)
- \*99. Do you think this is a good location at which to live?  
 YES NO Uncertain
- \*100. Would you say that this location is as desirable now as it was before the flood?  
 YES NO Uncertain
- \*101. Do you think this neighbourhood has changed at all from what it was before the flood?  
 YES NO Uncertain
- \*102. What would you say were the principal advantages of living in this area? (Specify)
- \*103. What would you say were the principal disadvantages?  
 (Specify)
- \*104. Would you say the advantages of living in this area outweigh the disadvantages or is the opposite the case?  
 (Specify/record explanation)
- \*105. What do you think the effect of the flood will be on property values in this area?  
 It will cause property values to go down  
 It will have no effect on them  
 It will make them rise  
 Other (Specify)
- \*106. If you had your choice, would you move from this place, stay here, or are you uncertain?  
 Move  
 Stay  
 Uncertain.
- \*107. As of the present what are your moving plans?  
 Do not plan to move GO TO 117  
 There is a slight possibility we will move  
 There is a fair possibility we will move  
 There is a good possibility we will move ASK 115  
 We will definitely move.
- \*108. If you have plans to move, how important would the effect of the recent flood be on your decision?  
 Not at all important  
 Somewhat important  
 Very important.

- \*109. How important would the possibility of a future flood be on that decision?  
 Not at all important  
 Somewhat important  
 Very important.
- \*110. People say "It's an ill wind that blows no good". Would you say that any good has come out of the flood?  
 YES NO  
 If YES: (Specify)
- \*111. Did you get to know any people living around here you did not know before the flood?  
 YES NO
- \*112. Are there any people you feel you have come to know better?  
 YES NO
- \*113. Do you feel there have been any changes in the contact you have had with the people around this area since before the flood?  
 NO GO TO 115  
 YES ASK 114
- \*114. Has this been the same all the time since the flood?  
 (Record any comments)  
 Hasn't changed  
 Has changed.
- \*115. It has been suggested by people on television and in the newspapers that many people have had to face emotional stresses during and after the flood. Would you agree or disagree with this?  
 Agree Disagree GO TO 116  
 Why is that? (Record comments)
- \*116. Looking back, can you identify any particular personal or family problems you faced during or after the flood?  
 YES NO  
 If YES: When was this?  
 Would you mind telling me the nature of these problems?  
 (Specify)
- \*117. There has been some discussion about the part that social workers have played during and after the flood. Did you yourself see a social worker?  
 YES ASK 118  
 NO GO TO 121
- \*118. What sort of assistance, if any, did he/she give you?  
 (Specify)
- \*119. Was he or she able to help you with any personal or family problem?  
 YES NO  
 If YES: In what way?

- \*120. Do you feel it was helpful to you to have the opportunity to talk about your problem?  
 YES                      NO  
 Was the social worker able to redirect you or refer you to any other social agency?  
 YES                      GO TO 122  
 NO                        GO TO 122
- \*121. Apart from social workers, have you had the opportunity to talk over any personal or family problems which may have arisen during the flood with anyone?  
 YES                      NO  
 If YES: With whom?  
                             When was that?  
 Did you find this helpful?  
 YES                      NO  
 If NO: Did you feel at any stage that you would have liked to have talked any particular personal or family problem over with someone?  
 YES                      NO  
 If YES: Who did you think you would have liked to talk to?  
                             (Specify)  
                             When did you feel this way? (Specify)
- This is the end of the main part of the questionnaire, but there are some more questions we would like to ask you which would help us in our analysis.
- \*122. First of all, do you own your house, are you buying it at present, are you leasing it, or do you rent it on a short-term basis?  
 Rent (short-term)  
 Lease (longer-term)  
 Buying  
 Own home
- \*123. How long have you been living in this area?  
 Less than 1 year  
 1-3 years  
 3-5 years  
 5-10 years  
 More than 10 years.
- \*124. Where did you live before you came to this area? (Specify)
- \*125. Have you always lived in cities or large towns, or have you spent some time living in the country?  
 Always lived in cities/towns  
 Some time in the country.  
 IF R. HAS SPENT SOME TIME IN THE COUNTRY: How long did you live in the country? (Specify)





	Could be Repaired (Record Cost)	Beyond Repair		
		Unable to be Replaced	Replaced with New Item	Replaced with S/H Item
Built-in Cupboards				
Ceilings				
Roof				
Floors				
Windows				
Footings, Wall Struts, Beams				
Stumps				
Stairs				
Internal Paintwork				
External Paintwork				
Furniture				
Curtains				
Floor Covering				
Fridge				
Stove				
Washing Machine				
Other Electrical Appliances				
Personal Effects				

2. TRANSCRIPT<sup>1</sup> OF LETTER OF INTRODUCTION

HM:EC:cls

14th March, 1975

To whom it may Concern

This is to identify Mr \_\_\_\_\_ who is working on a follow-up study of the effects of the floods in Queensland in January 1974, under the supervision of Mrs Patricia Short and Mrs Heather Mugglestone of the Department of Social Work, University of Queensland (telephone 70-3741).

I should appreciate any assistance you could give to help him with this project.

Yours faithfully,

Professor E.R. Chamberlain  
Department of Social Work

## Note:

1. The letter of introduction used by researchers was printed on the University of Queensland letterhead.

### 3. FLOOD STUDY FOLLOW-UP 1975 INSTRUCTIONS TO INTERVIEWERS

#### Where to go

Interviews are to be conducted at a random sample of households where interviews were conducted in 1974. Therefore, you are provided with lists of addresses at which you are to interview. Photocopied area maps are also provided.

#### Who to interview

You must interview the household member who answered the 1974 questionnaire. Therefore you must ask for that person. In the case where no one in the household can recall having answered the 1974 questionnaire, you should conduct an interview with any adult member of the household who is agreeable and inform us that this has occurred so that a check can be made from our records to decide whether or not the interview is acceptable.

#### Call backs

If the person you wish to interview is not available to be interviewed the first time you call, please make up two return calls at different times of the day. If an interview cannot be obtained after two return calls have been made, please let us know. You will be given another address.

#### The Call Sheet

Please fill in the call sheet carefully. It will be used for lodging pay claims and as a summary of interviews conducted and reasons for interviews not being conducted.

#### Reports and Returns

It is very important that this survey be done quickly, well, and efficiently. To help in achieving these things we would like you to telephone me or Heather Mugglestone on Wednesday of each week to report on your progress and any difficulties you might be having, and also to return completed schedules by each Monday morning of the following week.

If you are unable to come to the University, please phone and make alternative arrangements for the return of completed schedules.

You are, of course, free to phone at any time if you are having difficulties.

#### Some Notes about the Schedule

We have endeavoured to pre-code questions where possible to minimise problems with processing at later stages. Please use the categories provided but if it is necessary to elaborate in order to make the respondent's answer clear, please do so. It is intended that the pre-coding be helpful not restrictive in

recording responses. Remember the comments which will be made at the briefing session about the use of categories in particular questions.

Please try to get the respondent's name and record it fully. Be thoroughly familiar with the schedule before you go out to use it.

The damage sheet may be filled out by the respondent at the completion of the interview. The question about taxable income may be left with the respondent with a stamped, addressed envelope for return by mail.

Thank you,

Patricia Short  
Phone: 70-3741 (work)  
30-4102 (home).

4. UNIVERSITY OF QUEENSLAND  
DEPARTMENT OF SOCIAL WORK  
FLOOD STUDY FOLLOW-UP HOUSEHOLD SCHEDULE

DATE:  
ADDRESS:

RESPONDENT'S NAME:  
RESPONDENT'S NUMBER:

Interviewer Introduction

Good Morning  
Afternoon  
Evening

I am .....

I am helping with a follow-up survey which is being done by the Department of Social Work at the University of Queensland to trace the social and psychological effects of the flood last year.

I understand that at some time last year, someone in this household was a respondent in our first survey. I should like to interview that person again if possible ... Was it yourself who answered our questionnaire or was it another member of the household?

1. Would you say that by now you have "recovered" from the experience of the flood last year?
  - YES NO
  - If YES: Was there any particular stage or time during the past year when you would say that you felt you had recovered?
    - YES NO/Couldn't say
  - If YES: What was it that made you feel you had "recovered"? (Record)
  - If NO: Is there any particular reason that you do not feel you have "recovered from the flood"? (Record)
  
2. Would you say that your home is now in the same condition as it was before the flood last year, in better condition, or not as good as it was?
  - Same condition
  - Better condition
  - Not as good
  - Don't know/couldn't say.
  - IF SAME OR BETTER: How soon after the flood was this achieved?
    - Within 1 month
    - More than 1 month, less than 2 months
    - More than 2 months, less than 3 months
    - More than 3 months, less than 6 months
    - More than 6 months, less than 9 months
    - More than 9 months, less than 1 year
    - D.N.A.
  - IF NOT AS GOOD: Do you think it will ever be restored to its previous condition?
    - YES NO
  - If YES: When do you think this will be achieved?
    - By end April 1975
    - By end June 1975
    - By end September 1975
    - By end of 1975
    - By end of 1976
    - Some time after 1976
    - Don't know/couldn't say.
  - If NO: Why do you say that? (Record)
  
3. In general, would you say people have experienced emotional strain associated with the flood?
  - Yes
  - No
  - Don't know/couldn't say.
  - If YES or DON'T KNOW: Have you yourself or any of the members of your family experienced emotional strain associated with the effects of recovery from the flood?
    - Yes
    - No
    - Don't know/couldn't say.
  - If YES: Would you say it was one of the worst periods in your life?
    - Yes
    - No
    - Don't know/couldn't say

If YES: Was it the worst period in your life, or have there been other times which were just as bad or worse than this?

Worst period

Other times as bad

Other times worse

Don't know/couldn't say.

4. Would you say there was anything about the flood experience which made it different from other periods of emotional stress which you might have experienced?

Yes

No

Don't know/couldn't say

If YES: (Record differences)

5. When you were repairing your home would you say that there was any stage when emotional strain was severe enough to affect your ability to do the things which were necessary for you to repair or replace your possessions?

Yes

No

Don't know/couldn't say

If YES: (Record)

6. Looking back, can you identify any particular personal or family problems which have arisen in the year since the flood which you feel are either directly or indirectly a result of the flood experience?

Yes

No

Don't know/couldn't say

If YES: What were these problems? (Record)

7. We know that many people had to take time off from their normal occupations during the flood and in some cases for some time afterwards. If any members of your family were affected in this way, could you tell me how long it was before each of them resumed normal work or school activities?

H. of household	Spouse	Other	Other
-----------------	--------	-------	-------

Within 1 week

More than 1 week,

less than 3

More than 3 weeks,

less than 5

More than 5 weeks,

less than 2 months

More than 2 months

8. Have you noticed any particular community problems which have occurred in this area and which people feel are a result of the flood experience last year?

Yes

No

Don't know/couldn't say

If YES: What are these problems? (Record)

9. How important do you feel each of the following characteristics is in being able to recover from situations such as you experienced as a result of the flood last year?

Taking each one in turn, could you tell me if you think it is very important, somewhat important, not at all important?

Very important	Somewhat Important	Not Very Important	Not at all Important	Uncer- tain
-------------------	-----------------------	-----------------------	-------------------------	----------------

Number of  
people in  
family

Family  
income

Type of  
occupations  
of family  
members

Level of  
education  
of family  
members

"Having  
contacts"

Age

Membership  
of clubs and  
societies

10. Would you say there were any other things which are important in recovering?

Yes

No

Don't know/couldn't say

If YES: What are they? (Record)

And how important would you say they were?

Very Important	Somewhat Important	Not very Important	Not at all Important	Uncertain
-------------------	-----------------------	-----------------------	-------------------------	-----------

11. If you feel that any of these things is important, in what ways do you think it is important?

Number of people  
in family

Family income

Types of occupations  
of family members

Level of education  
of family members



"Having contacts"

Age

Membership of clubs  
or societies

Other (Record)

The next group of questions refers to a number of activities which people who were helping flood-affected people in this area might have been engaged in. Again, it will be simpler if we take each activity in turn.

\*12. During the flood, were you aware of any people who were warning households likely to be flooded of the possibility of flooding in this area?

YES NO

If YES: Have you heard since the flood if people were doing this?

YES NO

If YES: Did you personally receive any warning of this sort?

YES NO

Can you tell us what sort of people were doing this? (Record)

Don't know

Do you think they were the best sort of people to be doing this?

Yes

No

Don't know/couldn't say

If NO: Why do you say that? (Record)

What sort of people do you think could best carry out this warning activity? (Record)

\*13. Do you think it is a good thing to have people in an area warning residents of what is likely to happen?

Yes

No

Don't know/couldn't say.

If NO: Why do you say that? (Record)

\*This group of questions was repeated with reference to:

Rescue activities

Accommodation service

Provision of food

Provision of clothing, furniture

Clean-up assistance

Assistance in matters relating to health, sanitation

Counselling service.

During the flood various neighbourhood relief centres opened and gave assistance for a time.

28. Were there any of these relief centres in your locality?

Yes

No

Don't know

If YES: Where were they? (Record)

How long did they stay open?

Don't know

Less than 1 month

More than 1 month, up to 2 months

More than 2 months, up to 3 months

More than 3 months, up to 6 months

More than 6 months, up to 1 year

More than 1 year but not still in operation

Still in operation

Would you say the centre(s) had stayed open too long, not long enough, or was the time just right?

Too long

Not long enough

Just right

Don't know/couldn't say

Some of these flood relief centres seemed to draw people living in that locality together for quite a long time. Would you say that this happened in your area?

Don't know

Yes

No

Did anything grow out of the centres in the weeks and months after the floods, like interest groups or associations?

Don't know

No

Yes - non-specific

Yes - interest group/action group

Yes - association (including community association)

Yes - other

Yes - more than one type of group (Specify)

If YES: Could you tell us about them and what they are trying to do? (Record)

Were these interest groups mainly on behalf of the flood-affected people or for the community in general?

Don't know/uncertain

Flood-affected people

General community

29. Do you know of any groups which were formed in this area as a result of the flood last year who were concerned with giving personal help on a long-term basis to people who were affected by the flood?

Don't know

No

Yes - but cannot specify

Yes (Specify if possible)

If YES: Are you a member of any such groups?

Yes (Specify group)

No

If YES: Specifically, what does this group do? (Record)

If NO: Have you been approached by any such groups?

