Tasmania

STATE SUMMARY

THE TASMANIAN EMERGENCY RISK MANAGEMENT PROJECT

...a community perspective

December 2003

ISBN 0-9751487-0-2

Published by the State Emergency Service

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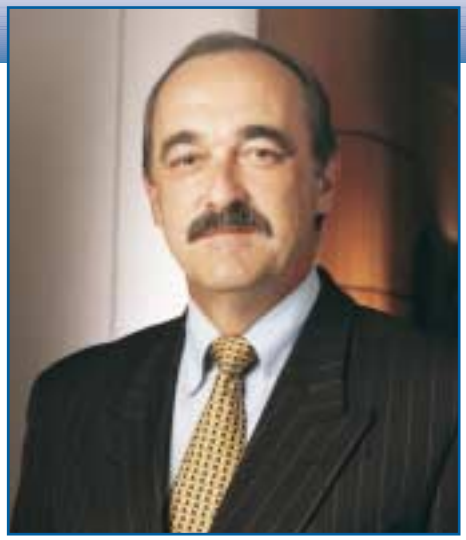
Designed and produced by PR Partners Pty Ltd, Launceston, Tasmania

Printed by Printing Authority of Tasmania, Hobart, Tasmania

Photos on cover pages courtesy of The Mercury, The Examiner and Tony Cross Photography.

FOREWORD



Each year, Australian communities are affected by natural disasters such as flood, wildfire and cyclones, with an average damages bill of more than $1 billion. While the annual cost of disasters in Tasmania is only a small part of the total cost in Australia, millions of dollars are spent dealing with, and recovering from, such disasters.

In recent times, the cost of natural disasters to the community, the economy and the environment has been much reduced by assessing the risks of the main natural hazards and putting in place measures to lessen those risks. Similarly, looking at the risks associated with technological hazards such as building collapse and infrastructure failure should reduce costs in that area. Recent international events have meant that the national focus has been on the risks arising from terrorist activities, but we must never lose sight of the potential for natural and technological disasters to affect our daily lives. All opportunities to boost community safety must be considered.

When I launched this Project in March 2001, I acknowledged that Tasmania is extremely fortunate in not often experiencing major natural or technological disasters. Nevertheless, we felt that community safety could be improved by having emergency management officers and the community working together to examine those risks that communities regarded as important and needed more attention from a risk management point of view. This approach is in keeping with the way that my Government is working in partnership with Local Government and is involving the community.

Over the past two years, a great many people from all levels of government, industry and the community, have willingly given their time to identify risks, based on their knowledge and experience of local circumstances, and to work on appropriate risk reduction strategies and implementation programs.

While further discussions will be needed to sort out who is responsible for managing risks, to check the appropriateness of the proposed risk reduction strategies and to assist their implementation, this study is an exceptionally solid platform on which to build. This study is being recognised as a best practice example of emergency risk management on a large scale and puts Tasmania in a sound position to take advantage of funding through the future Disaster Mitigation Australia Package.

The goal now is to build on the good work of this study by ensuring that in partnership, we implement the agreed strategies, we assess emerging risks and achieve the Tasmania *Together* goal – 'To have a community where people feel safe and are safe in all aspects of their life'.

I commend the study to you.

Jim Bacon MHA

Premier of Tasmania

Natural Disaster Statistics (1967 – 1999)

Average Annual Cost ($million)

State	Flood	Severe Storms	Cyclones	Earthquakes	Bushfires	Landslide	Total
NSW	128.4	195.8	0.5	141.2	16.8	1.2	484.1
QLD	111.7	37.3	89.8	0.0	0.4	0.0	239.2
NT	8.1	0.0	134.2	0.3	0.0	0.0	142.6
VIC	38.5	22.8	0.0	0.0	32.4	0.0	93.6
WA	2.6	11.1	41.5	3.0	4.5	0.0	62.7
SA	18.1	16.2	0.0	0.0	11.9	0.0	46.2
TAS	6.7	1.1	0.0	0.0	11.2	0.0	18.9
ACT	0.0	0.1	0.0	0.0	0.0	0.0	0.2
TOTAL	**314.0**	**284.4**	**266.2**	**144.5**	**77.2**	**1.2**	**1087.5**

Economic Costs of Natural Disasters in Australia, Report 103, Bureau of Transport Economics, January 2001.

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Appendices

Firefighters and residents post wildfire at Interlaken, January 2003. Photo courtesy of The Mercury.

Background

Over the past three decades, State and Local Governments within Australia, supported by Commonwealth funding under the Natural Disaster Relief Arrangements (NDRA), have spent millions of dollars responding to, and assisting recovery from, natural disasters. As shown earlier, the annual average cost of natural disasters to Australia and Tasmania, between 1967 and 1999, was $1087.5 million and $18.9 million respectively. Yet, over this same period, only a comparatively small amount has been dedicated to implementing strategies to prevent and/or prepare for such disasters. Work at both national and State levels has now confirmed that the implementation of prevention strategies will assist in reducing the cost of such incidents and their impact on the community.

Following publication of AS/NZS 4360:1995 *Risk management*, a Standard to guide good management practice in organisations, the applicability of the Standard to community emergency management was immediately recognised. The subsequent development of emergency risk management guidelines by Emergency Management Australia heralded a new approach to emergency management in Australia, where not only the hazard or source of risk is considered but also the likelihood of harmful consequences arising from the interaction of the hazard, the community and the environment. Shortly thereafter, the Commonwealth Government introduced a Natural Disaster Risk Management Studies Program (NDRMSP) to encourage State and Local Governments to undertake risk management studies.

The guidelines for emergency risk management – the Emergency Risk Management Applications Guide – were considered to be a new best practice approach to emergency management. The well-defined steps of a cyclic process, stakeholder consultation, monitoring and review, and a focus on continuous improvements would allow emergency management officers to work with the community on identifying, assessing and treating those risks considered unacceptable to the community. The involvement of the community is now acknowledged as an essential element of emergency management.

With the State Disaster Committee's commitment to this new approach, and with future NDRA funding to be linked to evidence of risk reduction, funding was obtained under the NDRMSP to support risk assessments in the three regions of Tasmania. Risk assessments were principally focused on sudden, or relatively sudden, natural hazards such as flooding, major wildfires, severe land gale conditions, severe snow storms and earthquakes. Given Tasmania's limited exposure to such natural hazards, the Commonwealth Government accepted that some consideration could be given to technological hazards, with funding guidelines limiting such consideration to approximately ten per cent of the Project content.

Storm damage at East Devonport, July 2000. Photo courtesy of The Mercury.

The Project

The aim was to –

utilise the Emergency Risk Management Guidelines to produce a risk assessment and risk treatment/mitigation study for the three regions of Tasmania based on community input.

The objectives were to –

- gain a whole-of-community commitment to the Project;
- conduct an assessment of major risks within Tasmania at regional level;
- allocate risk treatment strategies to appropriate organisations;
- promote risk management as a process of community development and organisational management; and
- monitor implementation of the risk treatment strategies.

Tornado damage at Smithton, November 1992.

The main benefits in undertaking the Project were considered to be –

- understanding risks from the community's perspective;
- opportunity to reduce the levels of risk to the Tasmanian community;
- identification of potential emergency planning requirements;
- use of a best practice standard for risk management;
- opportunity to focus on prevention rather than response;
- opportunity to reduce the cost to communities from the impact of natural and technological disaster;
- opportunity for enhanced community consultation;
- development of an agreed list of risks in Tasmania that are unacceptable to the community;
- improved community understanding of risks and the benefits of risk reduction activities; and
- improved knowledge of the risk assessment process across key State and Local Government areas.

