Book Review

Natural Hazards and the risks they pose to South-East Queensland

Edited by Ken Granger and Matthew Hayne

Reviewed by Alan Hodges

Natural Hazards and the risks they pose to South-East Queensland is presented in an attractive 24-page summary booklet together with a CD-ROM of 389 pages. This study of natural hazard risks has been undertaken by AGSO-Geoscience Australia. It was conducted in conjunction with the Bureau of Meteorology, and in cooperation with Queensland's Department of Natural Resources and Mines and Department of Emergency Services, and with eight local government councils. The report is the fourth in a series of case studies conducted under AGSO's *Natural Geohazards Vulnerability of Urban Communities Project*, more usually referred to as the *Cities Project*. The techniques used and knowledge gained during the earlier studies have clearly been of much benefit in this fourth case study.

The geographic area studied is home to 2 million people and is one of our fastest-growing urban areas, stretching south from Brisbane to the Gold Coast, north to Bribie Island and inland to Ipswich (150 km north to south and 110 km east to west). It is an area subject to significant hazards. Separate chapters in the report consider in detail eight hazards: tropical cyclones, east coast lows, severe thunderstorms, landslides, earthquakes, floods, heat waves and bushfires. In addition, hazards and risk concepts, the south-east Queensland setting, and the elements at risk and their vulnerability are covered in three introductory chapters, and the report concludes with a multi-hazard risk assessment. The report was written by a total of 13 experts, with the major contribution by Ken Granger who is a joint author of 10 chapters. Support for the study has also come from academia, in particular from David King and Linda Berry of the Centre of Disaster Studies, James Cook University, Russell Blong of Risk Frontiers-Natural Hazards Research Centre, Macquarie University and 'Dingle' Smith of the Centre for Resource and Environmental Studies, ANU.

This is indeed a landmark study. It is the first time that such a comprehensive approach has been taken to risk assessment for such a large Australian urbanised area. The building planks for this study are the approach of the Australian-New Zealand Standard on Risk Management, and the systematic and thorough consideration of five 'esses' for each hazard: Setting, Shelter, Sustenance, Security and Society. Considerable use is made of integrating information using GIS capabilities. Analysis is conducted at the level of a Census Collection District (CCD), of which there are over 3 000 in the area, each typically comprising 200 households. The relative importance of each CCD is derived by consideration of the five 'esses'. Then, from development of relative risk indices, identification is possible of areas that contribute disproportionately to community risk.

Residents born in the last quarter of the 20th Century and many who have migrated from southern States to South-East Queensland have not experienced a major disaster in the area. The last significant catastrophe was the Brisbane-Ipswich flood of 1974, which is still the most severe urban flood experienced in Australia. Chapter 9 on Flood Risks gives realism to the effects of this hazard by quoting graphic newspaper accounts of the 1974 floods, as well as the 1893 floods which had an approximately 50 per cent greater depth. In considering each of the eight hazards, the report demonstrates evidence of significant research of their history in Queensland and their effects on the area of the study. This background information vividly brings home the real threat that exists from a number of natural events.

A major benefit of the study is its contribution to our understanding of the issue of vulnerability to risk through the detailed analysis of elements of communities, i.e. the people and their physical and social infrastructures. For instance, in the examination of societal issues, consideration is given to such matters as language, ethnicity and education. Similarly, security issues involve examination of availability of medical facilities, industries, emergency services, flood detention basins and emergency plans. This report is thorough and detailed. For instance, information is provided of Woolworths' food resupply arrangements and the location of depots holding dry goods, cold stores and fruit and vegetables. The report concludes that there would be a significant, if hidden, threat if the current efficient food-resupply system were disrupted by a major disaster.

As a result of the analysis, maps have been produced for each of the five 'esses'. These show suburbs with vulnerability indices, colour-coded into six levels, thereby providing essential information for evaluating risk.

For each of the hazards, the reader is provided in the first instance with a comprehensive understanding of the physical phenomena. This is a foundation for the analysis of historical occurrences and interpretation of risks. In the final chapter dealing with A Multi-Hazard Risk Assessment, the common measure adopted to compare risks is the level of building damage (accepting that this excludes intangible costs of fatalities and injuries). This last chapter concludes with some very sensible suggestions in relation to risk information and risk communication, the use of modelling and exercises, the need to consider the effects of climate change, and the protection of lifelines. This final chapter, together with the first three chapters and the excellent Executive Summary, will be of interest to all readers. Chapters on specific hazards may have more specialised appeal.

This is a report that cannot easily be read in one sitting because of the amount of detail it contains. It is well written, contains appropriate maps, tables and photographs, and is consistent in approach throughout — a credit to the two editors. An extensive bibliography is provided, and this is a further example of the thoroughness of the study. Although the CD-ROM provides benefits for convenient searching and for map viewing, it is a difficult format to use for reading such a large report. I believe that production of this important study in book form is warranted.

This report will be of particular use to the eight councils in the South-East Queensland area and various Queensland State Government agencies. For others with an interest in or responsibility for emergency management and community safety, this is an invaluable resource. It illustrates how information from disparate sources can be integrated to provide a greater understanding of hazards, of elements at risk and of vulnerability, and of their combined effect on risk.

Natural Hazards and the risks they pose to South-East Queensland is available from the AGSO-Geoscience Australia Sales Centre for $45.10 plus postage. Email: sales@agso.gov.au