Yes

No

31. In the first few months or so after the flood, would you say that people in this neighbourhood talked with each other about the flood a great deal, fairly often, not very often, or not much at all?
- A great deal
  - Fairly often
  - Not very often
  - Not much at all
  - Don't know
32. After that time would you say they talked about the flood a great deal, fairly often, not very often, not much at all?
- A great deal
  - Fairly often
  - Not very often
  - Not much at all
  - Don't know
33. In the first few months or so after the flood, would you say that the people in this neighbourhood talked about the possibility of a future flood a great deal, fairly often, not very often or not much at all?
- A great deal
  - Fairly often
  - Not very often
  - Not much at all
  - Don't know
34. After that time, would you say they talked about the possibility of a future flood a great deal, fairly often, not very often, or not much at all?
- A great deal
  - Fairly often
  - Not very often
  - Not much at all
  - Don't know
35. Would you say you took an interest in community affairs or what goes on in this area?
- YES NO
- If YES: Would you say you were "active" in community affairs and community projects in this area?
- YES NO
- If YES: What sort of things do you become involved in? (Record)

36. If you have children going to school, do they go to school in this area or do they travel some distance to school?

No school age children

School age children

(Record in table below)

(Specify son/ daughter and age	Same suburb	Nearby suburb (within 5 miles)	Other suburb (5-10 miles)	More than 10 miles
--------------------------------------	----------------	--------------------------------------	------------------------------	--------------------------

37. And the members of your family who work, do they work in this area or do they travel some distance?

No family members go out to work

Family members go out to work (Record below in table)

Same suburb	Nearby suburb (within 5 miles)	Other suburb (5-10 miles)	More than 10 miles
----------------	--------------------------------------	------------------------------	--------------------------

Head of house-  
hold

Spouse

Other (Specify)

38. Do you or any other member of your family belong to any organizations related to your occupations: e.g. a trade union, professional organization or any social clubs associated with your work?

YES

NO

If YES: Would you mind telling me what these are? (Record below please)

Head of household

Spouse

Other (Specify)

Would you say that you/they are an active member?

Head of household (1) Active  
Not active

(2) Active  
Not active

Spouse (1) Active  
Not active

(2) Active  
Not active

Other (1) Active  
Not active

(2) Active  
Not active

What would you say were the main benefits of membership in this (these) organization(s)?

Organizations

Benefits

Head of household

Spouse

Other

Was membership in this (these) organization(s) in any way beneficial to you during the flood and afterwards during the period of rehabilitation?

Organizations	Benefits
---------------	----------

Head of household  
Spouse  
Other

39. Do you or any other member of your family belong to any community groups, church organizations, clubs or societies not associated with your work?

NO YES

If YES: Would you mind telling me what these are? (Please record below)

Head of household  
Spouse  
Other (Specify)

Would you say you/they are active members?

Head of household (1) Active  
Not active

Spouse (1) Active  
Not active

Other (1) Active  
Not active

What would you say were the main benefits of membership in this (these) organization(s)?

Organizations	Benefits
---------------	----------

Head of household  
Spouse  
Other

40. If you got support from an organization or organizations to which you belong, which ones would you rate most highly? (Please record in order mentioned)

41. Are there any organizations to which you belong which disappointed you by a lack of support? (Record)

42. Do you know if any of the following organizations have opened new branches or groups in your locality?

Yes	No	Don't know
-----	----	------------

Civil Defence (SES)  
Red Cross  
Lions  
Religious organization  
(Please specify)

43. Do you think this is a good location at which to live?  
 Yes  
 No  
 Don't know/uncertain
44. Would you say that the location is as desirable now as it was before the flood?  
 Yes  
 No  
 Don't know/uncertain
45. If you had your choice, would you move from this place, stay here or are you uncertain?  
 Move  
 Stay  
 Uncertain  
 Other
46. At present, what are your moving plans?  
 Do not plan to move  
 Slight possibility  
 Fair possibility  
 Good possibility  
 Definitely will move
47. Do you know of anything that will reduce flooding in this area?  
 No  
 Levees  
 Land-use control  
 Wivenhoe  
 Other  
 Combinations
48. Would you say that you now have more knowledge of the nature of the flood threat in this area than you had at the time of the flood last year?  
 Yes  
 No  
 Uncertain  
 If YES: What kind of knowledge have you gained in the meantime? (Please specify)  
 Do you think that this knowledge will be of help to you in the future?  
 Yes  
 No  
 Uncertain  
 If YES: In what way?
49. Do you know of anyone or any place you could contact for information if you were worried that a flood might occur again in this area?  
 YES NO  
 If YES: Who or where? (Please record)

50. During the year since the flood, have you received any information, e.g. by way of pamphlets
- (a) about the nature of the flood threat in this area?  
 YES                      NO  
 If YES: (Please record details)
- (b) about what should or can be done in the event of another serious flood in this area?  
 YES                      NO  
 If YES: (Record details)
- (c) about who you might contact if you were concerned that a serious flood might occur?  
 YES                      NO  
 If YES: (Record details)
51. Do you know of any groups which might have formed in this area as a result of the flood last year which are concerned with putting pressure on the Council or Governments to provide flood mitigation works in this area?  
 No/don't know  
 Yes, but cannot specify  
 Yes (Specify if possible)  
 If YES: Are you a member of any such groups?  
 YES                      NO  
 If YES: Which group/s?  
 If NO: Have you had any contact with such groups?  
 YES                      NO
52. During the past year have you made any permanent alterations to your house or property so as to reduce damage in the event of another flood?  
 No alterations  
 House raised  
 Water proof/resistant building materials used to repair damaged sections  
 Unsuitable building materials replaced with water resistant furniture  
 Some or all furniture/furnishings replaced with easily moveable items  
 Modifications to drainage  
 Other  
 (Combinations of 2-7 above)
53. Do you plan to make any (further) permanent alterations to your house or property so as to reduce damage in the event of another flood?  
 YES                      NO  
 If YES: What is it that you plan to do?  
 Uncertain  
 Raise house  
 Replace unsuitable building materials  
 Replace items of furniture/furnishings with water resistant items

Replace items of furniture/furnishings  
 with easily moveable items  
 Modify drainage  
 Other  
 (Combinations of 2-7 above)

54. Are there any permanent alterations which you would like to make to your home but are unable to for some reason?  
 YES                      NO  
 If YES: What is it that you would like to do?  
 Uncertain  
 Raise house  
 Replace unsuitable building materials  
 Replace items of furniture/furnishings  
 with water resistant items  
 Replace items of furniture/furnishings  
 with easily moveable items  
 Modify drainage  
 Other  
 (Combinations of 2-7 above)
55. During the year, have you taken any precautions apart from making permanent alterations or modifications, to protect your house or property in the event of another flood?  
 No precautions taken  
 Precautions taken (Specify)
56. Are there any (other) precautions which you plan to take in order to protect your property in the event of another flood?  
 No precautions planned  
 Precautions planned (Specify)
57. Are there any other precautions which you would like to take in order to protect your property but are unable to for some reason?  
 No precautions  
 Precautions would like to take (Specify)
58. Have you and your family changed your way of life in any way as a result of the flood?  
 No  
 Yes  
 Couldn't say  
 If YES: What sort of changes have you made? (Specify)  
 Why is it that you have made these changes? (Specify)
59. Do you have any type of insurance cover on your home and property?  
 YES                      NO  
 If YES: What exactly does your insurance policy cover? (Record)  
 If NO: Do you have any particular reason for not insuring your home and property? (Record)



During our last survey, we asked questions about the amounts of money people received from various sources. Because some people had not received final amounts of money when we interviewed them, we need to ask those same questions again.

60. So would you mind telling me how much your family received from the Government under the personal hardship and distress category?
- No assistance received
  - No comment/will not say
  - Up to \$100
  - More than \$100 to \$300
  - More than \$300 to \$600
  - More than \$600 to \$1,000
  - More than \$1,000 to \$2,500
  - More than \$2,500 to \$5,000
  - More than \$5,000 to \$10,000
  - More than \$10,000
61. How much did your family receive from the Government for the restoration of your flooded home?
- No assistance received
  - No comment/will not say
  - Up to \$100
  - More than \$100 to \$300
  - More than \$300 to \$600
  - More than \$600 to \$1,000
  - More than \$1,000 to \$2,500
  - More than \$2,500 to \$5,000
  - More than \$5,000 to \$10,000
  - More than \$10,000
62. Did you receive any other assistance from Governments, e.g. under the Land Exchange Scheme?
- No other assistance received
  - No comment
  - Assistance received
- 63a. How much did your family receive from the Lord Mayor's Fund (Brisbane)?
- OR (if applicable)
- 63b. How much did your family receive from the Ipswich City Council Relief Fund (Ipswich)?
- No assistance received
  - No comment/will not say
  - Up to \$100
  - More than \$100 to \$300
  - More than \$300 to \$600
  - More than \$600 to \$1,000
  - More than \$1,000 to \$2,500
  - More than \$2,500 to \$5,000
  - More than \$5,000 to \$10,000
  - More than \$10,000

64. How much did various members of your family receive from voluntary organizations that were established to provide relief, e.g. employers, employees; churches, clubs, societies or other flood relief appeals?

No assistance received  
 No comment/will not say  
 Up to \$100  
 More than \$100 to \$300  
 More than \$300 to \$600  
 More than \$600 to \$1,000  
 More than \$1,000 to \$2,500  
 More than \$2,500 to \$5,000  
 More than \$5,000 to \$10,000  
 More than \$10,000

By the way, would you mind telling me approximately how much your family earns, i.e. the combined income of the head of the household and spouse (if working)?

Don't know  
 Will not say  
 Less than \$100 gross per week  
 More than \$100 to \$150 gross per week  
 More than \$150 to \$200 gross per week  
 More than \$200 to \$300 gross per week  
 More than \$300 to \$400 gross per week  
 More than \$400 to \$500 gross per week  
 More than \$500 gross per week

65. After a natural disaster, Emergency Funds are often established to assist people in financial distress. Do you think that in these circumstances, people prefer to obtain assistance from a special fund or from standard assistance programs?

Don't know  
 Special fund  
 Standard assistance programs  
 It doesn't matter

Why do you think this is so? (Not coded)

Apart from natural disasters, there are a variety of reasons for people finding themselves in financial difficulties: for example - sickness; unemployment; personal hardship.

Do you think that the Government should assist them all financially ON THE SAME BASIS or DIFFERENTLY?

Don't know  
 Same basis  
 Differently

If DIFFERENTLY: In what way? Why do you think so?

66. Would you mind telling us the level of education which each member of your family has attained?

	Head of Household	Spouse	Other
Not yet attending school or pre-school			
Pre-school only			
Completed pre-school attending primary school			
Completed primary school only			
Still attending high school grades 8-10			
Completed high school to grade 10 level			
Still attending high school grades 11-12			
Completed high school grade 12 level			
Attending university			
Attending other tertiary institution			
Completed university degree			
Completed studies at tertiary institution			
Other			

67. How long have you and the other members of your family lived in Australia?

	Never lived elsewhere	More than 20 years	10-20 years	5-9 years	2-4 years	Under 2 years
Head of household						
Spouse						
Other						
Other						
Other						
Other						

THANK YOU VERY MUCH. This is the end of the schedule but I wonder if you would mind helping us out by filling in these sheets? Could you fill in at least the first one while I am here? We would appreciate it if you could answer the following question. However, if the information is not available, or if you do not wish to provide the information, leave the question blank. It would be of considerable benefit to our study however, if you could answer this question:

What was the taxable income of your family for either or both of the following years?

	1972-73	1973-74
Husband		
Wife		
Other		
Other		

## APPENDIX B

TEXTS OF BRISBANE VALLEY FLOOD WARNINGS FROM 10.30 P.M.  
24 JANUARY, 1974 TO 5.00 A.M., 29 JANUARY, 1974, EXTRACTED  
FROM THE REPORT BY DIRECTOR OF METEOROLOGY (1974)

- Warning No. 1 Initial Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 10.30 p.m. 24.1.1974:
- Heavy rainfalls in the Upper Stanley River have been recorded in the 12 hours to 9.00 p.m. in association with the movement of Cyclone Wanda which at 9.00 p.m. was located 25 miles N.E. of Gympie and moving S.W. at 12 m.p.h. Minor flooding currently occurring around Peachester will increase overnight. Further heavy rainfalls are expected during the next 12 hours.
- Warning No. 2 Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 a.m. Friday 25.1.1974:
- Heavy flood rains have been recorded over the Upper Stanley River catchment overnight. Continued heavy falls are expected this morning as Cyclone Wanda moves S.W. River levels in the upper reaches at Peachester were rising fast late last night and flooding is expected downstream this morning.
- Warning No. 3 Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 11.00 a.m. Friday 25.1.1974:
- Heavy rains averaging 230 mm were recorded in the 24 hours to 9.00 a.m. in the Stanley River. Moderate to major flooding is occurring in the Stanley River. Very heavy to flood rains are expected over all tributaries of the Brisbane River in the next 24 hours. Flooding and traffic disabilities are expected throughout the Brisbane Valley and tributaries by tomorrow.
- Warning No. 4 Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 p.m. Friday 25.1.1974:
- Heavy rains have continued in the 6 hours to 3.00 p.m. but rains are expected to ease slowly overnight in the Brisbane River and tributaries. Flooding is now easing in the Stanley River, however the Upper Brisbane, Lockyer and Bremer River tributaries are rising and continued rises are expected tonight. Some flooding and traffic disabilities are expected and the Murrumba bridge on the Brisbane Valley Highway is expected to remain closed for the next 24 hours.

- Warning No. 5      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 a.m. Saturday 26.1.1974:
- Heavy rainfalls up to 127 mm at Moore in the 18 hours to 3.00 a.m. have been recorded in the Brisbane Valley and tributaries and further heavy falls are expected in the next 12 hours. River levels are rising in the Bremer River, Lockyer Creek and Upper Brisbane. Moderate to major flooding is expected today in these streams. In the Brisbane River Middle Reaches minor flood levels are expected to increase in the next 12 hours. Moderate flooding is expected to increase at Ipswich today. In the Brisbane Metropolitan area, the effects of Upper Brisbane river runoff, Metropolitan creek runoff and an apparent Moreton Bay Tide height of approximately 1 metre above predicted heights, is expected to cause moderate flooding of low lying areas on the high tide at about midday in the city area.
- Warning No. 6      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 7.00 a.m. Saturday 26.1.1974:
- Heavy rainfalls up to 127 mm at Moore were recorded in the 18 hours to 3.00 a.m. in the Upper Brisbane River, Lockyer Creek, and Bremer River. Moderate to major flooding is expected today in these streams and increasing minor flooding in the Brisbane River Middle Reaches. Moderate flooding is expected to increase at Ipswich today. A height of 14 feet is expected at the Brisbane Port Office gauge on the high tide at 12 noon today. This is similar to the flood peak of 1931. Moderate flooding will be experienced.
- Warning No. 7      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 11.00 a.m. Saturday 26.1.1974:
- Heavy rainfalls averaging 80 mm to 120 mm were recorded over the Brisbane River tributaries in the 24 hours to 9.00 a.m. Major flood levels are rising in the Upper Brisbane River, Lockyer Creek and the Bremer River areas with widespread traffic disabilities. Moderate flooding is expected in the next 24 hours in the middle reaches of the Brisbane River. Major flooding is expected in the Ipswich area overnight. Minor flooding only is now expected in the Brisbane River, on the high tide at midday today.
- Warning No. 8      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.30 p.m. Saturday 26.1.1974:

Major flooding is occurring in the Bremer River, Lockyer Creek and Upper Brisbane River and further rises are expected in these rivers. Moderate flooding is increasing in the Brisbane River Middle Reaches. A height of 16 metres (52' 6") is expected at Ipswich between Midnight and 6.00 a.m. Sunday, with major flooding. At the Brisbane Port Office a height of 4 metres (13') is expected on the high tide at about midnight tonight and a height of 4.6 metres (15') on high tide at midday Sunday with moderate flooding. At Darra a height of 8.2 metres (28') is expected late morning).