Project Approach

In each of the three regions a Regional Project Plan was developed and endorsed by the appropriate Region Disaster Planning Group, ahead of establishing working committees of key stakeholders. As appropriate, stakeholders such as Local Co-ordinators, Mayors, elected Councillors, Council officers, Commonwealth and State agency representatives, members of Municipal Emergency Management Planning Committees and Fire Management Area Committees were either members of the working committees or closely consulted during the Project. In each region, the State Emergency Service's Regional Manager was tasked with progressing the risk assessments in line with the national guidelines published by Emergency Management Australia. The data gathering phase for the Project basically concluded for the north-west and the northern regions in June 2002 and slightly later for the southern region.

Where Statewide issues arose – for example, establishing risk evaluation criteria and developing risk treatment strategy principles – stakeholder workshops were arranged to address such issues, with community representatives attending from the three regions.

Mindful of the volume of information generated by the regional risk assessments and the need for concise, accurate reporting of risk data, a geographic information system (GIS) risk mapping initiative was developed in conjunction with a Hobart consultancy. Risk statements and potential treatment strategies sit behind GIS risk mapping and remain immediately accessible via interface programming. While the initial focus for reporting in 2003 centred on a simple, effective, low cost, read-only approach, it is likely a web-based interactive solution will be developed to satisfy comprehensive planning and operational needs outside of this Project.

Five examples of Statewide GIS risk mapping work associated with the Project are provided later in this report and regional data can be viewed by following the instructions on the CD ROM.

Project Support

Support for the Project took several differing forms. To support the coordination and resourcing of regional studies, a Project Steering and Review Committee was established at an early stage. It comprised the Region Disaster Controller, the State Emergency Service's Regional Manager and a Local Government representative from each region, the State Emergency Service's Director and Manager Planning and the Director of Community Fire Safety, Tasmania Fire Service. The Committee met a number of times over the past two years and had several out-of-session briefings to progress related issues.

Bulletins were prepared throughout the studies to provide information on the Project, the progress of each regional study and the benefits to Local Government. These bulletins were made available on the State Emergency Service website (*www.ses.tas.gov.au*), plus Local and State government 'shop fronts'. Subsequent to the launch of the Project in March 2001 by the Premier, Jim Bacon, numerous presentations were made to various audiences, mainly by the Director of the State Emergency Service. Through regular reporting to the State Disaster Committee and the Premier's Local Government Council, progress of the Project was monitored and reviewed, as required.

Poster board displays at major community events such as Agfest and the 89th Local Government Annual Conference also served to heighten community awareness of the Project. A technical paper presented at a conference of emergency services personnel in Perth, Western Australia, helped promote the Project within the emergency management community. A further paper was presented at the 2003 Safer Sustainable Communities Australian Disaster Conference in September 2003.

The Emergency Risk Management Process

As outlined in the aim of the Project, national guidelines contained in the Emergency Risk Management Applications Guide were used for the regional risk assessments. The process of the Guide is depicted in Appendix 1 and the five main steps are discussed below. All applicable data, which was essentially collected between March 2001 and June 2002, and appropriate determinations in support of the process can be found on the CD ROM.

Step 1 – Establish the Context

The following activities were undertaken to establish the context –

- identification of the nature and scope of issues that should be addressed to improve community safety;
- establishment of the management framework in which the regional studies were to be progressed;
- description of the community and the environment for each region; and
- development of risk evaluation criteria for:

- loss of life	- health and well-being	- cultural assets and values	- community lifelines/services
- serious injury	- environment	- normal business activity	- exotic diseases or pests

Step 2 – Identify Risks

The second step in the process related to regional assessments by community representatives of the interaction of hazards (sources of risk) with the community and the environment (elements at risk).

The history of interaction between the source of risk and the elements at risk was examined to establish a credible relationship or justification for inclusion in the study. Local knowledge, the history of previous events and the advice of emergency service professionals proved to be most important. Risk statements relating to this interaction were then generated for the following natural and technological hazards, as appropriate to the region:

Natural Hazards

- flood	- severe weather	- whale beaching	- tsunami
- wildfire	- earthquake/landslip	- exotic animal disease	- volcanic activity
- storm	- public health epidemic	- food crop disease	- coastal erosion

Technological Hazards

- building collapse	- structural fire	- industrial accident	- transport accident
- infrastructure failure	- hazardous material	- pollution	

Based on the following generic classifications, specific elements at risk were identified by the working committees.

Elements at Risk

- essential services	- life	- assets	- service sector providers
- community facilities	- physical health	- income	- natural environment
- social networks	- mental health	- retail/commercial/industry	- heritage

In accordance with national guidelines, risk statements were developed for the interaction of each relevant hazard or source of risk with a specific element at risk, an example of a risk statement being:

> *There is a risk that major flooding of the South Esk River may cause disruptions to community services, e.g. transport and recreational facilities.*

Step 3 – Analyse Risks

The third step in the process related to determining the likelihood of the risk and its associated consequences occurring, the magnitude of the consequences should such a risk occur and a level of risk in terms of four descriptors – low, moderate, high or extreme.

Towards demonstrating the thoroughness of the risk analysis stage, the total number of risks identified and the number of risks within the various categories for each of the regions and the State are shown below:

Region	Number of Risks				
	Total	Extreme	High	Moderate	Low
North-West	763	145	258	166	194
Northern	774	165	319	155	135
Southern	641	219	249	123	50
State	**2178**	**529**	**826**	**444**	**379**

Step 4 – Evaluate Risks

In the fourth step each identified risk was evaluated, based on community acceptance as determined by the risk evaluation criteria and the management arrangements currently in place.

The evaluation process provided four possibilities –

- **Unacceptable** based on risk evaluation criteria, but **acceptable** based on current management arrangements – no further action would be required.
- **Acceptable** based on risk evaluation criteria and **acceptable** based on current management arrangements – no further action would be required.
- **Acceptable** based on risk evaluation criteria, but **unacceptable** based on current management arrangements – further action would be required.
- **Unacceptable** based on risk evaluation criteria and **unacceptable** based on current management arrangements – further action would be required.

Those risks considered by the working groups to require no further action were documented to enable regular review should there be changes in the risk level, changes in community acceptance and/or the need for action. A comparison of the total number of risks identified and the number requiring action within the various categories for each of the regions and the State is shown below:

Region	Number of Risks Requiring Action				
	Total	Extreme	High	Moderate	Low
North-West	282	78	105	60	39
Northern	109	36	67	6	0
Southern	396	168	156	63	9
State	**787**	**282**	**328**	**129**	**48**

It is important to note that many of the risks identified in the regions are viewed by the working groups either as acceptable risks or risks where current management arrangements are considered satisfactory. Thus the above tabulation showing the number of risks requiring action must not be viewed as an indicator of the level of risk within each region. Factors such as community awareness of risk, risk perceptions, knowledge of existing management arrangements and satisfaction with existing response capabilities, preclude drawing any specific conclusions on the level of risk within the communities of each region. The tabulation does, however, provide a snapshot of the number of risks in each of the regions which must be further assessed, in pursuit of a clear understanding of the opportunities for enhanced community safety.

The Tahune Bridge post flood, September 2003.

Step 5 – Treat Risks

In this final step of the process, risk treatment options were generated and assessed against the 15 criteria provided in the national guidelines. Based on the community representatives' understanding of sensible risk mitigation strategies, the option or mix of options was then selected by the working groups.

In many cases relatively low-cost strategies (e.g. developing contingency plans, reviewing legislation, enforcing regulations and education) were considered adequate to mitigate the effect of the risk.

Following selection of the appropriate risk treatment strategy or strategies, the potential responsibility for action and the urgency of implementation to mitigate the effects of the risk were determined. To highlight potential responsibility for implementing the various risk treatment strategies, a colour coding was developed on the CD ROM data showing potential responsibility for the management of the envisaged treatment strategies, as proposed by the Region Disaster Planning Groups.

Preliminary findings indicated the majority of risk treatments were likely to be a Local Government responsibility in partnership with a State Government agency, private interests or an industry.

An implementation timeframe for each risk treatment strategy has been proposed as an indication of the priority for action, as viewed by the community. Obviously those organisations/agencies responsible for risk treatment strategy implementation need to take many other factors into consideration when planning to mitigate the effects of identified risks, and this report should be considered a platform on which to build.

The number of risks requiring action for the three regions and the State is provided below, together with an indication of the envisaged organisation/agency with the potential responsibility for risk treatment implementation. A breakdown of the potential responsibilities for treatment strategy implementation, by municipal area, is provided in Appendix 2.

Region	Number of Risks Requiring Action		
	Local Government	Partnership	Single Organisation
North-West	60	162	60
Northern	11	87	11
Southern	81	293	22
State	**152**	**542**	**93**

Main Natural Disaster Risk Findings

It is not possible to present in detail the findings for each of the sources of risk studied in a summary document and the reader is referred to the accompanying CD ROM for detailed information. As funding for the Project was provided under the Natural Disaster Risk Management Studies Program (NDRMSP), where the focus was on risks arising from flood, wildfire, storm, severe weather and earthquake/landslip, the findings for those five risks are summarised. Following the summary, maps showing the geographical locations of those risks identified by the working groups as requiring action, at specified risk levels, are provided. The alphanumeric risk identifier relates to the textual information within the CD ROM. Towards supporting spatial information, a breakdown by municipal area of those five categories of risk where action is considered by the working groups to be appropriate, regardless of risk level, is provided in Appendix 3.

Wildfire at Gordon, January 2003. Photo courtesy of The Mercury.

Flood

Flooding is considered the second most costly natural disaster impacting on Tasmanian lifestyles, with an average annual cost of $6.7 million between the years 1967 to 1999.

Extensive flooding occurred at Longford in 1969 with 250 people evacuated and 65 homes inundated by rising floodwaters. In 1970, record flooding occurred in the Mersey and Meander Rivers with damage estimated in excess of $5 million at Deloraine and one fatality recorded. Extensive flooding also occurred in Southern Tasmania with many roads cut in the Derwent and Lower Midlands areas. In 1977 major flooding occurred in the north-west leaving four houses at Penguin and 14 at Latrobe inundated with mud. Seventy residents were evacuated from Branxholm in 1988 when a nearby dam threatened to collapse following heavy rainfall. Many roads were cut along the north coast, a train was surrounded by floodwaters near Launceston, the Ringarooma Bridge was washed away and Scottsdale was only accessible via the Bridport Road. Coastal areas were also flooded by unusually high tides caused by a storm surge after a low pressure system passed over Tasmania. In 1993 Statewide rainfall associated with a series of low pressure systems off the East Coast resulted in extensive flash flooding in the north-east and flooding in the Midlands area that resulted in an estimated $5 million damage to roads and bridges, and in stock and crop losses. In 1998 extensive flooding occurred in the Deloraine area when over 100 millimetres of rain fell in a 24-hour period along the Western Tiers. Extensive flooding also occurred in the Lake and Isis Rivers districts.

Flooding at St Leonards, July 2003. Photo courtesy of The Examiner.

Whilst community representatives identified 277 flood risks across the State, some 183 flood risks were rated by communities as having been managed satisfactorily already, leaving only 94 rated as requiring action.

Representatives of the southern region identified 48 flood risks requiring action, whilst the other two regions each identified 23 flood risks for action.

The northern region had 11 extreme flood risks, the southern region five and the north-west two.

Nineteen of the 29 municipal areas across Tasmania identified flood risks for action, with Launceston and Huon Valley sharing the greatest number at 10 each, irrespective of the level of risk. Launceston also had the greatest number of extreme risks for action at seven, followed by Huon Valley with four extreme risks for action.

The risk treatment strategies considered by the community to be appropriate covered warning systems, compliance with planning schemes, upgrading/protecting/re-locating the infrastructure impacted and improved hydrology.

Whilst many of these strategies are dependent on a partnership arrangement, there is an acceptance that many could be handled at local level through, for example, keeping river edges free from vegetation and maintaining the integrity of existing levees. Many municipal areas saw a need to undertake community education programs.

See page 11 for the geographical locations of the extreme and high flood risks for action.

Wildfire

Wildfire is considered the most costly natural disaster impacting on Tasmanian lifestyles, with an average annual cost of $11.2 million between the years 1967 to 1999.

A total of 62 lives were lost during Tasmania's worst fire season in 1967, with the worst day being 7 February when several bushfires destroyed 1,300 homes and 128 major buildings. Some 7,500 people were left homeless and besides the significant loss of livestock, 20 per cent of Tasmania's fruit crop was destroyed. In 1981 fires in Zeehan destroyed 40 homes. In 1991 fires at Pelverata and Bonnet Hill burned six houses. In 1998 fire destroyed 3,000 hectares and six houses in Hobart's southern suburbs.

Wildfire at Albion Heights, January 1998. Photo courtesy of The Mercury.

Whilst community representatives identified 349 wildfire risks across the State, they rated 168 of these risks as having been managed satisfactorily already, leaving 181 rated as requiring action. The north-west region identified 89 wildfire risks requiring action, whilst the southern region identified 65 wildfire risks for action, and the northern region identified 27 such risks.

Representatives of the southern region identified 35 extreme wildfire risks, the north-west 27 and the north eight.

Other than Break O'Day, Northern Midlands and West Tamar, all municipal areas identified wildfire issues for action. The West Coast identified 27, Central Coast 21 and Latrobe 16, irrespective of risk level. The West Coast working group identified the greatest number of extreme wildfire risks for action (nine) closely followed by the Huon Valley (eight).

The risk treatment strategies considered by the community to be appropriate covered conducting fire management studies and hazard reduction programs, better land use planning and protecting or relocating the infrastructure impacted.

As with flooding, many municipal areas saw the need for community education and awareness programs. Training and awareness of Council staff was also identified as an important component in reducing wildfire risk.

As per current practice, the responsibilities for mitigatory action were seen to rest with private landowners, in close consultation with Councils and the Tasmania Fire Service. It was recognised that these property owners and those responsible for other assets can contribute significantly to risk reduction by continuing to act upon the good fire safety and fire management advice of the Tasmania Fire Service and local Councils.

See page 12 for the geographical locations of the extreme wildfire risks for action.

Storm

Storm is considered to be the third most costly natural disaster in Tasmania, after wildfire and flood, impacting on Tasmanian lifestyles, with an average annual cost of $1.1 million between the years 1967 to 1999.

The mid-latitude westerlies, affectionately known as the Roaring Forties, affect Tasmania directly. The greatest strength and persistence of these winds occur during late winter and early spring, but the speed and direction vary with the passage of high and low pressure systems.

Gales are most likely to come from the western quarter as deep lows pass south of Tasmania. The highest recorded wind gust in Tasmania of 176 km/h occurred at Cape Grim in July 1998. The strongest wind strength experienced in Hobart was 150 km/h, recorded during a storm in September 1965.

Since 1967, storm damage records show numerous incidents in many parts of the State, with possibly the most significant event in the south of the State being the unroofing of several houses and the total destruction of two houses in the Hobart area in March 1980. Gale force winds at this time ruined at least 50 per cent of the apple export crop. In November 1992, in the north-west region, extensive damage to over a dozen homes and community infrastructure occurred when a tornado from a north-westerly direction cut a swath inland of Smithton. Wind speeds were estimated to have reached 280 km/h.

Community representatives identified 175 storm risks across the State. Some 119 storm risks were rated by communities as having been managed satisfactorily already, leaving 56 rated as requiring action. The southern region identified 25 storm risks for action, the north-west 17 and the north 14.

The Huon Valley municipal area had the greatest number of storm risks for action at nine and the municipal areas of Tasman, Central Coast, Devonport and George Town shared the highest number of extreme storm risks for action at two each.