Warning No. 9      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 1.00 a.m. Sunday 27.1.1974:

Major flooding is increasing tonight in the Bremer River, Warrill Creek and Lockyer Creek. Major flood levels are falling in the Upper Brisbane River but further rises are likely. Moderate flooding is increasing in the Brisbane River Middle Reaches. Major flooding is increasing at Ipswich and a peak of 18.3 metres (60 ft) is expected at about 6.00 a.m. Sunday. A height of 4.6 metres (15 ft) at the Port Office is expected on the high tide around midday today which is approximately 1 metre (3 ft) higher than the level at midday Saturday. Moderate flooding is expected along the Brisbane River in the city.

Warning No. 10      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 a.m. Sunday 27.1.1974:

Major flood levels continue to rise in the Upper Brisbane River and Lockyer Creek. A peak of 7.32 metres (24 ft) was reached at Rosewood at about 9.00 p.m. Saturday but at 5.00 a.m. today at Harrisville on Warrill Creek major levels are still rising. At 5.00 a.m. today the Ipswich height was 19.05 metres (62' 6") rising slowly and near its peak with major flooding. A height of 11.6 metres (38 ft) is expected at Darra wharf at midday today. At the Port Office a height of 17 feet is expected at high tide at about midday today with major flooding. This is 1.5 metres (5 ft) higher than the height observed at midday Saturday. At Tennyson Power Station the height at midday today is expected to be 3.35 metres (11 ft) higher than at the height at midday Saturday and at Darra Wharf the height at midday is expected to be 4.57 metres (15 ft) higher than at midday Saturday.

Warning No. 11      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 1.30 p.m. Sunday 27.1.1974:

Major flooding continues in the catchments of the Bremer, Lockyer Creek, Upper Brisbane River and Brisbane River Middle Reaches. Brisbane River levels are expected to continue to rise today and a height of 19.5 feet is expected at the Port Office by midnight tonight, and a height of 21 feet is expected at the Port Office by mid-morning tomorrow, Monday with major flooding increasing. Tonight's height at the Port Office by midnight is expected to be 2 feet 6 inches above the height at high tide at about midday today. At Ipswich the height at 12 noon was 19.58 metres (64' 3") and rising very slowly. Major flooding is expected to continue in the Ipswich area overnight.

Warning No. 12      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 6.00 p.m. Sunday 27.1.1974:

Further rains are expected throughout the Brisbane River catchment again tonight although not as heavy as the past 24 hours. Major flood levels continue to rise throughout the Brisbane River and major flooding is widespread. The Brisbane River is expected to continue rising tonight and reach a height of 20 feet at the Port Office by midnight tonight with further rises continuing tomorrow. The height at Ipswich is 19.61 metres and falling slowly and major flooding is expected to continue in the Ipswich area overnight.

Warning No. 13      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 9.00 p.m. Sunday 27.1.1974:

Further rain is expected throughout the Brisbane River catchment again tonight although not as heavy as the past 24 hours. Major flooding is occurring throughout the Brisbane Valley and will continue tomorrow although major flood levels are falling slowly at Ipswich. The Brisbane River at Moggill was 20 metres (65' 7") and rising at 8.00 p.m. and downstream at the Brisbane Port Office the height is expected to exceed 6.10 metres (20 ft) overnight and reach 6.7 metres (22 ft) by 12.00 noon tomorrow being 1.52 metres (5 ft) higher than the peak height recorded today at 12.45 p.m.

Warning No. 14      Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 a.m. Monday 28.1.1974:

Little rain has been recorded over the Brisbane River catchment overnight and only light rain is expected today. The Brisbane River major flood peak is expected at Mt Crosby this morning and relief from major flooding in Ipswich will not commence until the peak moves into the lower reaches below Moggill this afternoon. A peak of 17.68 metres (58 ft) is expected at Goodna by 3.00 p.m. this afternoon whilst



further downstream at the Brisbane Port Office the height is expected to reach 6.4 metres (21 ft) by 12.00 noon followed by a peak of 6.7 metres (22 ft) during the early morning of Tuesday 29th January. Widespread major flooding of low lying areas adjacent to the river is expected to continue.

## Warning No. 15

Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 2.00 p.m. Monday 28.1.1974:

Major flood levels are now receding throughout the Bremer River catchment and the Brisbane River above Mt Crosby. At 10.00 a.m. today the height at Mt Crosby was 65' 0" (19.91 metres) and stationary. At 12 noon the height at Ipswich was 64' 6" (21.08 metres) and at its peak. At the Brisbane Port Office a height of 21 ft (6.4 metres) was reached at 1.30 p.m. A Port Office height not exceeding 22 ft is expected on the high tide between 1.00 a.m. and 2.00 a.m. Tuesday 29th January. This is one foot higher than the height observed at 1.30 p.m. today at the Port Office at the lower end of Edward Street, City. River levels will remain fairly stationary between 2.00 a.m. and 4.00 p.m. on Tuesday.

## Warning No. 16

Renewal of Flood Warning Brisbane Valley issued by the Bureau of Meteorology, Brisbane at 5.00 a.m. Tuesday 29.1.1974:

The main peak of 21' 8" occurred at 2.15 a.m. at the Brisbane Port Office and flood levels will recede slowly reaching successively lower peaks on the high tides. All major flood levels are now falling. At 4.30 a.m. the Brisbane River at Mt Crosby was 54' 10" (16.71 metres). At 5.00 a.m. the Brisbane River at Ipswich was 60' 10" (18.54 metres) and at 3.00 a.m. at Moggill the height was 66' 9" (20.35 metres). On the next high tide at 2.00 p.m. this afternoon the Brisbane River at the Port Office will be approximately 20' (6.1 metres). This will be 1' 0" below the previous peak at 1.00 p.m. on yesterday's high tide.

APPENDIX C

NEWSHEETS NUMBERS 1 TO 6

Newsheet 1:            Sunday Mail, 27 January, 1974

Newsheet 2:            Courier-Mail, 29 January, 1974

Newsheet 3:            Courier-Mail, 28 January, 1974

Newsheet 4:            Courier-Mail, 29 January, 1974

Newsheet 5             Courier-Mail, 29 January, 1974

Newsheet 6             Courier-Mail, 30 January, 1974.

# GREAT FLOOD KILLS THREE, DAMAGE IN MILLIONS



## More rain coming

AS Brisbane's great Australia Day floods began to recede last night the Brisbane Weather Bureau issued new rain warnings.

The Bureau said floods were expected to be as bad as those which devastated the city on Friday night.

The floods, from the wettest Brisbane day for 87 years, were trapped in already swollen Brisbane streams by a tidal surge which added 1.5 metres to forecast heights.

The Tropical Cyclone Warning Centre in Brisbane issued this Priority Gale Warning at 10 p.m. last night:

"A trough lying across the coast north of Brisbane, together with a 1026mb. high near New Zealand, is expected to maintain 30 to 40 knot east to north-east winds (55-75 km/hr) with stronger squalls between Cape Moreton and Coochin-gatta for at least the next 12 hours."

In 24 hours, 314 millimetres of rain had fallen.

The floods left at least three dead and four missing and a damage bill that State authorities estimate will run to millions of dollars.

After a late morning and afternoon lull, heavy rain again hit the city from about 6 p.m.

The Bureau said more rain with heavy falls were expected during the night.

Between 8 p.m. and 10 p.m., 52.5 millimetres were recorded at the Bureau.

Wind gusts of more than 80 kilometres an hour were recorded.

In yesterday's flooding the biggest ever emergency evacuation in Brisbane was mounted with police, civil defence authorities, the Army and Air Force combining to rescue more than 500 flood-bound residents.

It was Brisbane's Dutt-kirk.

Hundreds of small craft worked the flooded suburban streets carrying householders to high ground and safety.

RAAF Iroquois helicopters flew mercy missions in the metropolitan area.

They winched people from tree-tops near Bundamba and roof-tops at Inala and Blackstone.

The Prime Minister (Mr. Whitlam) ordered the Science Minister (Mr. Morrison) to Brisbane to report on the disaster.

Late yesterday, the full impact of the devastation became apparent as streams that had been running in flood for more than 36 hours began to fall.

Houses were ripped off their stumps, steel walls of factories were torn open and luxury craft were smashed to match-wood in Breakfast Creek.

Most major Brisbane roads were still closed last night.

The repair bill for pothole damage will be enormous.

The floods and torrential rain yesterday morning paralysed the city.

The two airports were closed, train services were slashed, council bus services were disrupted.

### Black-out

Suburbs were blacked out as power lines were felled by gale force winds, and hundreds of homes lost phone services.

Police appealed to motorists to keep off the roads.

Two caravan parks, one at Newmarket and the other at Gailles, were left in a shambles.

Four people were missing after their caravans had been swept away from Woogaroo caravan park at Gailles.

Police fear they may have been trapped in their caravans.

One hundred vans were swept away, when Wo-

garoo Creek broke its banks.

One of the floods' first victims was a baby boy who was swept from his father's hands at Oxley Creek near Inala early yesterday.

He was Shane David Patterson, 2, of Hyde Road, Yeronga.

The baby's mother and father were rescued after their car was washed into Oxley Creek.

The second flood death occurred as rescuers were evacuating a middle-aged man from the flood-ravaged Newmarket caravan park.

He was Mr. Robert Adams, 54, who collapsed and died apparently from a heart attack.

### The cost

Rescuers discovered the body of a middle-aged man floating in floodwaters in the premises of a motor dealer in Bowen Bridge Road, Windsor.

The man had not been identified last night.

Police last night were searching for a schoolgirl missing in the Moorooka area.

Dressed in corduroy pants with shirt sleeves rolled up, the Premier (Mr. Bjelke-Petersen) yesterday toured hard-hit flood areas at Ashgrove, Windsor, and Newmarket.

He said Brisbane damage would run into millions of dollars. The State Government would treat the flood ruin as an emergency situation.

Mr. Bjelke-Petersen said: "There has been tremendous devastation. We saw flood debris on the roofs of some homes. It is unbelievable that the waters could have gone as high."

Later yesterday he made an aerial inspection of flood damage in the metropolitan area.

Many pleasure boats were torn from their moorings by the wall of water which rushed down Breakfast Creek about 3 a.m.

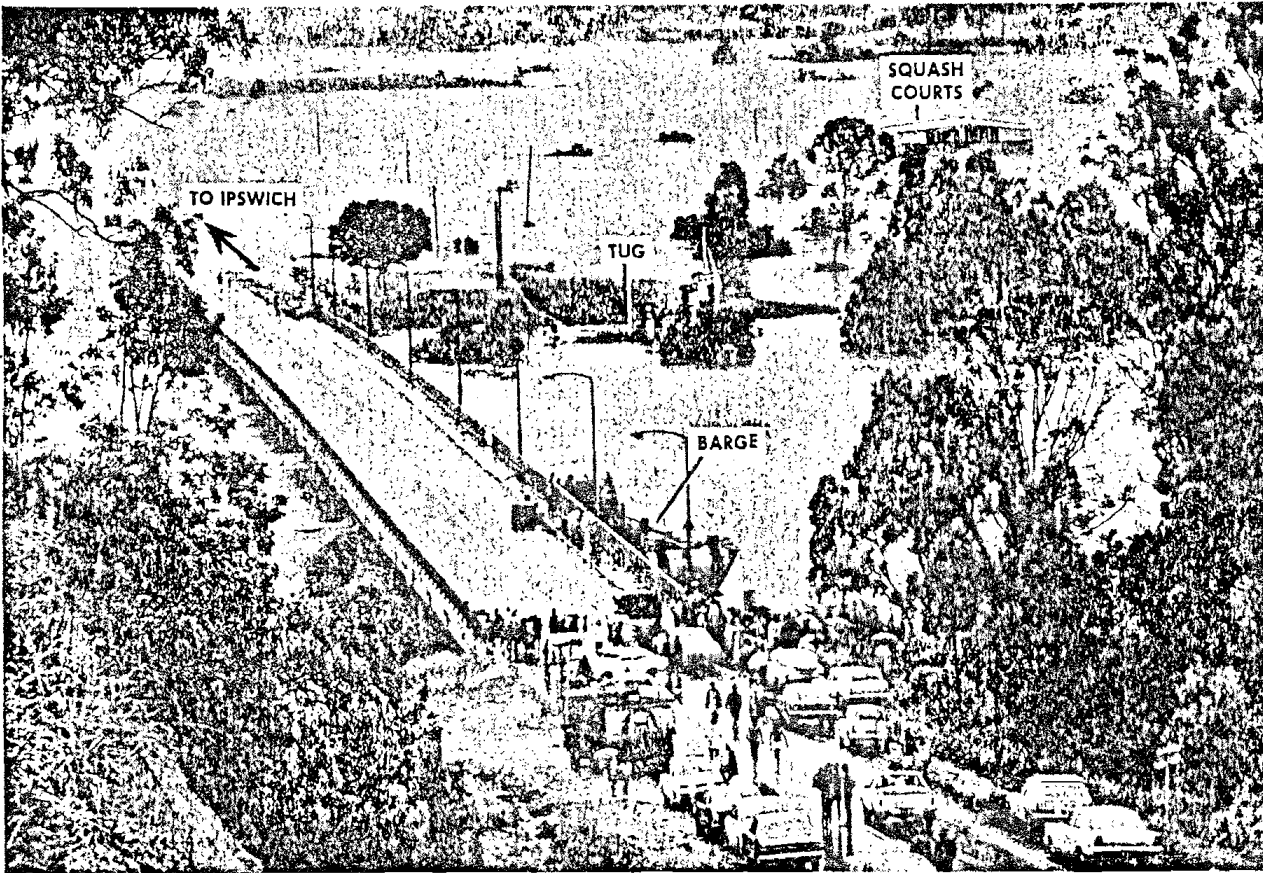
Brisbane businessman, Mr. George Pickers, 65, and his wife, Lorna, watched as their 13 metre luxury diesel launch, Royce, was smashed against Breakfast Creek Bridge.



**CONCERNED PREMIER** (Mr. Bjelke-Petersen) after his aerial inspection of flood ravaged Brisbane leaves the Army Kiowa helicopter in which he made the inspection. Earlier, Mr. Bjelke-Petersen had toured hard-hit suburbs.

# CRISIS TO LAST FOR DAYS

## CITY'S FLOOD FIGHTERS ARE WEARY



BRISBANE'S overworked emergency services were faltering last night as State Government authorities warned that the beleaguered city's flood crisis could last for several more days.

The Brisbane River has been rising continually in the upper reaches since the flood emergency began three days ago and it is expected to rise to more than six metres (21ft. 6in.) at the Port Office about noon today.

This compares with a maximum of nine metres (29ft.) in the 1893 flood.

The Brisbane Weather Bureau last night predicted more rain — on top of the 839 mm (33in.) that had fallen from 9 a.m. on Wednesday until 8 p.m. yesterday.

Most State and private primary and secondary schools will not open until February 4 — a week late.

University supplementary examinations have been put back a week to Feb. 5.

The floods have crippled the city, leaving thousands of residents homeless, suburbs isolated and essential services disrupted.

At 11 o'clock last night the South-East Freeway and Victoria Bridge were impassable.

Hundreds of exhausted emergency personnel — including police, the military and volunteers — worked throughout yesterday combating the floods which have affected one-third of the city and claimed four lives.

The Police Commissioner (Mr. Whitford) yesterday announced that the continuing crisis had compelled authorities to adopt a long-

range plan to cope with the situation.

He said he would order a 21-man immediate stand-down of one-third of the city police force to conserve manpower and equipment.

Until late last night the full strength of the force had been involved, and many officers were suffering from fatigue from the endless rescue operations.

"The force has been stretched to its utmost," Mr. Whitford said.

"If we'd known this situation was going to last more than 72 hours, we'd have conserved our forces earlier."

The State Government authorities have been told that their use of some RAAP helicopters may soon be restricted because of maximum safety service periods have been reached.

Barrels of other chemicals — which explode on contact with water — were reported to be floating down the river after floodwater swept through a Rocklea chemical plant.

Brisbane's telephone services have been overtaxed during the crisis and thousands of subscribers are without telephone communication.

A P.M.G. Department spokesman said four exchanges had been closed by floodwater and in the Strathpine area one breakdown had disrupted services to about 1200 subscribers.

The department urged people not to use their telephones unless the call was urgent.

The raging flood tore several ships from their moorings in the Brisbane River.

At 8 p.m. the 24,385-tonne (24,000-ton) cruise liner Paris broke her moorings at Calmarcross Dock wharf and drifted into midstream.

The plight of the city grew worse yesterday as one of the power stations, Tennyson, was shut down when floodwater swamped its main base-

A Southern Electric Authority spokesman said that staff were having difficulty reaching Swanbank — the main power supplier for the south-east Queensland grid.

He said some staff members were rescued by helicopter after their vehicle became stranded in the attempt to reach the station. The spokesman said the Bullimba station was still operating.

At least 17 suburbs have been blacked out by electricity supply failures.

Power to some of the suburbs has been cut off for safety reasons. At least four sub-stations in the metropolitan area are swamped.

At 9 o'clock last night, the Premier ordered all external lighting switched off at State Government buildings in Brisbane.

Brisbane's gas supplies have been reduced to thousands of homes, mainly in flood areas.

Thirty soldiers were sent to the Newstead power station last night when floodwaters threatened to cut the whole city's supply. The soldiers packed sand bags throughout the night.

The water lapped within 3 metres (10ft.) of the gas generators before the soldiers of the 2 Engineers Regiment started work on the levee.

One gas company spokesman said there were fears of gas leaks in some suburbs when the floodwater receded.

Some areas of the city were also without reticulated water. Malfunctioning of sewage systems was also reported.

The 32,000-tonnes barge was being towed by BHP wharf after "touching" the bottom on the south bank of the river at Colmslie.

Earlier in the day the Centenary Highway Bridge was backed when a drifting barge was smashed against it by the flood.

Police ordered the barge to be sunk before it carried away the bridge. The 32,000-tonnes tanker, Robert E. Miller, broke from its Kangaroo Point moorings about 5 a.m. and went around about 500 metres downstream.

### Troops build sandbag walls

LATE last night soldiers from Enoggera barracks were building sandbag walls to protect two important city properties from flooding.

One wall was going up around the central telephone exchange in Elizabeth Street which is an essential communications link for the city.

The second wall is being built on the bank of the Brisbane River in Bowen Street, where the vaults contain millions of dollars in notes.

Police said both buildings would be threatened if floodwaters reached 4.81 levels.

The Brisbane River is expected to reach a height of more than 4 metres (21ft. 6in.) at the Port Office about noon today. The 1893 height was 9 metres (29ft.).

Federal Transport Department officials said last night that Brisbane Airport could be closed by midday today.

One main runway had been undermined by floodwater and further flood rises threatened the remaining main tarmac.

Among the scores of rescues yesterday was that of a dangerously ill pregnant woman who was taken by Army helicopter from Wolston Park to the Royal Brisbane Hospital.

Civil defence and police last night mustered 12 speed boats to rescue 45 people stranded in the rising flood at Jindalee.

At Pallara, on the south side of Blunder Road, trucks, graders and end loaders were commandeered to evacuate 100 people from homes.

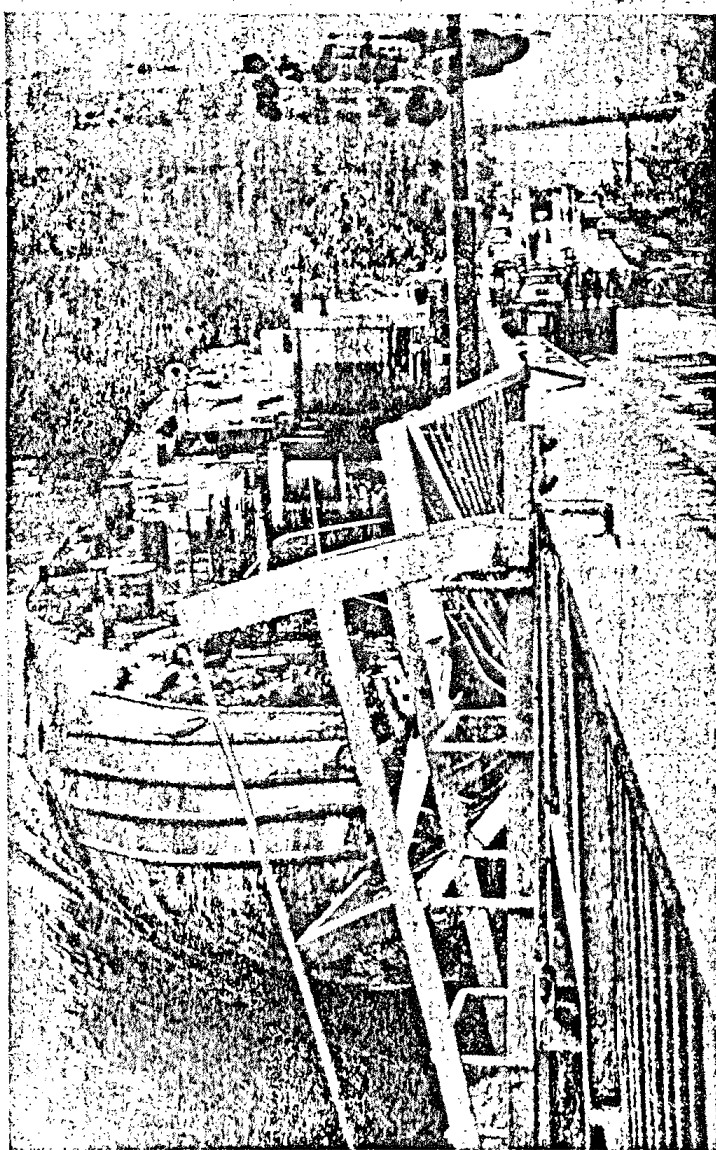
At Indooroopilly 100 people ranging in age from infants to 80-year-olds sheltered at Nudgee Junior College.

The people were refugees from Twigg and Whitton Streets where houses are covered by water up to 25ft. deep.

The refugees ate by candle light last night. Power to the college had failed.

ROAD TO NOWHERE was the Centenary Highway Bridge at Jindalee yesterday. The bridge was threatened by floods and a big gravel barge which crashed against the upstream section yesterday morning. It was closed to motorists and pedestrians, except rescue workers and police. A City Engineer's Department spokesman said four pylons had been damaged. A central girder of the bridge is believed to have cracked under pressure of the barge and floodwaters.

### Job for dynamite



TWISTED RAILINGS show the force of the impact of the gravel barge against the Centenary Bridge at Jindalee yesterday. Four charges of dynamite were placed in the barge in an attempt to sink it. The vessel stayed afloat until last night, when it passed under the bridge and sank downstream.

### DEATH TOLL NOW IS 4

The flood death toll has risen to four, with the flooding of a man's body in a creek at Deayboro.

His name had not been released last night.

Other deaths occurred on Saturday, including that of a two-year-old baby, swept from his father's hands at Oxley Creek, near Inala.

He was Shane David Patterson, of Hyde Road, Yeronga.

Mr. Robert Adams, 60, died of a heart attack while being evacuated from Newmarket caravan park.

### No limit to Federal aid for victims

CANBERRA. — Unlimited Federal funds are to be provided for flood-stricken areas of Brisbane and Queensland.

The Acting Treasurer (Mr. Hayden) yesterday postponed an overseas trip until he learned what assistance the Federal Government could give.

He said that the Government would make personal hardship grants on a dollar-for-dollar basis with State Government grants.

No limit would be placed on Federal assistance.

On Saturday, the Prime Minister (Mr. Whitlam) promised urgent Federal attention to Queensland's flood problem.

Mr. Hayden said that the Queensland Government had the organization and the experience to administer relief grants.

The Federal Government would keep in close touch with State authorities.

### Stranded

Mr. Hayden was stranded in Ipswich yesterday by floods, but he will inspect other flood areas when the roads clear.

He said he would arrange for Social Security Department assistance to State Governments if the assistance was necessary for relief.

Social welfare officers could be sent from other States to assist.

The Federal Government was ready to offer all assistance necessary to State authorities.

Mr. Whitlam sent the Science Minister and acting Defence Minister (Mr. Morrison) to Brisbane on Saturday to inspect flood damage.

He worked closely with the Premier (Mr. Bjelke-Petersen) and the State Opposition Leader (Mr. Houston) in determining the areas of greatest need for service activity.

Mr. Morrison has asked the armed forces to meet

### Lord Mayor's Appeal

AN appeal for Brisbane flood victims has been opened.

The Lord Mayor (Alderman Clem Jones) announced last night that the appeal would provide funds for those victims not eligible for State or Federal aid.

The appeal was opened with a \$1000 donation from Brisbane Wharves and Wool Dumping Pty. Ltd.

Alderman Jones said donations could be sent to:

Lord Mayor's Flood Disaster Appeal, City Hall, Brisbane, 4000.

all requests from Queensland civil defence organization to help with flood relief.

Mr. Morrison said he expected to give a full report of his visit to the acting Prime Minister (Mr. Barnard) today.

### Water plea

Brisbane City Council works committee chairman (Alderman Lynch) early this morning asked Brisbane people to restrict water usage after a major electricity failure affected the Mount Crosby pumping station.

Engineers said the situation could be out of action for two days or more.

# Worst flood since 1893 hits Ipswich

**IPSWICH last night was reeling under the impact of the worst flood to strike the city since the 1893 disaster.**

Authorities have lost count of the number of people who have evacuated their homes, but believe the total is more than 1000.

**At least 300 houses in six suburbs have been abandoned, and have been badly inundated or destroyed by the relentless muddy torrents.**

One coal mine, Moreton Extended, was covered by the floods and "exploded."

Overall property damage is expected to exceed \$3 million.

The swollen Bremer River yesterday reached a height of 19.6 metres (64ft. 5in.) at 1.30 p.m.

By dark, the river had shown no sign of falling.

## 'Out on feet'

There were unconfirmed reports of another huge body of water sweeping down towards the city.

A senior police officer commented: "People are just about out on their feet."

"They've been working non-stop for more than 24 hours. They can't take much more."

Four of the district's major coal mines went under water.

They are Moreton Extended, owned by Ry-lance Collieries, West-falen (Kathage Bros.), Haighmore (Tivoli Col-leries) and Aberdare No. 6 (Aberdare Collieries).

Other mines are known

to have serious water damage.

Chief Inspector of Mines (Mr. W. Roach) said the Moreton Extended explosion was a pressure blast.

Water seeped into the mine through a weak spot in the overburden.

Gradually, the flow increased until the entire mine was flooded and air and gas pressure then "blew."

## Crater

Mr. Roach said a small office building and a car disappeared into the huge crater.

He said he believed it might be six weeks before the mines were pumped out and back in production.

Coal Board chairman (Mr. A. Crowley) said the Ipswich mines had the contract to supply the Swanbank Power Station which needed 52,000 tonnes (51,000 tons) a week.

He said the station had reserves for a few weeks.

But it might be necessary to use the men from the flooded mines to augment the production of those mines still operating.

It would be a few days before the position could be assessed.

## 'Aerial taxi'

Helicopters from the isolated Amberley R.A.A.F. base began rescue and evacuation missions at first light yesterday.

They plucked people from the tops of houses, off the roofs of cars and trucks, out of flooded paddocks and even off fences.

A RAAF spokesman said: "We've got quite a few strangers staying with us on the base tonight."

"I don't think anybody bothered to count how many people were rescued."

"The helicopters simply acted like an aerial taxi service... they would be given a pick up,

and when that was finished, another one.

The spokesman said that only two helicopters were available when the rescues began.

A third craft came into use later in the afternoon.

Yesterday, the base — which is "home" for the RAAF's latest and most powerful air armada, the F111s — was inoperable.

All landing surfaces were covered by feet of water as two local creeks, the Purga and Worrell, broke their banks, merged into a 5.7 km (3½-mile) stream and swamped the whole district.

By dark, some "islands" were starting to appear on the strip, but the base could be out of action for another 48 hours while the accumulated rubbish from the flood is cleared off.

## Worst hit

Ipswich district police chief (Inspector J. V. McCarthy) said the worst hit suburbs had been Basin Pocket, Erassall, Wood End, West Ipswich, Booval, Bundamba and Bergin's Hill.

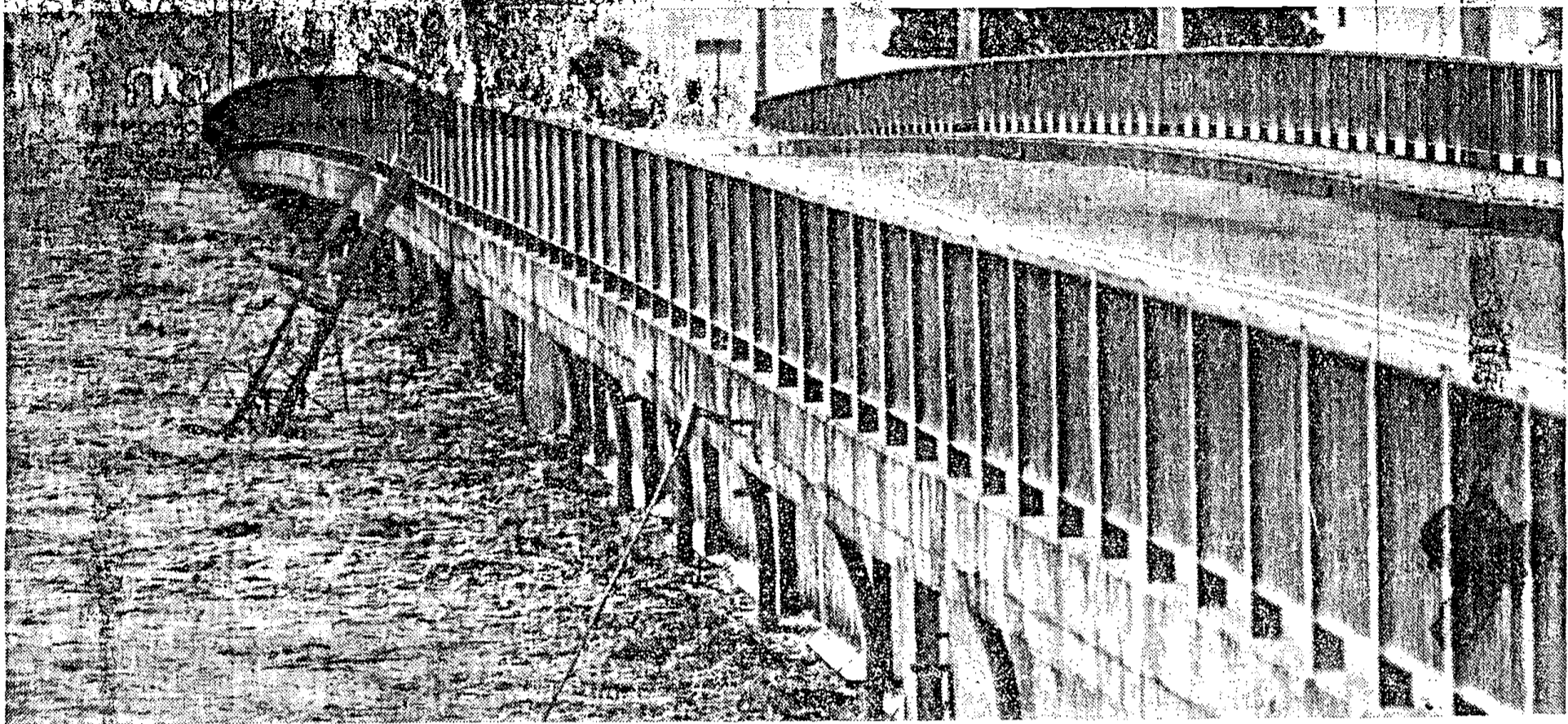
Scores of homes were submerged.