The risk treatment strategies considered by the community to be appropriate covered regular inspection and maintenance/removal programs for trees causing threat, stricter adherence to building codes, identification of high risk assets and improved early warning systems for storm events, similar to current flood warning systems. An improved emergency response capability and community education programs were also deemed appropriate.

Not surprisingly, responsibilities for implementing many of the strategies were determined by stakeholders to rest with partnership arrangements between Local and State Governments, especially the State Emergency Service. The Bureau of Meteorology was, of course, included in implementing strategies involving early warning systems and community education programs.

See page 13 for the geographical locations of the extreme, high, moderate and low storm risks for action.

Storm damage in North Hobart, December 2000. Photo courtesy of The Mercury.

Severe Weather

For the most part Tasmania enjoys a temperate maritime climate, with temperatures moderated by the sea. The prevailing westerly airstream leads to a marked variation of cloudiness, rainfall and temperature which results in a west coast and highlands that are cool, wet and cloudy and an east coast and lowlands that are milder, drier and sunnier. Summers are mild with any hot periods rarely lasting more than a few days. Winters are not excessively cold.

Maximum temperatures may approach 40°C in the east and south-east of Tasmania during January and February, generally the hottest months throughout the State. The highest temperature recorded in Tasmania has been 40.8°C recorded at Bushy Park in December 1945 and in Hobart in January 1976. No data is available on heat related human fatalities, but 30,000 hens were lost in a heat wave in January 1973.

In the highlands, above the 900 metre level, snow can occur at any time of the year, with the heaviest snowfalls tending to occur in July and August. In August 1976, heavy snow falls blocked many minor roads in the Central Highlands, resulting in relief food supplies being made available to isolated families in the Mt Lloyd area. Early on 29 July 1986, many places in Tasmania had their heaviest snow on record. Heavy snow fell in Hobart and most principal roads were closed, isolating the city for much of the day.

Whilst large hail is relatively uncommon in Tasmania, the far south–west has the highest number of days of small hail occurrence recorded in Australia.

Frosts can occur throughout the year in all areas apart from the extreme coastal strip, where the frost season extends from about March to November. Fog is prevalent in Tasmania particularly during autumn and in winter, especially in the inland river valleys.

Community representatives identified 136 severe weather risks across the State and concluded that 118 of these risks have been managed satisfactorily already, leaving 18 rated as requiring action. The north-west region identified 10 severe weather risks for action and the southern region eight. No action was required for the severe weather risks identified in the northern region.

Severe weather search and rescue, Huonville, August 2001.

The Huon Valley again had the greatest number of severe weather risks for action at seven, and was the only municipal area having an extreme severe weather risk for action.

The risk treatment strategies considered by the community to be appropriate covered improved road signage, an improved response capability and a community education program. Besides Local Government, responsibilities for implementation of these strategies were considered to lie with State Government, assisted by the Bureau of Meteorology.

See page 14 for the geographical locations of the extreme, high, moderate and low severe weather risks for action.

Earthquake/Landslip

Historically, Tasmania is regarded as a low or very low risk location for earthquakes, through low impacts and relatively low frequencies. In 1989, two main risk zones were scientifically confirmed – a western Tasmania zone and a western Tasman Sea zone. Landslips are also considered to be generally a low risk, with the Tamar Valley, the west coast and the north-west coast of Tasmania the scenes of landslip in the past.

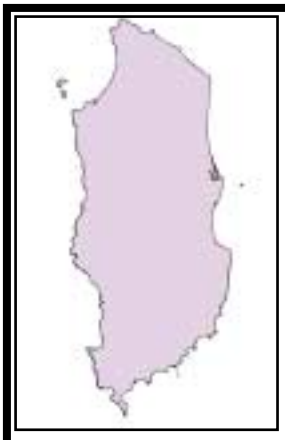
Moderate earthquake tremors have been recorded at King Island (1960), Burnie (1969), Macquarie Island (1981) and Bream Creek (1986).

Community representatives identified 144 earthquake/landslip risks across the State. Some 129 of those risks were rated by the communities as having been managed satisfactorily already, leaving 15 rated as requiring action. The southern and northern regions each identified six earthquake/landslip risks for action and the north-west region identified three.

The George Town municipal area had the greatest number of earthquake/landslip risks for action at four and the greatest number of extreme earthquake/landslip risks for action at two.

The risk treatment strategies considered by the community to be appropriate covered improved identification of landslip areas, geotechnical studies of critical areas and improved planning and development controls. Availability of additional trained emergency service responders in urban search and rescue to a basic level was also considered by some communities as an appropriate treatment strategy for earthquake events. Local and State Governments, together with property owners, were considered by stakeholders to have responsibilities in implementing appropriate risk treatment strategies.

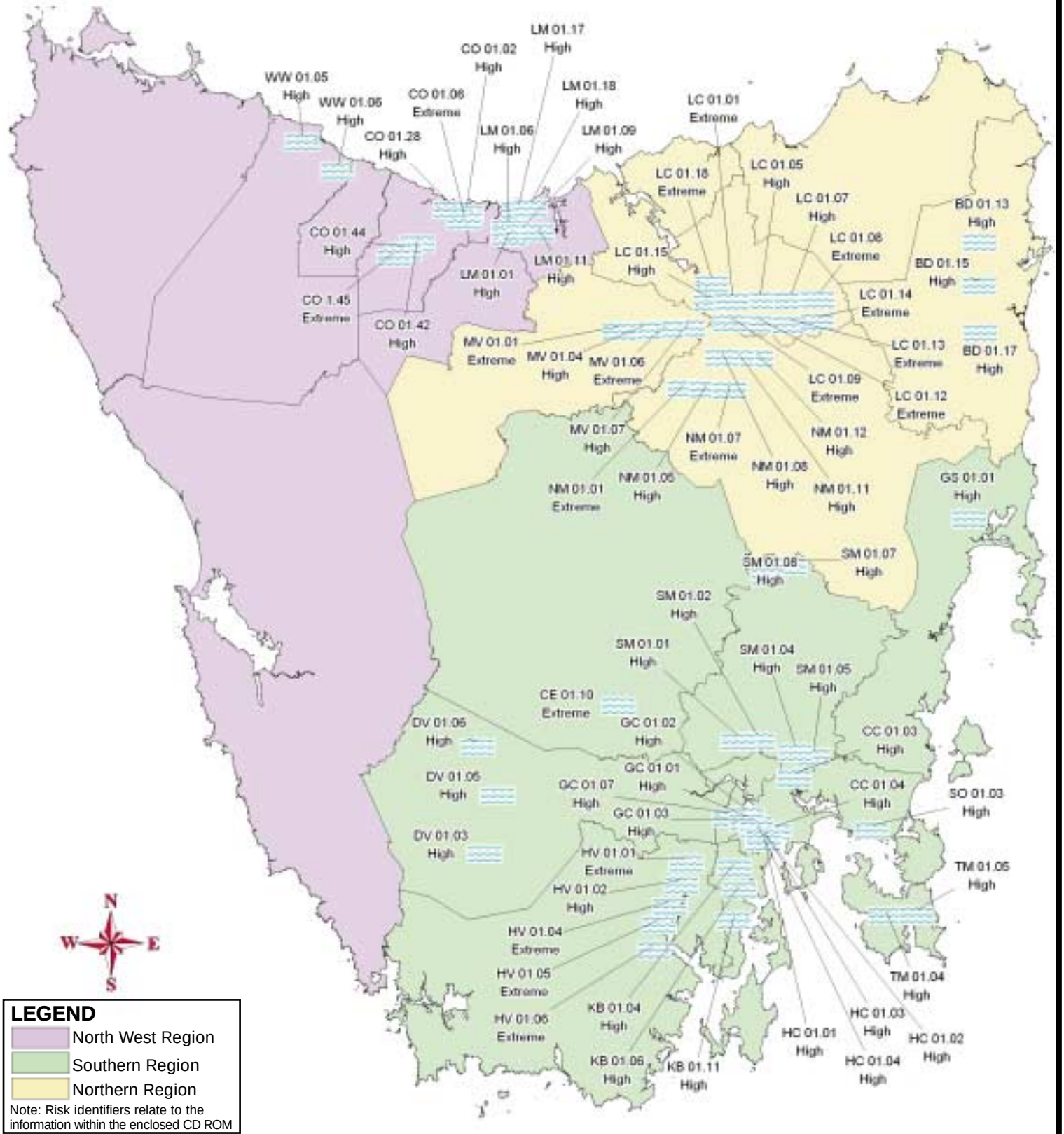
See page 15 for the geographical locations of the extreme, high, moderate and low earthquake/landslip risks for action.