Inspector McCarthy said many hundreds of people had been cleared out of these areas.

He said the city had responded magnificently to pleas for help.

As far as he knew, not one person was without shelter.

# WATERY INVASION OF JINDALEE



**BRIDGE** to nowhere. (Top picture). This was the Centenary Bridge at Jindalee yesterday, as Brisbane River floodwaters rose to near-record height, and below, a modern house was another flood victim.

## FUEL EXPLOSION A THREAT NOW

**THE** flood-besieged suburb of Jindalee, starved of food and all but isolated, now faces a new threat — a petrol explosion.

Flooding was reported to have displaced hundreds of gallons of petrol from storage tanks at a Curragundi Street service station.

Rescue workers said petrol swirling around with the water was vaporising and posed a serious explosion threat.

People who helped ferry in essential supplies to the suburb spoke of some streets of Jindalee "reeking" of petrol.

Meanwhile residents and police yesterday commandeered heavy machinery in an effort to break through the flood barrier threatening the suburb.

The residents began bulldozing an emergency road from the western side of the suburb through bushland to a dry section of the Centenary Highway.

This would give them

access to supplies at Oxley and other western suburbs.

Before the floods, the heavy machinery had been used on roadworks connected with residential developments in the area.

### Solid link

Early reports were that the bush track, believed to be almost a kilometer (six-tenths of a mile) long, was fit only for four-wheel drive vehicles, but offered a solid land link with the outside.

While the construction was taking place, Civil Defence workers were ferrying food and supplies by boat into the suburb.

Other equipment, particularly gas cylinders for cooking, was being taken in by people from adjoining suburbs.

More than 100 refugees from the Witten Road and Twig Street area of Indooroopilly watched from the sanctuary of the Nudge Junior College as water engulfed all but the rooftops of the few homes still visible at dawn yesterday.

The head of the school (Brother Hopgood) told the homeless "You are welcome as long as the emergency lasts".

Brother Hopgood said later that the school would not open until next Wednesday.

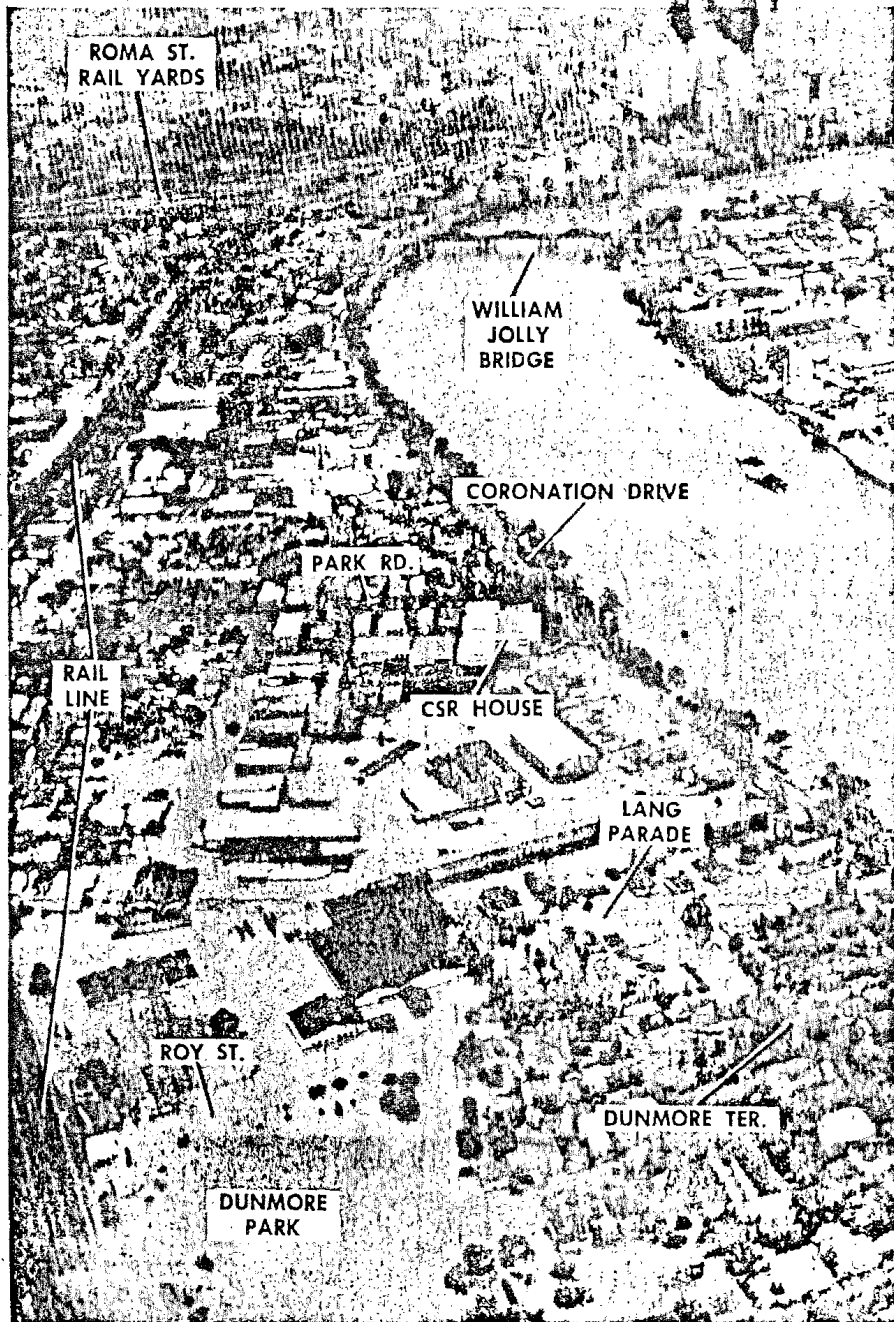
# RESCUE DISASTER AS FLOODS HIT

## EXCLUSIVE AIR PICTURES

# NEW TOP City almost at standstill

# 1 dead, 1 missing in Army tragedy

# Floods worry sports stars



**THE Brisbane River's massive floodwave early today began its surge through the city's already-ravaged areas and authorities warned that the disaster level would not fall until late this afternoon.**

Rescue craft last night were operating by searchlight to move scores of people trapped in flooded suburbs as the river height reached 6.7 metres (22ft.) — 4.2 metres (14ft.) above normal.

The rescue operations followed another day of heightening crisis in many suburbs as police and volunteers evacuated 600 more flood victims from their homes.

The worst floods this century claimed more lives bringing the State death toll to eight dead and two missing.

## 8 flood deaths in State

Eight people have died in Queensland's floods in the last six days.

The body of a man was found floating near Arnprior's biscuit factory in Coronation Drive, Milton, yesterday morning.

Another man's body was recovered in the St. Lucia area on Sunday, and a third was found floating in a car sales area at Windsor on Saturday.

Police had not named the victims last night. Robert Adams, 58, died from a heart attack during evacuation of a Newmarket tennis park. Ghada David Patterson, 57, of Yeronga, was swept from his father's arms at Oxley Creek, near Inala.

Jim Scherger, stockman, died at Urangangie on Friday afternoon. Last Thursday a man was found floating in a dam at Mt. Isa.

Two other men are missing. One is believed to have drowned in yesterday's Army tragedy near Kenmore and a chemist is believed to have drowned on Sunday when his car was swept away at Saddler's Crossing at Ipswich.

The raging Brisbane River continued to rip the heart out of the near-crippled city, tearing vessels from their moorings and washing into more than a dozen suburbs causing disruption to essential services.

Several areas were without electricity, water, and gas, hampering the city, cutting most major roads and badly damaging scores of others. The city's commuters face a grim task this morning getting to work because bus and rail services are restricted severely.

The city's commuters face a grim task this morning getting to work because bus and rail services are restricted severely. Some major city department stores have told their employees to stay home.

There were fears last night that the floods may cause a food shortage.

Huge quantities of food were lost yesterday when warehouses escaped warehouses in the Brisbane and Ipswich areas.

Water feet deep flowed through parts of the inner city causing huge losses to stores and warehouses in the Mary Street-Albert Street area.

Soldiers and firemen worked for hours pumping water from the main Edison telephone exchange in Elizabeth Street where floodwater threatened to ruin equipment.

Police cracked down on the crowds of spectators who ignored appeals to them to stay off the roads.

AN ARMY corporal is dead, a captain is missing believed drowned and three men are in the Royal Brisbane Hospital badly burned after a flood tragedy near Kenmore yesterday.

The men were members of a rescue and relief team operating in an army LARC amphibious vehicle that hit high tension wires in the Bellbowrie area about 4 p.m.

Three Army helicopters flew the dead man and the injured to the Royal Brisbane Hospital where they were in satisfactory condition last night.

Killed was CMP Corporal Neville Barry Hourigan, married, of Sunnybank.

Missing is Captain I. G. Kerr, married, of Alderley.

Also on board the LARC were Major B. C. Risell, married, of Stafford, who was the most seriously burned; Mr. Tony Johnson, of Moggill, burned; Mr. Glen Buttle, of Moggill, burned; Mr. Kenyon, of Kenmore, burned; Mr. Lickiss, M.L.A. (Lib., Mt. Cootiba) of Orestonia Avenue, Brookside; and a doctor.

Mr. Lickiss has minor burns on an arm.

He said last night the LARC was operating with two others in the Bellbowrie-Moggill-Kenmore area, from noon, surveying the area for future flood pick-up and delivery depots.

He said: "We picked up a man, his bed-ridden grandfather, 85, and his two children and another family of a man, his wife and baby from Road and the Moggill side of Bellbowrie."

"The LARC passed under several dead high tension wires on the way back."

"One minute I was in the LARC and the next I was thrown about 15 yards out of it," Mr. Lickiss said.

But police said most southern and western suburbs had been affected.

Some of the people moved by boat during the day had only just returned to their flood-ravaged homes when the waters rose again, trapping them.

More than 30 relief centres operated in the city last night to house and feed the flood victims.

Exhausted A police spokesman said: "Many of the rescue workers are exhausted. They've been working with only short breaks for four days and nights."

"The flood peak is expected to last throughout today and there's no sign of immediate relief for the flood victims."

The Brisbane City Council appealed to residents to restrict their use of electricity and water.



Mr. Lickiss

Mr. Lickiss is a member of the Kirra Surf Life Saving Club.

"It was the corporal—a big man of 14 or 15 stone," he said.

"He was still alive, he was breathing and looking at me so I grabbed him keeping his head out of the water and swam from the shock soon after he was on board."

"All of us in the front of the LARC really coped it. The people in the back were thrown down but only things that saved me, yet the corporal was wearing them too."

Cricketers In Adelaide, Queensland shield captain and Australian batsman Greg Chappell wants to get home to Brisbane as soon as possible. He is playing in the Third Test against New Zealand at Adelaide Oval. He wants to find out the condition of his flooded two-storey house in Kenmore.

He was told yesterday the floods had reached the upstairs living quarters of his \$60,000 house, near Moggill Creek, destroying or damaging furniture and fittings. He estimated the damage to be about \$5000.

In Perth, the Queensland shield cricketers made anxious long-distance telephone calls home throughout the day yesterday to check on the flood situation.

For at least two, the news was bad. Batsman Alan Jones went to the crease after learning that his late-model car had been washed away by floodwaters at Carina.

The car was badly damaged by water but Jones said that this would be covered by insurance.

Spin bowler Malcolm Franche heard that his half-finished home at Jindalee was submerged.

Copter call The two LARCs returned to Moggill Road, at Bellbowrie, where Mr. Lickiss called the Army for helicopters to evacuate the injured.

Three helicopters arrived. The first took the major and Mr. Buttle. Flares were fired to help the second and third helicopters land in the rain on a cleared patch alongside the road.

Electrified "The whole craft was electrified. People were moaning and screaming and there were sheets of flame and a sound of an explosion."

"The people at the front of the LARC were burned and I saw the major's shirt on fire."

"I was stunned and tried to inflate my M&S West, but couldn't and swam back towards the craft."

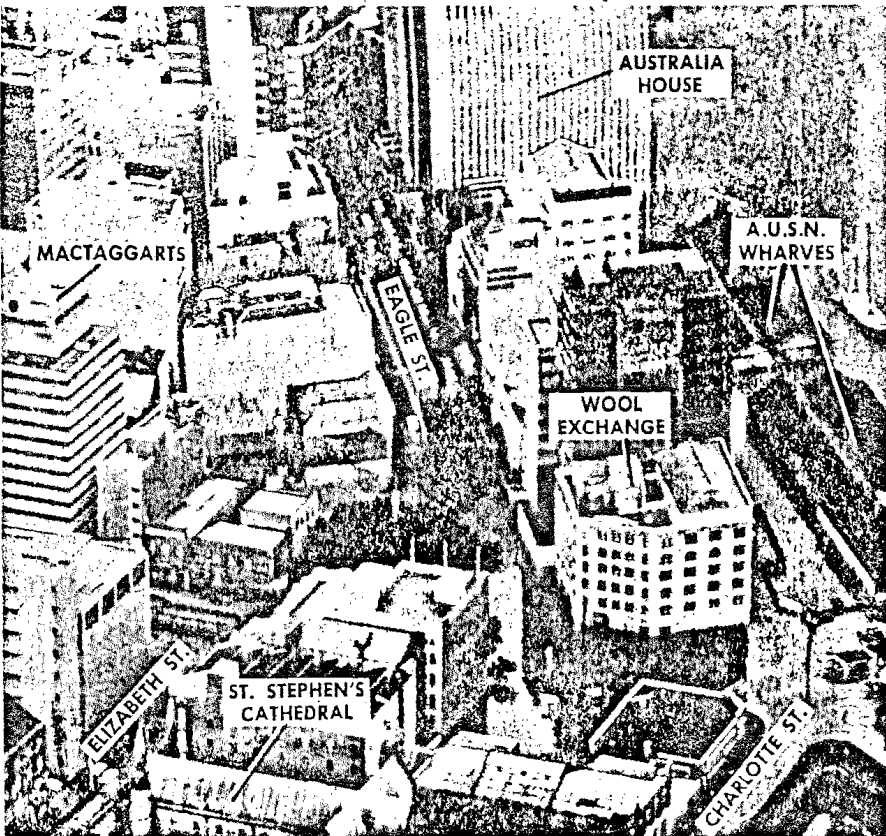
"I could hear people inside groaning, everyone received the shock."

Mr. Lickiss said he inflated his life jacket and clambered on board.

"It's hard to recollect what it was like," he said. "It was pandemonium, confusion."

"I remember someone from the other LARC, about 25 yards away, calling that there was someone in the water, so I dived in again after him."

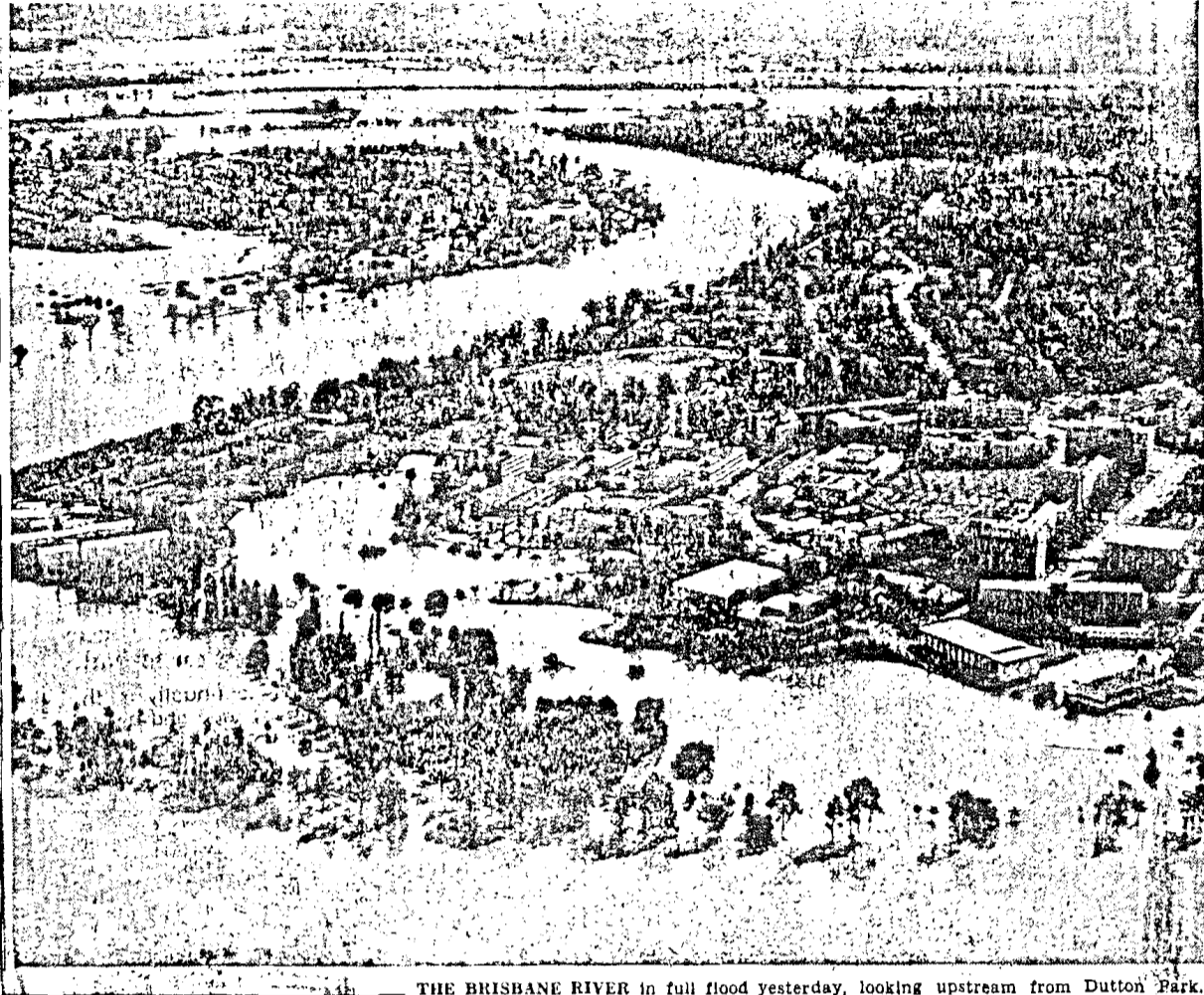
SPECIAL AIR PICTURES show the extent of the flood devastation in Brisbane. This view, taken from an aircraft over Toowong, looks over the flood-swept suburbs of Apcherflower and Milton to William Jolly Bridge and the City beyond.



AIR VIEW of the flooded commercial section of the city near Eagle Street. Water had spread beyond the Wool Exchange into Charlotte and Elizabeth Streets, and threatened the Edison Telephone Exchange, the light-colored building at left, almost opposite St. Stephen's Cathedral.

More flood pictures Pages 2, 3, 7, 8, 9, 10, 11, 15 and 16.

# THE GREAT BRAIN DRAIN



THE BRISBANE RIVER in full flood yesterday, looking upstream from Dutton Park. In the foreground is the Queensland University, St. Lucia. The area at left is the suburb of Yeronga West. In the distance are Long Pocket, the Oxley Creek mouth and the suburbs of Chelmer, Graceville and Sherwood.

## River is two miles wide

By a Staff Reporter who flew over Brisbane yesterday

**FLOOD-SAVAGED.** Brisbane was an incredible sight from the air yesterday.

The Brisbane River was more than 3 km (two miles) wide, spreading back from St. Lucia through the Jindalee area, and Oxley and Rocklea industrial suburbs.

As the afternoon flood peak reached the inner city area, the only traffic

access from north to south still serviceable was the Story Bridge. Dozens of houses showed their roofs through the water, but an unknown number were submerged or simply missing, as streets disappeared into the murky water.

Hundreds of others stood in water varying in depth from a few inches to many feet.

At St. Lucia the river immediately upstream cut straight across Long Pocket golf course.

Flooding in the lower parts of South Brisbane and between the Botanic Gardens and Queen Street gave some indication of the magnitude of the unseen damage to business premises.

In East Brisbane, the Church of England Grammar School was a virtual island caused by the bank-up in Norman Creek sending water into houses and through hundreds of residential allotments.

### Square only

Upstream from St. Lucia, a water stretched for miles along the river's flood plain as far as the eye could see towards Ipswich.

Hardest hit appeared to be Oxley and Rocklea industrial areas, and the residential areas of Jindalee, St. Lucia, Chelmer, Indooroopilly and adjoining riverside suburbs.

At Milton, the Queensland Lawn Tennis Association's court complex could be distinguished only by the square formed by upper sections of the grandstands around the centre court.

Lang Park, Brisbane's Rugby League headquarters, and the Aiblon Park race course resembled huge swimming pools.

In the Breakfast Creek area, it was difficult to pick out the course of the creek, lost in a swirling mass of water which backed up through business premises right back to Perry Park.

Debris from houses,

## P.O. mail spoiled

The Post Office has not been able to estimate yet how much mail has been spoiled in the floods.

The South Brisbane Post Office was reported completely flooded but most of the mail there was salvaged.

A spokesman said mail already sorted into private boxes up to Box 100 was immersed.

Mail that could not be delivered last Saturday was also damaged and much of it would be undeliverable.

The Post Office hoped to use Woolloongabba Post Office to deliver mail to areas of South Brisbane today.

## Tanker is damaged

The 62,000 tonne tanker Robert Miller had been extensively damaged since it broke its moorings on Sunday night, a spokesman for Evans Deakin said yesterday.

The spokesman confirmed that the ship had been holed in three places.

Each hole measured about 18 metres by 8 metres (6 ft. by 2 ft.).

Two 38 metre (125 ft.) steel barges struck the ship when drifting out of control down the swollen river on Monday night.

The holes are above water level and are not causing immediate concern.

The ship will remain at its present position near the Evans Deakin shipyards until port authorities can make alternative arrangements.



## APPENDIX D

## THE DAMAGE SCALE

The Damage Scale was constructed using the Guttman Scaling Sub-programme in SPSS (Nie *et al.*, 1970). Initially, all items from a detailed 'damage' supplement to the Follow-up Schedule were considered for inclusion.

A final pool of five items was accepted as a useful scale. These items were:

Item 308	Damage to Internal Walls
Item 310	Damage to Internal Doors
Item 311	Damage to External Doors
Item 312	Damage to Built-in Cupboards
Item 320	Damage to Internal Paint Work.

Statistics for this scale, based on 262 cases, were:

Coefficient of reproducibility = 0.9160

Coefficient of scalability = 0.7556.

Yule's Q:

	Item 308	Item 310	Item 311	Item 312	Item 320
Item 308	1.0000	0.9756	0.8963	0.8781	0.9485
Item 310	0.9756	1.0000	0.9769	0.9724	0.9623
Item 311	0.8963	0.9769	1.0000	0.9541	0.9572
Item 312	0.8781	0.9724	0.9541	1.0000	0.9760
Item 320	0.9485	0.9623	0.9572	0.9760	1.0000

Biserial Correlation:

Scale-Item	0.8973	1.1228	1.0350	0.9833	1.0772
------------	--------	--------	--------	--------	--------

RECATAGORISATION OF VARIABLES FOR CHAPTER 5 CONTINGENCY ANALYSES

Note that only those variables appearing in Figure 5.1 are included in Appendix E.

Peak Height

Original categories:

- No answer
- Don't know
- Entered grounds only
- Water under house but no rooms affected
- Entered downstairs rooms:
  - . No details on depth
  - . Less than 1 metre
  - . 1-2 metres
  - . More than 2 metres but not into upstairs rooms
- Over main (upstairs) floor level:
  - . No details on depth
  - . Less than 1 metre
  - . 1-2 metres
  - . More than 2 metres but not to ceiling
  - . Above ceiling height
  - . House totally submerged

New categories:

- No answer
- Don't know
- Mild to moderate flooding
- Severe flooding

Knowledge of the Hazard

(No recategorisation necessary)

Age of Male Household Head

Original categories:

- N.A.
- Less than 18 years
- 18-29 years
- 30-45 years
- 46-60 years
- More than 60 years

New categories

- N.A.
- 45 years and under
- Over 45 years

Age of Female Household Head (Includes spouses of male household heads)

(as for age of Male Household Head)

Occupation of Male Household Head

## Original categories:

N.A.  
 Professionals  
 Managers  
 Clerical and Sales  
 Farmers  
 Skilled  
 Semi-skilled  
 Unskilled  
 Miscellaneous (Pensioners)  
 Houseworker

## New categories:

N.A.  
 White collar  
 (No cases)  
 Blue collar

Home Tenure

## Original categories:

N.A.  
 Renting  
 Leasing  
 Buying  
 Own

## New categories:

N.A.  
 Rented  
 Owner occupation

Personal Hardship and Distress Grants

## Original categories:

N.A.  
 No assistance received  
 No comment  
 Up to \$100  
 More than \$100 to \$300  
 More than \$300 to \$600  
 More than \$600 to \$1,000  
 More than \$1,000 to \$2,500  
 More than \$2,500 to \$5,000  
 More than \$5,000 to \$10,000  
 More than \$10,000

## New categories

N.A.  
 \$100 or less  
 Little or no assistance received  
 More than \$100  
 Considerable assistance received

State Government House Restoration Grant

## Original categories

N.A.  
 No assistance received  
 No comment  
 Up to \$100  
 More than \$100 to \$300  
 More than \$300 to \$600  
 More than \$600 to \$1,000  
 More than \$1,000 to \$2,500  
 More than \$2,500 to \$5,000  
 More than \$5,000 to \$10,000  
 More than \$10,000

## New categories

N.A.  
 Little or no assistance received  
 Considerable assistance received

Lord Mayor's/Ipswich City Council Fund Grant

## Original categories:

N.A.  
 No assistance received  
 No comment  
 Up to \$100  
 More than \$100 to \$300  
 More than \$300 to \$600  
 More than \$600 to \$1,000  
 More than \$1,000 to \$2,500  
 More than \$2,500 to \$5,000  
 More than \$5,000 to \$10,000  
 More than \$10,000

## New categories:

N.A.  
 Little or no assistance received  
 Considerable assistance received  
 No cases  
 No cases

Damage (Scale)

Original categories

New categories

(See Appendix D for details.)

Time in Temporary Accommodation

Original categories

N.A.  
 Does not apply  
 One night only  
 2 to 3 nights  
 More than 3 nights but less than 1 week  
 1 week to (less than) 2 weeks  
 2 weeks to (less than) 1 month  
 1 month to (less than) 2 months  
 2 months to (less than) 3 months  
 More than 3 months

New categories

N.A.  
 A short time  
 A long time

Experience of Flood-related Problems

## Original categories

Yes - but did not supply problems  
 Yes -  
 . Marital problems  
 . Marital problems associated with financial worries  
 . Financial worry and other personal problems  
 . Financial worries alone  
 . Specific physical health problem  
 . Emotional problems associated with physical symptoms  
 . Other personal or emotional problems, not associated with physical health problems and not related to financial worries  
 . Problems with children  
 . Other specific problems  
 No  
 Don't know/couldn't say

## New categories

Yes - experienced flood-related problems

No - did not experience flood-related problems

Emotional Strain

## Original categories

N.A.  
 Yes  
 No  
 Don't know/couldn't say

## New categories

N.A.  
 Yes  
 No

Time Off Paid Work (Primary Wage Earner)

## Original categories

N.A.  
 Not working at time of floods  
 No time off  
 Returned within 1 week  
 More than 1 week, up to 3 weeks off work  
 More than 3 weeks, up to 5 weeks off work  
 More than 5 weeks, up to 2 months off work  
 More than 2 months off work.

## New categories

N.A.  
  