State Summary

Flood Risks for Action

(Extreme and High)



State Summary

Wildfire Risks for Action

(Extreme)

WW 02.06
WW 02.05
BC 02.01
BC 02.07
DC 02.06
LM 02.12
LM 02.16
LM 02.14
GT 02.01
GT 02.03
CH 02.04
CH 02.07
CH 02.08
CO 02.16
LM 02.01
LC 02.03
LC 02.01
CO 02.25
LM 02.05
LM 02.19
KM 02.12
LM 02.22
LC 02.05
WC 02.01
WC 02.03
MV 02.05
MV 02.04
WC 02.08
WC 02.10
CE 02.02
GS 02.09
GS 02.01
GS 02.06
WC 02.22
WC 02.29
GS 02.07
WC 02.21
WC 02.25
CE 02.05
GS 02.08
WC 02.17
SM 02.01
SM 02.02
SO 02.03
SO 02.02
SM 02.06
BM 02.08
BM 02.04
BM 02.01
HV 02.01
DV 02.05
HC 02.03
HV 02.02
CC 02.05
CC 02.04
HV 02.05
HC 02.05
CC 02.02
HV 02.04
HC 02.01
HV 02.06
HV 02.11
HV 02.09
KB 02.11
TM 02.07
HV 02.07
TM 02.02
KB 02.01
KB 02.03

N
W
E
S

LEGEND

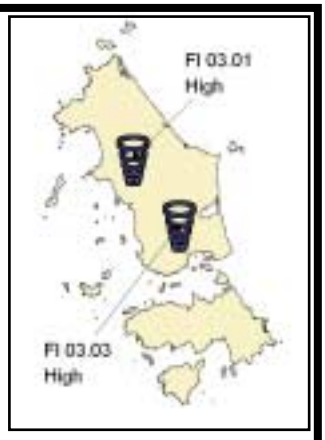
- North West Region
- Southern Region
- Northern Region

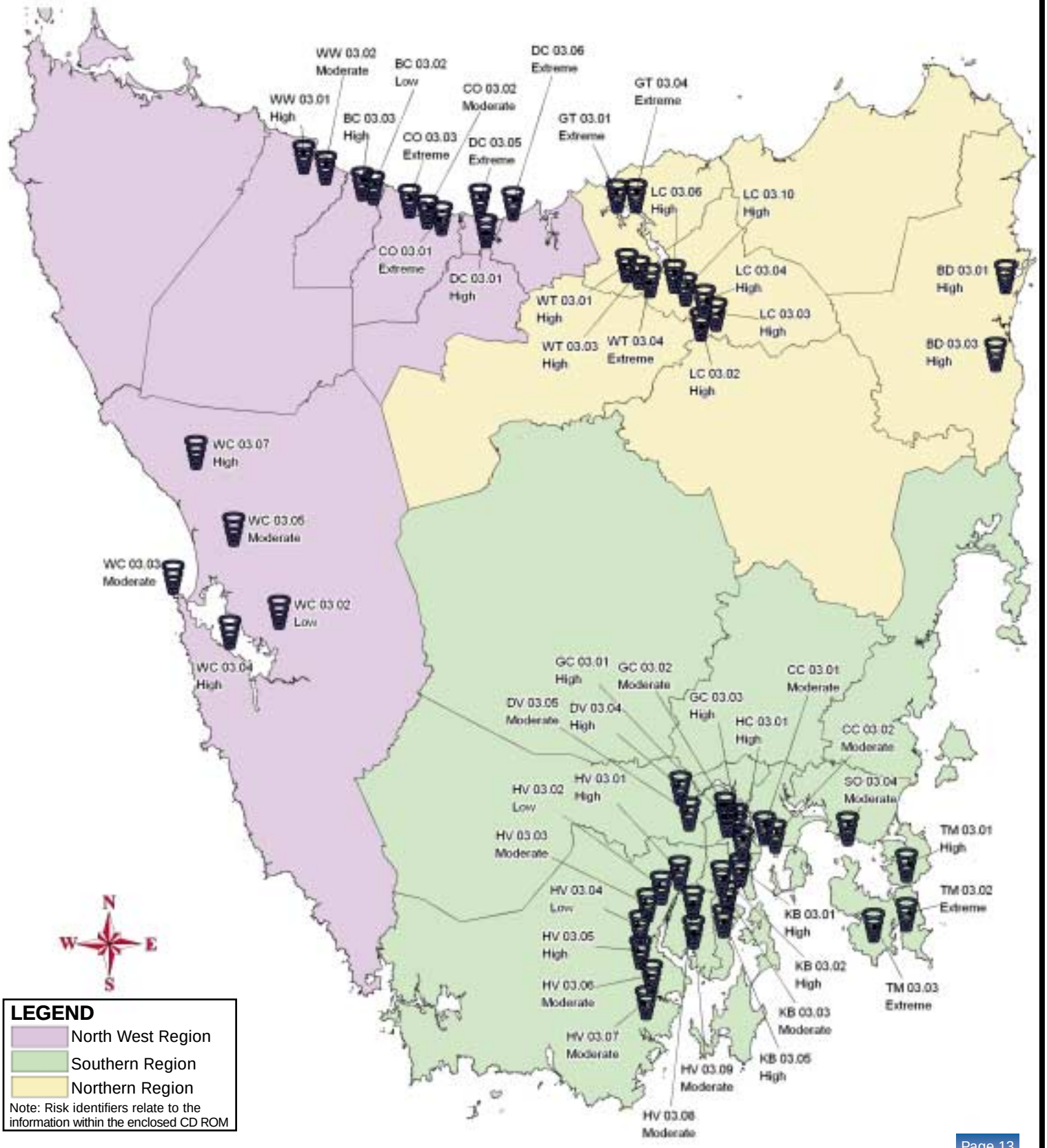
Note: Risk identifiers relate to the information within the enclosed CD ROM

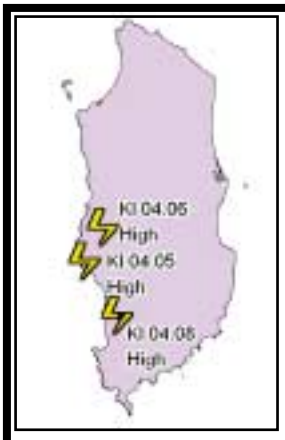
State Summary

Storm Risks for Action

(Extreme, High, Moderate and Low)