 3 weeks or less off work  
  
 More than 3 weeks off work

## BIBLIOGRAPHY

- Anderson, W.A. (1969), Disaster warning and communication processes in two communities. Journal of Communication, 19 (2), 92-104.
- Anderson, W.A. (1970), Military organizations in natural disasters: established and emergent norms. American Behavioral Scientist, 13 (3), 415-422.
- Angotti, T. (1977), Playing politics with disaster: the earthquakes of Frivli and Belice (Italy). International Journal of Urban and Regional Research, 1 (June), 327-331.
- Australian Bureau of Statistics (1975), The Labour Force, Queensland, August 1975 edition.
- Australian Counter Disaster College, Macedon (1979), Report of Proceedings of the Media (Broadcasters) Study Group, 12-14 November. Macdeon: Natural Disasters Organisation, Department of Defence, Australian Counter Disaster College.
- Australian Treasury (1976), A Natural Disaster Insurance Scheme for Australia: A Discussion Paper. Canberra: Australian Government Publishing Service.
- Azuela de la Cueva, A. (1986), Lists of demands presented by the sole coordinator of victims to the President of the Republic. Revista Mexicana de Sociologia, 48 (2), 293-322. Cited in Sociological Abstracts, Abstract No. 87R8787.
- Baker, G.W. and Chapman, D.W. (eds) (1962), Man and Society in Disaster. New York: Basic Books.
- Baldamus, W. (1972), The Role of Discoveries in Social Science, in Shanin, T. (ed.), The Rules of the Game: Cross-Disciplinary Essays on Models in Scholarly Thought. London: Tavistock Publications, pp.276-302.

- Baldamus, W. (1976), The Structure of Sociological Inference. London: Martin Robertson.
- Baldock, C. and Cass, B. (eds) (1983), Women, Social Welfare and the State. Sydney: Allen & Unwin.
- Barthes, R. (1973), Mythologies. St. Albans: Paladin.
- Barton, A.H. (1969), Communities in Disaster: A Sociological Analysis of Collective Stress Situations. Ward Lock Educational.
- Bates, F.L., Fogleman, C.W., Parenton, V.J., Pitman, R.H. and Tracy, G.S. (1963), The Social and Psychological Consequences of a Natural Disaster: A Longitudinal Study of Hurricane Audrey. Disaster Study 18, Washington, D.C.: National Academy of Sciences, National Research Council.
- Bell, W. and Boat, M.D. (1957), Urban neighbourhood and informal social relations. American Journal of Sociology,
- Berger, P.L. and Kellner, H. (1981), Sociology Reinterpreted: An Essay on Method and Vocation. New York: Anchor Press/Doubleday.
- Berger, P.L. and Luckmann, T. (1967), The Social Construction of Reality. London: Allen Lane, The Penguin Press.
- Bernerd, E.H. and Inkle, F.C. (1952), Evacuation and the cohesion of urban groups. American Journal of Sociology, LVIII, 133-138.
- Birnbaum, F., Coplon, J. and Scharff, I. (1973), Crisis intervention after a natural disaster. Social Casework, November.
- Blalock, H. (1979), Social Statistics. New York: McGraw Hill.
- Blalock, H. (1984), Basic Dilemmas in the Social Sciences. Beverly Hills, California: Sage Publications.
- Blumer, H. (1969), Symbolic Interactionism: Perspective and Method. Englewood Cliffs, N.J.: Prentice-Hall.
- Bolin, R. (1986), Disaster impact and recovery: a comparison of black and white victims. International Journal of Mass Emergencies and Disasters, 4 (1), 35-50.

- Britton, N.R. (1986), Developing an understanding of disaster. Australian and New Zealand Journal of Sociology, 22 (2), 254-271.
- Brownell, B. (1950), The Human Community: Its Philosophy and Practice for a Time of Crisis. New York: Harper and Row.
- Bulmer, M. (ed.) (1982), Social Research Ethics. London: Macmillan.
- Burgess, R. (ed.) (1982), Field Research: A Sourcebook and Field Manual. London: Allen & Unwin.
- Burchill, D., Munro, R. and Pigram, J. (1979), Differential Response to Multiple Hazard, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science, p.299.
- Burton, I. and Kates, R.W. (1964), The perception of natural hazards in resource management. Natural Resources Journal, 3, January.
- Butler, J.R.G. and Doessel, D.P. (1979a), Social Policy Aspects of Natural Disaster Relief in Australia, Business Research Centre Report No. 3. Brisbane: North Brisbane College of Advanced Education.
- Butler, J.R.G. and Doessel, D.P. (1979b), The Economics of Natural Disaster Relief in Australia. Research Monograph No. 27. Canberra: Centre for Research on Federal Financial Relations, The Australian National University.
- Butler, J.R.G. and Doessel, D.P. (1981a), Distributing Transfers to Natural Disaster Victims: Some Proposed Schemes, Business Research Centre Report No. 8.
- Butler, J.R.G. and Doessel, D.P. (1981b), Natural Disaster Relief and Horizontal Equalisation in Australia. Business Research Centre Report No. 10. Brisbane: North Brisbane College of Advanced Education.



- Butler, J.R.G. and Doessel, D.P. (1986), Evaluating disaster relief schemes: an Australian case study. Economic Papers, 5 (1), 51-59.
- Cage, R.A. (1981), The state and welfare: a radical approach. Management Forum, 7, 147-149.
- Chamberlain, E.R., Hartshorn, A.E., Muggleston, H., Short, P., Svensson, H. and Western, J.S. (1981), Queensland Flood Report, Australia Day 1974. Canberra: Australian Government Publishing Service.
- Chamberlain, E.R., Doube, L., Milne, G., Rolls, M. and Western, J.S. (1981), The Experience of Cyclone Tracy. Canberra: Australian Government Publishing Service.
- Cicourel, A.V. (1964), Method and Measurement in Sociology. New York: The Free Press.
- Clifford, R. (1956), The Rio Grande Flood: a comparative study of border communities in disaster. Disaster Study No. 7, Washington, D.C.: National Academy of Sciences, National Research Council.
- Clausen, L., Conlon, P., Jager, W. and Metreveli, S. (1978), New aspects of the sociology of disaster: a theoretical note. Mass Emergencies, 3 (1), 61-65.
- Connell, R.W. (1977), Ruling Class, Ruling Culture. Cambridge: Cambridge University Press.
- Connell, R.W. (1983a), Which Way Is Up: Essays on Class, Sex and Culture. Sydney: George Allen & Unwin.
- Connell, R.W. (1983b), Social class in Australia. Search, 14, 247-248.
- Cooley, W.W. and Lohnes, P.R. (1971), Multivariate Data Analysis. New York: John Wiley and Sons.

- Co-ordinator-General's Department, Brisbane (1977), Brisbane Suburban Creeks: Report on Flood Warning and Flood Education. Prepared by Cameron, McNamara and Partners Pty Ltd, Consulting Engineers, Brisbane.
- Cordery, I. and Pilgrim, D.H. (1979), Acceptance of Hazard in Design of Flood-Prone Structures, in Heathcote, R.L. and Thom, P.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science, p.216.
- Cossins, G. (1974), Flood Forecasting in the Brisbane River. Institute of Engineers, Australia, Queensland Division. Proceedings of Symposium, January 1974 Floods: Moreton Region, Queensland, Queensland Institute of Technology, 3 and 10 April. Brisbane: The Institute of Engineers Australia, Queensland Division.
- Cutler, A., Hindess, B., Hirst, P. and Hussain, A. (1977), Marx's 'Capital' and Capitalism Today. London: Routledge and Kegan Paul.
- Demerath, N. and Wallace, A. (eds) (1957), Human Adaptation to Disaster, Special Issue. Human Organization, 16 (2), Summer. Department of National Development and Energy, Australian Water Resources Council (1981), Proceedings of the Floodplain Management Conference, Canberra, Australia, 7-10 May 1980. Canberra: Australian Government Publishing Service.
- Department of Science, Bureau of Meteorology (1974), Brisbane Floods January 1974: Report by Director of Meteorology. Canberra: Australian Government Publishing Service.
- Disaster Research Group (1961), Field Studies of Disaster Behavior: an Inventory. Disaster Study Number 14. Washington D.C.: National Academy of Sciences, National Research Council.

- Douglas, I. (1979), Flooding in Australia: A Review, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Academy of Science, p.143.
- Douglas, J. (ed.) (1970), The Relevance of Sociology. New York: Appleton-Century-Crofts.
- Drabek, T.E. (1969), Social processes in disaster: family evacuation. Social Problems, 16, Winter, 336-349.
- Drabek, T.E. (1970), Methodology of studying disasters: past patterns and future possibilities. American Behavioral Scientist, 13 (3), January/February, 331-343.
- Drabek, T.E., Key, W.H., Erickson, P.E. and Crowe, J.L. (1975), The impact of disaster on kin relationships. Journal of Marriage and the Family, 37 (3), August.
- Dumas, G.K. (1986), The power of the powerless: resource mobilization and social movements in a Third World reality. International Journal of Mass Emergencies and Disasters, 4 (3), 256-284.
- Drabek, T.E. and Stephenson, J.S. (1971), When disaster strikes. Journal of Applied Social Psychology, 1, 187-203.
- Dynes, R.R. (1970), Organizational involvement and changes in community structure in disaster. American Behavioral Scientist, 13 (3), January/February, 430-439.
- Dynes, R.R., Haas, J.E. and Quarantelli, E.L. (1967), Administrative, methodological and theoretical problems of disaster research. Indian Sociological Bulletin, 4, July, 215-227.
- Dynes, R.R. and Quarantelli, E.L. (1971), The absence of Community Conflict in the Early Phases of Natural Disaster, in Smith, C.G. (ed.), Conflict Resolution: Contributions of the Behavioral Sciences. University of Notre Dame Press, pp.200-204.

- Dynes, R.R. and Quarantelli, E.L. (1972), a Perspective on Disaster Planning. Disaster Research Center, Report Series No. 11. Ohio: Disaster Research Center, Ohio University.
- Dynes, R.R. and Quarantelli, E.L. (1973), Editor's introduction. American Behavioral Scientist, 16 (3), January/February, 305-311.
- Edgar, P.M. (1975), Directions in mass communications research. Australian and New Zealand Journal of Sociology, 11 (2), 21-27.
- Edgar, P.M. (ed.) (1980), The Journalism of Exception. Melbourne: Sun Books.
- Encel, S. (1970), Equality and Authority. Melbourne: Longman Cheshire.
- Form, W.H., Loomis, C.P. et al. (1956), The persistence and emergence of social and cultural systems in disasters. American Sociological Review, XXI (2), April, 180-185.
- Form, W.H. and Noscov, S. (1958), Community in Disaster. New York: Harper and Row.
- Forrest, T.R. (1986), Disaster gypsies: the role of informal relationships in administering disaster assistance. Journal of Mass Emergencies and Disasters, 4 (1), 51-58.
- Foucault, M. (1969), The Archaeology of Knowledge. London: Tavistock.
- Foucault, M. (1975), Discipline and Punish: The Birth of the Prison. London: Tavistock.
- Foucault, M. (1979), Governmentality. M/F, 3, 5-21.
- Foucault, M. (1980), Power-Knowledge. Brighton: Harvester.
- Fritz, C.E. (1961), Disaster, in Merton, R.K. and Nisbit, R.A. (eds), Contemporary Social Problems. New York: Harcourt.
- Fritz, C.E. and Marks, E.S. (1954), The NORC studies of human behavior in disaster. Journal of Social Issues, 10 (3), 26-41.

- Fritz, C.E. and Williams, H.B. (1957), The human being in disasters: a research perspective. Annals of the American Academy of Political and Social Science, 309, January, 42-51.
- Garfinkel, H. (1967), Studies in Ethnomethodology. Englewood Cliffs, N.J.: Prentice-Hall.
- Giddens, A. (1982), Sociology: A Brief But Critical Introduction. London: Macmillan.
- Giddens, A. (1984), The Constitution of Society: Outline of the Theory of Structuration. Cambridge: Polity.
- Glaser, B.G. (1978), Theoretical Sensitivity: Advances in the Methodology of Grounded Theory. California: The Sociology Press.
- Glaser, B.G. and Strauss, A.L. (1967), The Discovery of Grounded Theory: Strategies for Qualitative Research. London: Weidenfeld and Nicolson.
- Gordon, C. (ed.) (1980), Power-Knowledge: Selected Interviews and Other Writings, 1972-77. New York: Pantheon.
- Gordon, C. (1980), Other inquisitions. Ideology and Consciousness, 1, 23-47.
- Graycar, A. (1979), Welfare Politics in Australia: A Study in Policy Analysis. Melbourne: Macmillan.
- Griffith, D. (?), Report on Emergency Relief: A Research Paper Prepared for the Social Welfare Commission by David Griffith of the Brotherhood of St. Lawrence, with Recommendations by the Social Welfare Commission. Canberra: Australian Government Social Welfare Commission. Unpublished manuscript.
- Haas, J.E. and Drabek, T. (1970), Community Disaster and System Stress: A Sociological Perspective, in McGrath, J.E. (ed.), Social and Psychological Factors in Stress. New York: Holt, Rinehart and Winston, pp.264-286.

- Habermas, J. (1963), Theory and Practice. London: Heinemann Educational Books.
- Habermas, J. (1968), Knowledge and Human Interests. London: Heinemann Educational Books.
- Habermas, J. (1979), Communication and the Evolution of Society. London: Heinemann Educational Books.
- Harloe, M. (1977), Captive Cities: Studies in the Political Economy of Cities and Regions. London: John Wiley and Sons.
- Harrison, J. and Sarre, P. (1971), Personal construct theory in the measurement of environmental images: problems and methods. Environment and Behavior, 3.
- Heathcote, R.L. and Thom, B.G. (1979), Natural Hazards in Australia: Proceedings of a Symposium sponsored by Australian Academy of Science, Institute of Australian Geographers, Academy of the Social Sciences in Australia. Canberra: Australian Academy of Science.
- Heatherwick, G. (1974), Flood forecasting and warnings, Moreton region. Institute of Engineers Australia, Queensland Division. Proceedings of Symposium, January 1974 Floods, Moreton Region.
- Heatherwick, G. and Quinzel, A.L. (1976), Optimising benefits to urban residents of a total flood warning system for the Brisbane Valley. Institute of Engineers Australia, Hydrology Symposium, 1976.
- Hewitt, K. and Burton, I. (1971), The Hazardousness of a Place. Toronto: University of Toronto, Department of Geography Research Publications.
- Hill, R. and Hansen, D.A. (1962), Families in Disaster, in Baker, G.V. and Chapman, D.W. (eds), Man and Society in Disaster. New York: Basic Books, pp.185-221.

- Hillery, G.A. Jnr (1955), Definitions of community: areas of agreement. Rural Sociology, 20, June.
- Hiroi, O., Mikami, S. and Miyota, K. (1985), A study of mass media reporting in emergencies. International Journal of Mass Emergencies and Disasters, 3 (1), 21-50.
- Housing Research Branch (1975), Housing in Flood-Prone Areas. Australian Department of Housing and Construction, Special Publication No. 1. Canberra: Department of Housing and Construction.
- Hughes, J.A. (1976), Sociological Analysis: Methods of Discovery. London: Nelson.
- Irish, J.L. and Falconer, B. (1979), Reaction to Flood Warning, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science.
- Kaufman, H.F. (1959), Toward an international conception of community. Social Forces, No. 38, October.
- Kelley, J. and McAllister, I. (1983a), Social class in Australia. Search, 14, 93-95.
- Kelley, J. and McAllister, I. (1983b), Modern sociology and the analysis of class. Search, 14, 249-252.
- Kennedy, R. (1982), Australian Welfare History: Critical Essays. Melbourne: Macmillan Company of Australia.
- Kennedy, W.C. (1970), Police departments: organization and tasks in disaster. American Behavioral Scientist, 13 (3), January/February, 354-361.