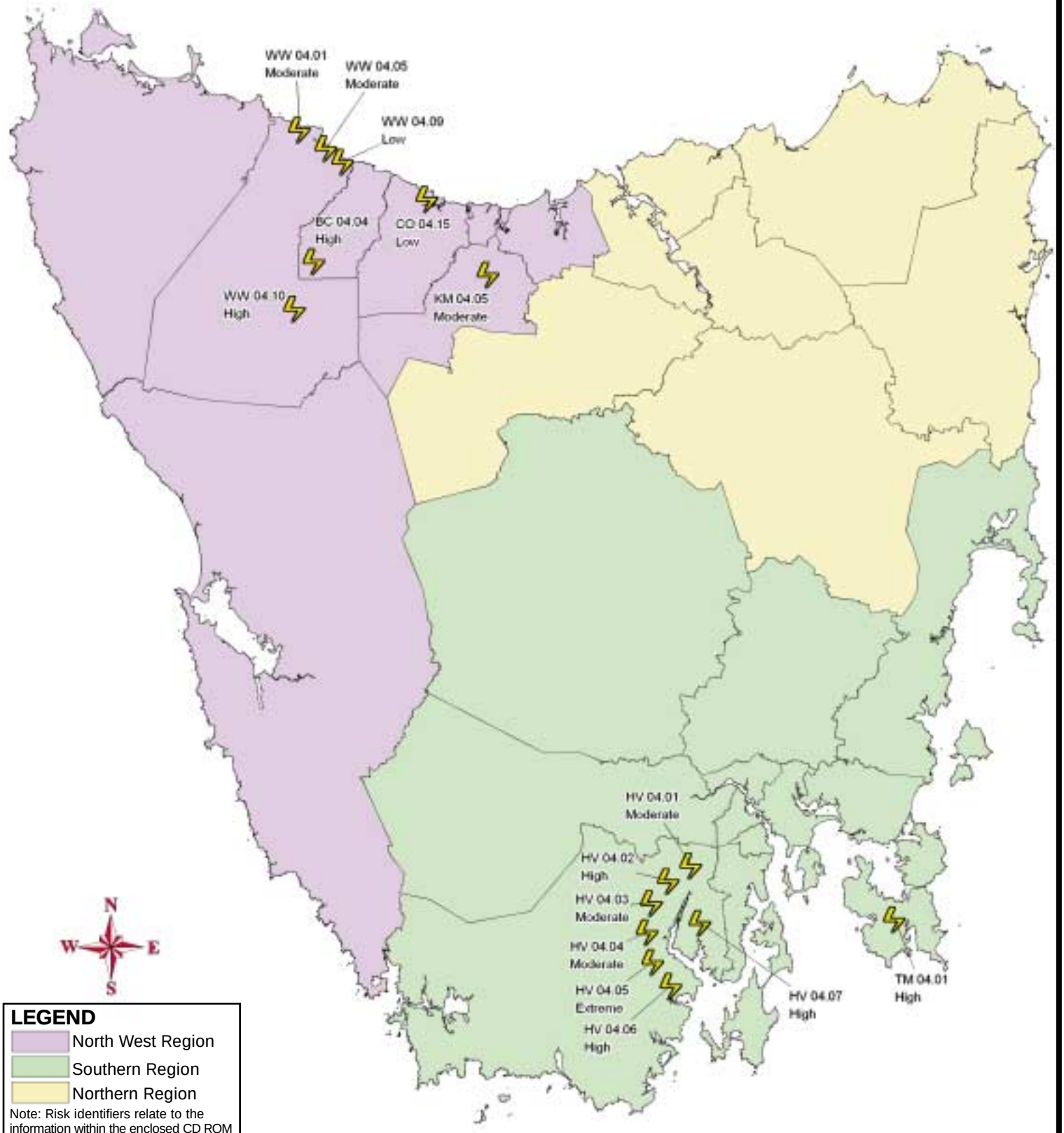


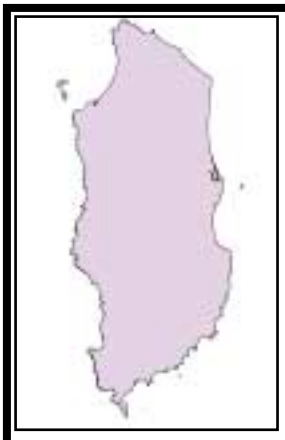


State Summary

Severe Weather Risks for Action

(Extreme, High, Moderate and Low)

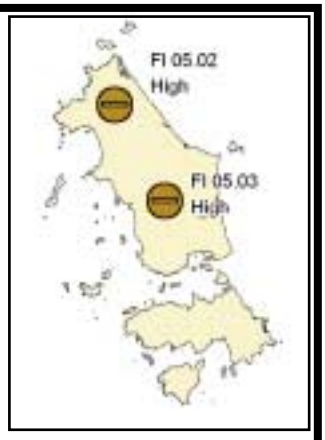




State Summary

Earthquake/Landslip Risks for Action

(Extreme, High, Moderate and Low)



BC 05.08
Moderate
BC 05.07
Moderate
GT 05.06
Extreme
GT 05.07
Extreme
GT 05.09
High
GT 05.10
High
WC 05.03
High
GC 05.02
High
GC 05.01
High
SO 05.02
Extreme
HC 05.01
Moderate
HC 05.02
Moderate
HC 05.03
Moderate

N
W
E
S

LEGEND

- North West Region
- Southern Region
- Northern Region

Note: Risk identifiers relate to the information within the enclosed CD ROM

Tasmania is the first jurisdiction within Australia to have embarked on an emergency risk management project of this scale. As other jurisdictions are expected to follow, it is likely that the experience gained will be of significant value to others and an evaluation of the Project is being considered to confirm its marketing value. Independent evaluators, skilled in community emergency management concepts, have been identified.

Flooding at Latrobe, July 2002. Photo courtesy of Tony Cross Photography.

It is anticipated that following State Disaster Committee consideration of the study, implementation of risk reduction measures will proceed under the existing framework of the Emergency Services Act 1976. A new emergency risk management policy has been endorsed by the Committee to provide direction on monitoring and control of all aspects of risk assessment and risk treatment, including emerging risks. Given the large number of treatment strategies proposed, a database has also been developed in conjunction with a risk register consultant, to assist with such monitoring and control activities. Before entering risk treatment strategies, implementation responsibilities and timeframes in the database, there will be a need to:

- confirm the risk owners;
- further assess risks with risk owners, as appropriate;
- check the appropriateness of the proposed risk treatment strategies;
- identify risk treatment funding opportunities; and
- mutually agree implementation timeframes.

A review of municipal, regional and State emergency planning has commenced and has focused on the risks to community safety at each level of planning to ensure lessons learned from the Project are incorporated, as appropriate.

Funding support for risk treatment projects will be available through the new Natural Disaster Mitigation Program (NDMP) and ongoing support from the Regional Flood Mitigation Program (RFMP). Guidelines for seeking NDMP funding are still being developed but will be similar to the RFMP and should be available for project applications from 2004/2005 inclusive. As a result the continued strengthening of Local and State Government partnerships in emergency risk management, including risk treatment, is anticipated. Through skills gained under this Project, a number of additional risk studies have been initiated at municipal level across the State, dealing with risks outside the scope of this Project or specific aspects of the natural and technological risks not able to be addressed within the Project. Funding support for studies such as these will continue to be available through the NDRMSP.

The RFMP, the NDMP and the NDRMSP are the three programs under the new Disaster Mitigation Australia Package.

Storm damage at Summerhill, December 2001. Photo courtesy of The Examiner.

Conclusion

The objectives and benefits of the Project have been significantly realised, with future emergency planning requirements awaiting the consultation phase of risk treatment implementation.

While working groups have identified a large number of community risks, the regional assessments have revealed that communities and government agencies have been very responsible in the past with risk treatment – the Launceston and Longford levees proved testament to this during recent flooding.

As can be gauged from the number of community risks, the quality of the analysis, evaluation and proposed treatment strategies, there are further opportunities for enhanced community safety.

The three regional studies have proposed a large number of specific risk treatment strategies which, following consultation and agreement with those agencies/organisations responsible for managing the risks, will be implemented and monitored and, if required, reviewed in accordance with the new risk management policy.

Undoubtedly the implementation and monitoring arrangements will be included in future partnership arrangements between State and Local Governments and others to ensure Tasmania remains the safest State in the nation and to achieve the Tasmania *Together* goal – *To have a community where people feel safe and are safe in all aspects of their life*.

Acknowledgments

Commonwealth funding of $150,000 over two years was obtained for the Project, with State and Local Governments expected to contribute 'in-kind' support at a similar level. To date, State Emergency Service personnel have provided just under 9,000 hours of in-kind service. Total in-kind hours for Local Government and emergency management participants (e.g. Local Co-ordinators) would easily exceed this.

Despite the many difficulties associated with 'charting new territory', all participants contributed a great deal of goodwill – often in their own time – and completed a project of which they can be very proud.

Flooding at Fingal, June 1986. Photo courtesy of The Examiner.

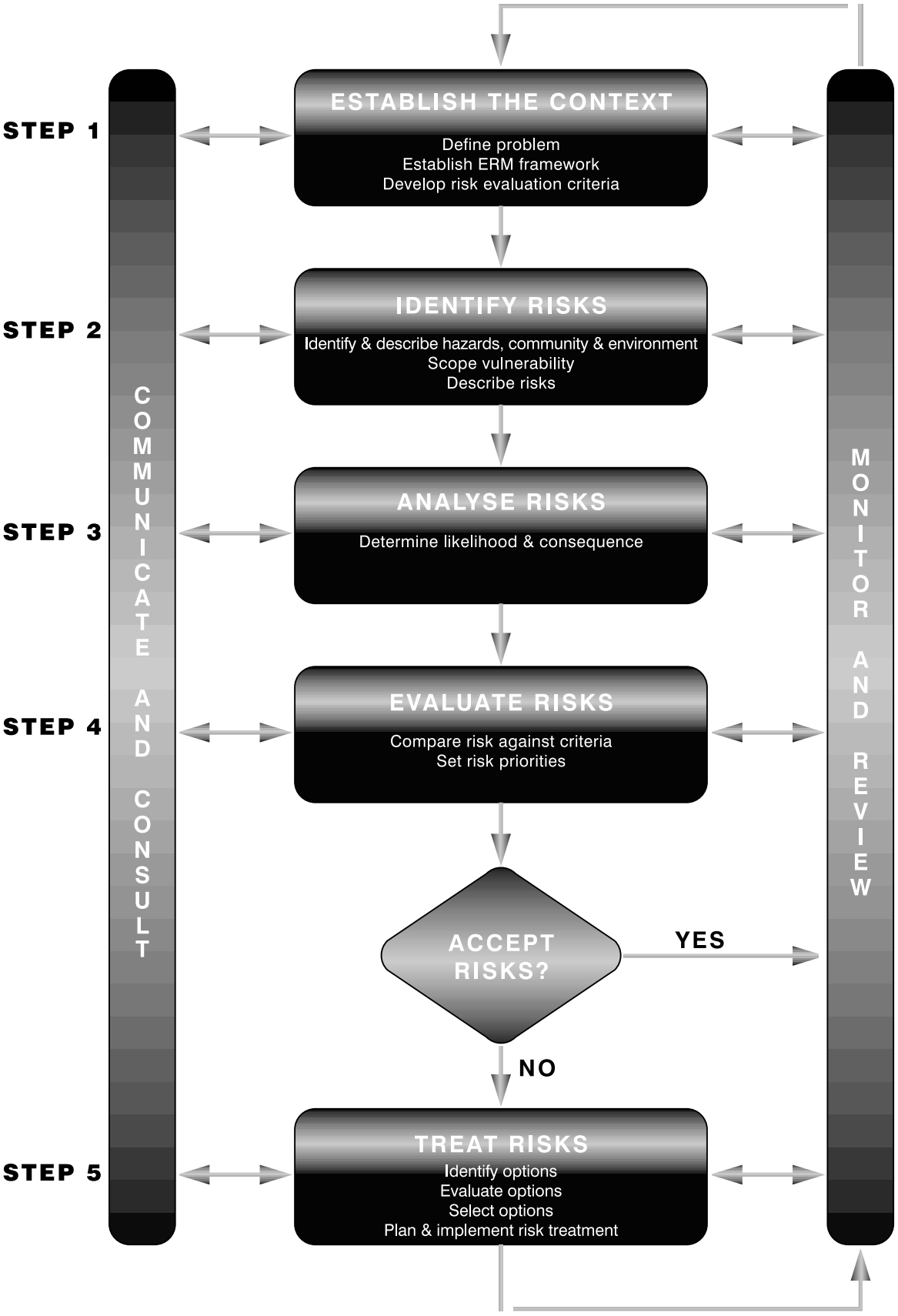


Diagram by kind permission of Emergency Management Australia.

Appendix 2 – Potential Responsibilities for Treatment Strategy Implementation, by Municipal Area

	Number of Risks Requiring Action		
Municipal Area	**Local Government**	**Partnership**	**Single Organisation**
Burnie	3	19	3
Central Coast	11	22	17
Circular Head	0	4	8
Devonport	3	4	12
Kentish	5	15	4
King Island	1	16	6
Latrobe	11	19	4
Waratah/Wynyard	15	26	4
West Coast	11	37	2
North-west Region	**60**	**162**	**60**
Break O'Day	0	5	0
Dorset	0	10	7
Flinders Island	1	12	0
George Town	2	21	0
Launceston	5	13	4
Meander Valley	0	18	0
Northern Midlands	3	3	0
West Tamar	0	5	0
Northern Region	**11**	**87**	**11**
Brighton	0	15	0
Central Highlands	1	13	0
Clarence	3	28	3
Derwent Valley	8	13	0
Glamorgan/Spring Bay	6	22	3
Glenorchy	5	25	0
Hobart	7	16	0
Huon Valley	24	77	0
Kingborough	2	43	10
Sorell	14	5	4
Southern Midlands	3	17	1
Tasman	8	19	1
Southern Region	**81**	**293**	**22**

Back burning in Southern Tasmania, January 2003. Photo courtesy of The Mercury.

Appendix 3 – Main Natural Disaster Risks, by Municipal Area

The breakdown of those key risks requiring action, regardless of level of risk, for each municipal area, is as follows.

Municipal Area	Flood	Wildfire	Storm	Severe Weather	Earthquake/ Landslip
Burnie	0	3	2	1	2
Central Coast	8	21	3	1	0
Circular Head	0	6	0	0	0
Devonport	0	4	3	0	0
Kentish	4	6	0	1	0
King Island	0	2	2	3	0
Latrobe	9	16	0	0	0
Waratah/Wynyard	2	4	2	4	0
West Coast	0	27	5	0	1
North-west Region	**23**	**89**	**17**	**10**	**3**
Break O'Day	3	0	2	0	0
Dorset	0	5	0	0	0
Flinders Island	0	3	2	0	2
George Town	0	5	2	0	4
Launceston	10	3	5	0	0
Meander Valley	4	11	0	0	0
Northern Midlands	6	0	0	0	0
West Tamar	0	0	3	0	0
Northern Region	**23**	**27**	**14**	**0**	**6**
Brighton	0	5	0	0	0
Central Highlands	2	2	0	0	0
Clarence	2	6	2	0	0
Derwent Valley	4	4	2	0	0
Glamorgan/Spring Bay	3	7	0	0	0
Glenorchy	7	3	3	0	2
Hobart	4	4	1	0	3
Huon Valley	10	11	9	7	0
Kingborough	3	7	4	0	0
Sorell	4	5	1	0	1
Southern Midlands	6	4	0	0	0
Tasman	3	7	3	1	0
Southern Region	**48**	**65**	**25**	**8**	**6**