- Killian, L.M. (1952), The significance of multi-group membership in disaster. American Journal of Sociology, 57, 309-314.
- Killian, L.M. (1954), Some accomplishments and some needs in disaster research. Journal of Social Issues, 10, 66-72.
- Killian, L.M. (1956), An Introduction to Methodological Problems of Field Studies of Disaster. Washington, D.C.: National Academy of Sciences, National Research Council.
- Kreps, G.A. (1973), Change in crisis-relevant organizations: police departments and civil disturbances. American Behavioral Scientist, 16 (3), January/February, 356-467.
- Kreps, G.A. and Weller, J.M. (1973), The police community relations movement: conciliatory responses to violence. American Behavioral Scientist, 16 (3), January/February, 402-412.
- Lachman, R., Tatsuoka, M. and Bonk, W. (1961), Human behavior during the Tsunami of May 1960. Science, 133, May, 1405-1409.
- Leivesley, S. (1980), The social consequences of Australian disasters. Disasters, 4 (1), 30-37.
- Leivesley, S. (1984), Natural disasters in Australia. Disasters, 8 (2), 83-88.
- Lenski, G.E. (1966), Power and Privilege. New York: McGraw-Hill.
- Littlewood, P. (1985), Social and political aspects of the South Italian earthquake of 1980. Disasters, 9 (3), 206-212.
- McCall, G.J. and Simmons, J.L. (eds) (1969), Issues in Participant Observation: A Text and Reader. Reading, Mass.: Addison-Wesley.
- McDonald, G. et al. (1976), Brisbane and the Census, 1971: A Social Atlas. Prepared by the Cities Commission. Canberra: Summit Press.



- Marchant, H. and Wearing, B. (eds) (1986), Gender Reclaimed: Women in Social Work. Sydney: Hale and Iremonger.
- Marston, S.A. (1984), A Case Study of California Lenders and the Earthquake Threat. Natural Hazards Working Paper No. 49. Colorado: Department of Geography, University of Colorado.
- Massalo, A. (1986), Que el gobierno entienda, lo primero es la vivienda! La organizacion de los damnificados (Let the Government understand, Housing is the First Thing!, The Organization of the Victims. Revista Mexicana de Sociologia, 48 (2), 195-238, cited in Sociological Abstracts, Abstract No. 87R8781.
- Mayer, H. (1978), Television and Radio: International and Australian Data. Sydney: University of Sydney, Department of Government.
- Mayer, H. (1977), Media, in Mayer, H. (ed.), Australian Politics. Melbourne: Cheshire.
- Mayer, H. (1979), Dilemmas in Mass Media Policies. Canberra: Delivered as Annual Lecture, Academy of the Social Sciences, Australia, November.
- Mayer, H. (1979), Australian Mass Media and Natural Disasters. Keynote Address to the Media (Broadcasters) Seminar in Australian Counter Disaster College, Macedon. Report of Proceedings of the Media (Broadcasters) Study Group, 12-14 November, 1979. Macedon: Natural Disasters Organisation, Department of Defence, Australian Counter Disaster College.
- Merton, R.K. (1957), Social Theory and Social Structure. New York: Free Press.
- Merton, R.K. (1987), Three fragments from a sociologist's notebooks: establishing the phenomenon, specified ignorance and strategic research methods. Annual Review of Sociology, 13, 1-28.

- Milne, G. (1977a), Cyclone Tracy: I. Some consequences of the evacuation for adult victims. Australian Psychologist, 12 (1), 39.
- Milne, G. (1977b), Cyclone Tracy: II. The effects on Darwin's children. Australian Psychologist, 12 (1), 55-62.
- Miner, D.W. and Greer, S. (eds) (1969), The Concept of Community. Chicago: Aldine Publishing Co.
- Minson, J. (1980), Strategies for socialists? Foucault's conception of power. Economy and Society, 9 (1), February.
- Munro, Johnson and Associates (197?), An Investigation of Methods of Mitigating Flood Damage caused by Kedron Brook, Brisbane. Brisbane: Queensland Co-ordinator-General's Department.
- Murphy, J.W. (1986), Phenomenological social science: research in the public interest. The Social Science Journal, 23 (3), 327-343.
- Murray, I. (ed.) (1979), Beyond Impact: A Review of the Effect of Disasters on Natural Hazards in the Australian Situation. Centre for Information and Research on Disasters and Natural Hazards, Caulfield Institute of Technology.
- NATMAP (1979), Atlas of Population and Housing. Queanbeyan, N.S.W.: Division of National Mapping in association with Australian Bureau of Statistics.
- Nie, N.H. et al. (1970), SPSS: Statistical Package for the Social Sciences. New York: McGraw-Hill.
- Norusis, M.J. (1986), The SPSS Guide to Data Analysis. Chicago, Ill.: SPSS.
- Offe, C. (1984), Contradictions of the Welfare State. London: Hutchinson.
- Overend, T. and Lewins, F. (1973), A Berger and Luckmann Critique. La Trobe Sociology Papers, Paper No. 5. Melbourne: Sociology Department, La Trobe University.

- Pahl, R.E. (1984), Divisions of Labour. Oxford: Blackwell.
- Parker, G. (1975), Psychological disturbance in Darwin evacuees following Cyclone Tracy. Medical Journal of Australia, 1, 650.
- Parkin, F. (1972), Class Inequality and Political Order. St. Albans: Paladin.
- Parr, A.R. (1969), Group Emergence Under Stress: A Study of Collective Behavior during the Emergency Period. Columbus: The Ohio State University.
- Parr, A. (1970), Organizational responses to community crisis and group emergence. American Behavioral Scientist, 13 (3), January/February, 423-429.
- Pemberton, A. (1982), Radical critiques of social work and welfare: a preliminary test of the Australian evidence. Australian Social Work, 35, 29-35.
- Pemberton, A. (1984), Class conflict and social control in the establishment of the Australian welfare state: some neglected questions. Australian Journal of Politics and History, 30 (1), 56-68.
- Phillips, D.L. (1971), Knowledge from What? Theories and Methods in Social Research. Chicago: Rand McNally and Company.
- Ponting, J.R. (1973), Rumor control centers: their emergence and operations. American Behavioral Scientist, 16 (3), January/February, 391-401.
- Proceedings of the Japan-United States Research Seminar: Organizational and Community Responses to Disasters (1972). Columbus, Ohio: Disaster Research Center, The Ohio State University, September 11-15.
- Quarantelli, E.L. (1960), Images of withdrawal behavior in disasters: some basic misconceptions. Social Problems, 13 (1), Summer.

- Quarantelli, E.L. (1970a) Emergent Accommodation Groups: Beyond Current Collective Behavior Typologies, in Shibutani, T. (ed.), Human Nature and Collective Behavior: Papers in Honor of Herbert Blumer. Englewood Cliffs, New Jersey: Prentice-Hall, pp.11-123.
- Quarantelli, E.L. (1970b), A selected annotated bibliography of social science studies on disasters. American Behavioral Scientist, 13 (3), January/February, 452-456.
- Quarantelli, E.L. (1972), Study and Research in the United States, in Organizational and Community Responses to Disasters: Proceedings of Japan-United States Disaster Research Seminar. Columbus, Ohio: Disaster Research Center, Ohio State University, September 11-15.
- Quarantelli, E.L. (ed.) (1978), Disasters: Theory and Research. California: Sage Publications Inc.
- Quarantelli, E.L. and Dynes, R.R. (1970), Property norms and looting: their patterns in community crises. Phylon, 31 (2), Summer, 168-302.
- Quarantelli, E.L. and Dynes, R.R. (1977), Response to social crises and disaster. Annual Review of Sociology, 3, 23.
- Queensland Disaster Welfare Committee (1974), Report from the Elmes Road Flood and Community Advisory Centre - Rocklea, June.
- Queensland Parliament, Queensland Flood Debate, 5.3.1974, in Official Records of the Debates of the Legislative Assembly (Hansard), 264, 2626-2697. Brisbane: Government Printery.
- Quinnel, A.L. (1974), Social Aspects of Flood Warnings. Institute of Engineers, Australia, Queensland Division. Proceedings of Symposium: January 1974. Moreton Region Floods, August 1974, p.134.

- Quinnell, (1974), Executive Officer's Report to Queensland Disaster Welfare Committee. Unpublished Manuscript.
- Rabell, C. and Mier y Teran, M. (1986), The victims of the 1985 earthquake in Mexico City; an analysis of the domestic groups that turned to shelters and camps. Revista Mexicana de Sociologia, 48 (2), 3-28. Cited in Sociological Abstracts, Abstract No. 87R8782.
- Raphael, B. (1979), The Preventive Psychiatry of Natural Hazard, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science.
- Rosow, I. (1953), A Comparative Study of Human Relations and Communications in Disaster. Unpublished Manuscript, Committee on Disaster Studies, National Academy of Sciences, National Research Council.
- Ross, J.L. (1970), The Salvation Army: Emergency Operations. American Behavioral Scientist, 13 (2), January/February, 404-414.
- Roth, R. (1970), Cross-cultural perspectives on disaster response. American Behavioral Scientist, 13 (3), January/February, 440-451.
- Royal Commission on Australian government Administration (1976), Report of the Royal Commission on Australian Government Administration. Canberra: Australian Government Publishing Service.
- Rubin, C. (1985), The Community recovery process in the United States after a major natural disaster. International Journal of Mass Emergencies and Disasters, 3 (2), 9-28.
- Runciman, W.G. (1968), Class, Status and Power?, in Jackson, J.A. (ed.), Social Stratification. London: Cambridge University Press, pp.25-61.

- Schutz, A. (1967), Collected Papers, Vol. 1: The Problem of Social Reality. The Hague: Nijhoff.
- Schutz, A. (1972), The Phenomenology of the Social World. London: Heinemann Educational Books.
- Shanin, T. (ed.) (1972), The Rules of the Game: Cross-Disciplinary Essays on Models in Scholarly Thought. London: Tavistock Publications.
- Shields, A.J. (1979), The Brisbane Floods of January 1974, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Social Science.
- Short, P. (1979), "Victims" and "Helpers", in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Social Science.
- Short, P. (1981), Sociological Aspects of Flood-Plain Management, in Department of National Energy and Development, Australian Water Resources Council, Proceedings of the Flood-Plain Management Conference, Canberra, Australia, 7-10 May, 1980. Canberra: Australian Government Publishing Service.
- Smith, D. (ed.) (1957), Disaster and Disaster Relief. Annals of the American Academy of Political and Social Science, Special Issue, 309, January.
- Stallings, R.A. (1973), The community context of crisis management. American Behavioral Scientist, 16 (3), January/February, 312-325.
- Stretton, A. (1976), The Furious Days: The Relief of Darwin. Sydney: Collins.
- Stretton, A. (1978), Soldier in a Storm: An Autobiography. Sydney, London: Collins.
- Stoddard, E.R. (1969), Some latent consequences of bureaucratic efficiency in disaster relief. Human Organization, 28 (3), 177.

- Suttles, G. (1972), The Social Construction of Communities. Chicago: University of Chicago Press.
- Tabachnick, B.G. and Fidell, L.S. (1983), Using Multivariate Statistics. New York: Harper and Row.
- Taylor, V.A. (1978), Future Directions for Study, in Quarantelli, E.L. (ed.), Disasters: Theory and Research. California: Sage Publications Inc.
- Taylor, V.A. and Quarantelli, E.L. (1979), Some Needed Cross-Cultural Studies of Disaster Behaviour, in Heathcote, R.L. and Thom, B.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science.
- The Institute of Engineers, Australia, Queensland Division (1974), January 1974 Floods: Moreton Region. Proceedings of Symposium held at John Kindler Memorial Theatre, Queensland Institute of Technology, 3 and 10 April. Brisbane: The Institute of Engineers, Australia, Queensland Division.
- Waxman, J.J. (1973), Analysis of Commercial Broadcasting Organizations During Flood Disasters. Columbus, Ohio: The Ohio State University.
- Weller, J.M. (1973), The involuntary partisans: Fire Departments and the threat of conflict. American Behavioral Scientist, 16 (3), January/February, 368-377.
- Wenger, D. (1973), The reluctant army: the functioning of Police Departments during civil disturbances. American Behavioral Scientist, 16 (3), January/February, 326-342.
- Wenger, D.E. (1970), Toward a Comparative Model for the Analysis of Community Power: A Conceptualization and Empirical Application. Columbus, Ohio: The Ohio State University.

- Western, J.S. and Milne, G. (1979), Some Social Effects of a Natural Hazard: Darwin Residents and Cyclone Tracy, in Heathcote, R.L. and Thom, G.G. (eds), Natural Hazards in Australia. Canberra: Australian Academy of Science.
- Westgate, K.N. and O'Keefe, P. (1975), Some Definitions of Disaster. University of Bradford, Disaster Research Unit, Occasional Paper No. 4. Bradford: University of Bradford.
- Wettenhall, R. (1975), Bushfire Disaster: An Australian Community in Crisis. Melbourne: Angus and Robertson.
- Wettenhall, R. (1970), Disaster and social science in Australia. Disasters, 2 (4), 241.
- Wettenhall, R. and Power, J.M. (1969), Bureaucracy and disaster. Public Administration, XXVIII (4), December.
- White, G.F. (ed.) (1961), Papers on Flood Problems. Research Paper No. 70. Chicago: Department of Geography, University of Chicago.
- White, G.F. and Haas, E. (1975), Assessment of Research on Natural Hazards. Cambridge, Mass.: MIT Press.
- Whitton, J. (1980), Disasters: The Anatomy of Environmental Hazards. London: Allen Lane Penguin Books.
- Williams, H.B. (1964), Human Factors in Warning and Response Systems, in Grosser, G.H. (ed.), The Threat of Impending Disasters: Contributions to the Psychology of Stress. Cambridge, Mass.: MIT Press, p.80.
- Winch, P. (1958), The Idea of a Social Science. London: Routledge and Kegan Paul.
- Windschuttle, K. and Windshcuttle, E. (1981), Fixing the News: Critical Perspectives on the Australian Media. North Ryde, N.S.W.: Cassell Australia.



- Wraith, R. and Gordon, R. (1986), Human responses to natural disasters [a Series of Parts]. Macedon Digest, 1 (2) and following issues.
- Wright, E. (1976), Class boundaries in advanced capitalist societies. New Left Review, 98, 3-41.
- Wright, E. (1980), Varieties of Marxist conceptions of class structure. Politics and Society, 9 (3), 323-370.
- Wright, E. et al. (1982), The American class structure. American Sociological Review, 47, 709-726.
- Young, M. (1954), The role of the extended family in a disaster. Human Relations, III (3), 383-391.
- Young, R.C. and Larson, O.L. (1965), A new approach to community structure. American Sociological Review.
- Yutzy, D. and Haas, J.E. (1970), Disaster and Functional Priorities in Anchorage, in Committee on the Alaska Earthquake of the National Research Council (ed.), The Great Alaska Earthquake of 1964. Washington: National Academy of Sciences.
- Ziccardi, A. (1986), Housing policy for a destroyed space. Revista Mexicana de Sociologia, 48 (2), 121-193, Cited in Sociological Abstracts, Abstract No. 87R8786.