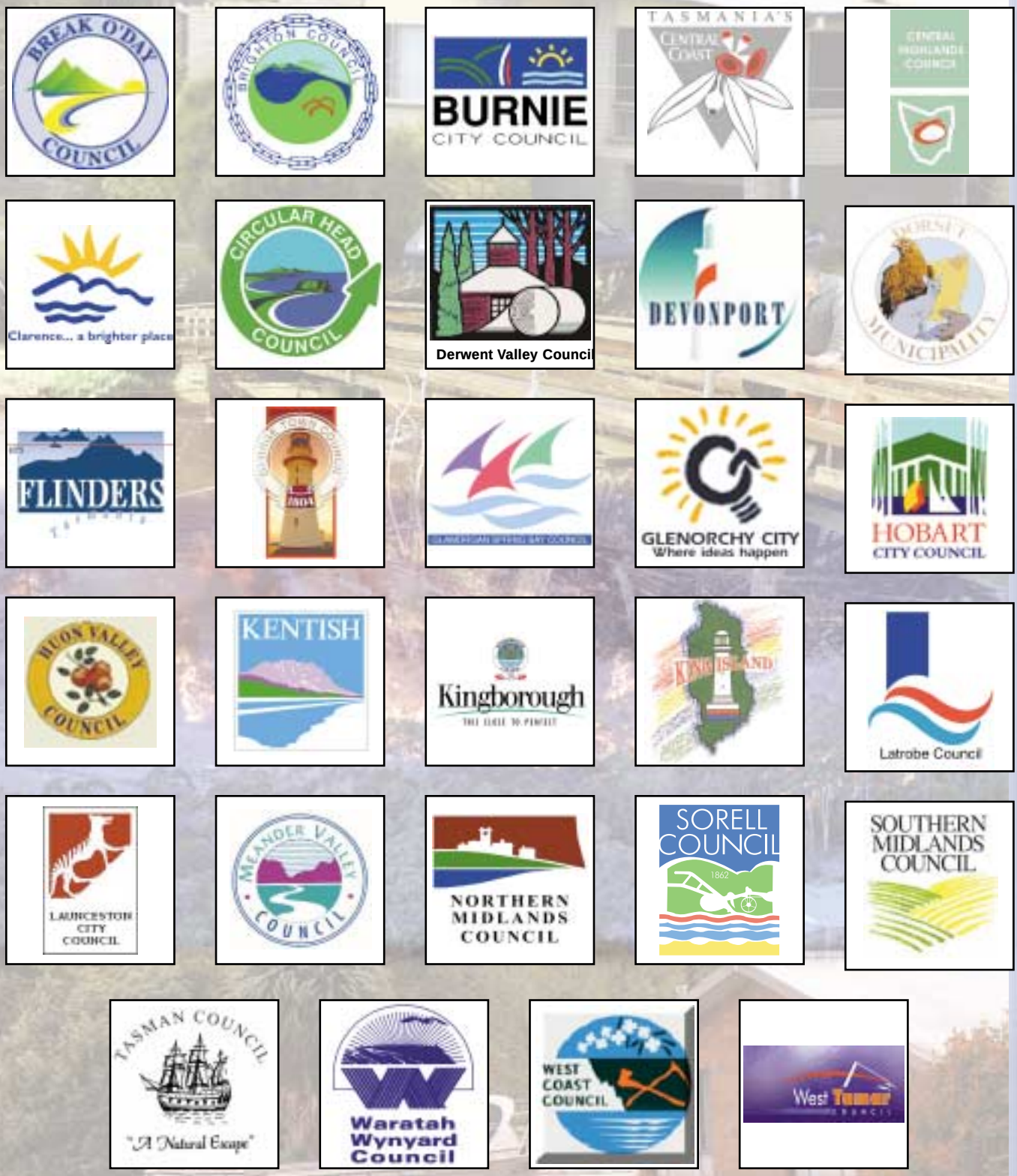
Flooding at Deloraine, June 1988. Photo courtesy of The Examiner.

Glossary

Disaster Mitigation Australia Package	A five-year package consisting of a new Natural Disaster Mitigation Program, continuation of the Natural Disaster Risk Management Studies Program and continuation of the Regional Flood Mitigation Program. This Package was proposed as part of the Council of Australian Governments review of natural disaster relief and mitigation arrangements and provides an additional $63.8 million to the ongoing $15 million for the Natural Disaster Risk Management Studies Program.
Emergency Management Australia	The Commonwealth Government agency with the responsibility of reducing the impact of natural and man-made disasters on the Australian community. Also the lead Federal agency responsible for disaster response.
emergency risk management	A systematic process that produces a range of measures which contribute to the well-being of communities and the environment. The process considers the likely impacts of hazardous events and the treatment measures by which they can be reduced.
Fire Management Area Committees	Committees established under Section 18 of the *Fire Service Act 1979* to provide effective management of the use of fire in their areas, including the use of fire to meet land management goals and objectives.
major risk	Risk to public safety that may cause emergencies/disasters and that require multi-organisational or whole-of-community attention.
mitigation measures	Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and environment.
Municipal Emergency Management Planning Committee	Body established by each municipal area to oversight emergency management locally, including the preparation of counter-disaster plans for the area.
Natural Disaster Mitigation Program (NDMP)	Introduced by Commonwealth Government in May 2003, a program to fund projects relating to nationally consistent data and research, disaster mitigation strategies, disaster mitigation measures, resilient infrastructure, community awareness and warnings, and natural disaster risk assessments.
Natural Disaster Relief Arrangements (NDRA)	Arrangements under which the Commonwealth Government assists the State and Territory Governments to provide financial assistance to eligible persons and organisations following certain natural disasters.
Natural Disaster Risk Management Studies Program (NDRMSP)	Program aimed at encouraging State, Territory and Local Governments to undertake worthwhile risk management studies to identify, analyse and evaluate risks from natural disasters, towards introducing preventative measures to reduce the risks identified in the studies.
natural hazard	Geologic (e.g. volcanoes, earthquakes, landslides and tsunamis), meteorological (e.g. cyclones, bushfires, floods, heat waves and severe storms) or biological (e.g. human disease epidemics, vermin, insect plagues, exotic animal disease and food crop disease) hazard.
recovery	Measures which support emergency affected individuals and communities in the reconstruction of the physical infrastructure and restoration of emotional, social, economic and physical well-being.
Region Disaster Controller	Officer of police in that region appointed by the Minister for Police and Public Safety, under Section 14 of the *Emergency Services Act 1976*.
Region Disaster Planning Group	Body established under Section 15 of the *Emergency Services Act 1976* to prepare and review counter-disaster plans for its region and maintain standing orders for counter-disaster purposes within the region.
Regional Flood Mitigation Program (RFMP)	Introduced by Commonwealth Government in 1999/2000, a program to fund proposed projects relating to the mitigation of flood risks.
risk	Concept used to describe the likelihood of harmful consequences arising from the interaction of hazards, communities and the environment.
State Disaster Committee	Committee established under Section 6 of the *Emergency Services Act 1976* to oversee the management of counter-disaster measures within Tasmania.
technological hazard	Hazard of a technological or man-made origin, as opposed to a hazard of a natural origin.

Roof-top safety system training, Mornington, March 2002.

Emergency planning discussions, SES Headquarters, August 2003.


BREAK O'DAY COUNCIL
BURNIE CITY COUNCIL
TASMANIA'S CENTRAL COAST
Clarence... a brighter place
CIRCULAR HEAD COUNCIL
Derwent Valley Council
DEVONPORT
FLINDERS
GLENORCHY CITY
Where ideas happen
HOBART
CITY COUNCIL
HUON VALLEY COUNCIL
KENTISH
Kingborough
Latrobe Council
LAUNCESTON CITY COUNCIL
MEANDER VALLEY COUNCIL
NORTHERN MIDLANDS COUNCIL
SORELL COUNCIL
1862
SOUTHERN MIDLANDS COUNCIL
TASMAN COUNCIL
"A Natural Escape"
Waratah Wynyard Council
WEST COAST COUNCIL
West Tamar