



bushfire&natural  
**HAZARDS**CRC

# INTEGRATED URBAN PLANNING FOR NATURAL HAZARD MITIGATION

**Alan March**

Melbourne School of Design, University of Melbourne, Victoria

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# TODAY'S PRESENTATION

- The Project
- Integration?
- Aspects of Urban Planning
- Applications?

# PRIMARY QUESTIONS

1. What are the limits and potentials of integrated urban planning for natural hazard mitigation in Australia?
2. Can key cases be used as a way to make practical improvements that generate practical lessons?

# PROJECT TEAM

**Assoc. Prof. Alan March** - University of Melbourne – Melbourne School of Design. (Project Lead, Integration of Urban Planning and Disaster Risk Reduction)

**Prof. Holger Maier** (Risk Management, Modelling & Decision Support) *University of Adelaide*

**Prof. Stephen Dovers** (Disaster Governance and Policy) *Australian National University*

**Prof. Ruth Beilin** (Resilience in changing communities, landscapes and disaster)

**Adjunct A/Professor Hedwig van Delden** (Natural Resources and Risk Management, Modelling and Decision Support) *University of Adelaide,*

**Prof. Janet Stanley** (Integrated Planning, Disaster Management and Arson, Transport and Social Exclusion) *University of Melbourne*

**Dr Graeme Riddell** (Researcher Spatial Systems and Engineering) *University of Adelaide*

**Dr Leonardo Nogueira de Moraes** – Research Fellow

# STAGE 1

## DEVELOPING THE CONCEPTUAL BASE

- Learning from the Past and Present
- Best Practice in Australia and Internationally
- How do current practices in Australia compare?
- Issues and Potentials

# STAGE 2

## APPLICATION OF APPROACH TO AUSTRALIA

- Critical Analysis Methodology
- Application to a number of cases

# STAGE 3

## TRANSLATION AND UTILISATION

# PLANNING IN THE BUILT ENVIRONMENT?

Advantageous arrangement of the physical features, activities and connections between element of settlements and natural systems to achieve desired outcomes and to avoid problems (Hall , 2007).

City regions are becoming increasingly exposed and are creating **new patterns of intensive risk**; at the same time, poorly planned and managed urban development has **generated new hazards and extensive risk** (UNISDR, 2013)

# PLANNING'S EM/DRR POTENTIAL

Consistently recognised as key to reducing natural hazard risks, particularly at policy level.

Urban planning can:

- examine and assess future scenarios (including DSS)
- integrate spatial understandings of hazards with built environment improvements
- modify *activities* and *use* of land
- avoid, reduce and remediate
- *integrate and coordinate a wide range of evidence*
- develop and apply new tools
- account for human behaviours, physical, social, economic, and ecological matters...

The Productivity Commission (2014:29) reports:

*“... growing awareness of the need to integrate natural disaster risk management into all aspects of the land use planning process, but this is not always achieved in practice. Inquiry participants expressed concern that development continues to be approved in high-risk areas, or that good local government decisions are being overturned”.*



# PLANNING'S CHALLENGES

- Existing settlement patterns
- Governance disconnects
- Multi-tier & Multi agency
- Competing demands
- Strong urban population growth
- Incomplete or unused data
- Tendency to continuing existing approaches
- Lack of understanding between EM and Planning personnel.
- Dynamic, changeable risks
- A lack of learning and translation from past events
- Bureaucracy, democracy and politics.

Lismore after Cyclone Debbie



# CONNECTIONS AND ADJUSTMENTS

- The project has direct links with the **Decision Support System** project including Holger Maier, Graeme Riddell and Hedwig van Delden who are part of this team.
- Initially a stronger focus directly on treatments and planning tools
- Initial end-user feedback strongly focused upon reasons for planning shortcomings as fundamental.
- We have now taken a step back to include consideration of governance structures and processes.

# INTEGRATION & URBAN PLANNING?

NERAG 2015 states that the application of risk assessment methodology needs to ensure that emergency-related risk management:

*“... integrates into all organisational **processes** – risk management is a **mainstream** activity that is most effective when integrated into **standard business practices of organisations, governments and communities**” (Australian Institute for Disaster Resilience, 2015).*

Oxford Dictionary: *integration* is "[t]he making up or composition of a whole by adding together or combining the separate parts or elements; combination into an integral whole: a making whole or entire'.

# INTEGRATION & URBAN PLANNING?

Overarching approaches to the built environment via a range of instruments, governance and processes that achieve:

1. avoidance of exposure to hazards;
2. reduction of hazard, or exposure to it *in situ*;
3. reduction of vulnerability or increase in resistance *in situ*;
4. improvement of response;
5. improvement of recovery

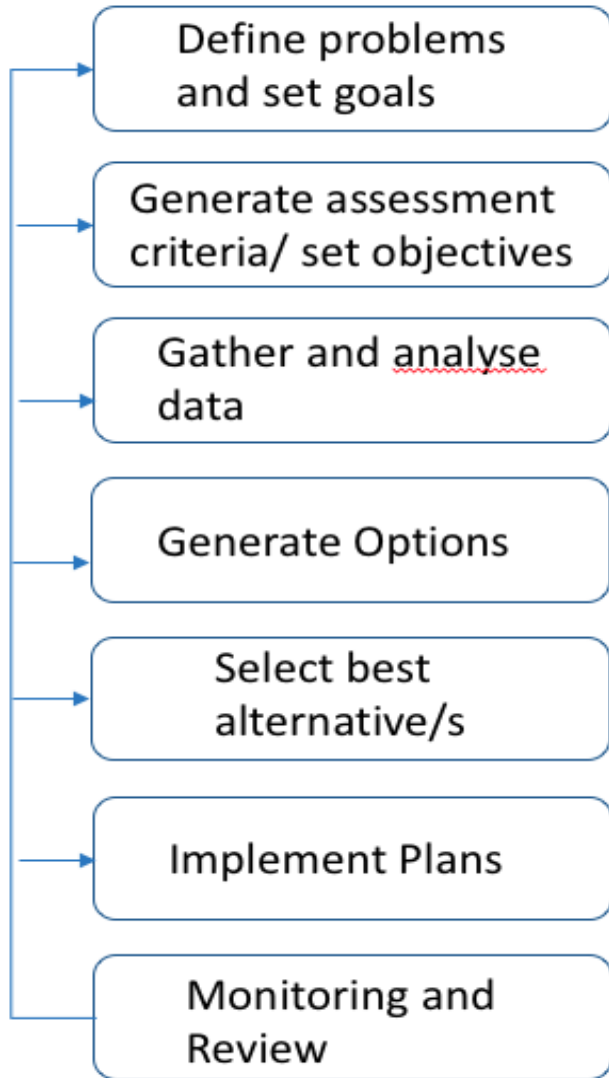
# INTEGRATION

1. intra and inter organisational / **agency integration**, horizontally and vertically;
2. comprehensive coverage of **all hazards**;
3. full use of **all treatment options** (including planning);
4. integration of a wide range of **other relevant parties**;
5. **procedural integration**;
6. integration **across PPRR / PRR**;
7. goals, objectives and **terminology** integration;
8. **treatments integration**;
9. acknowledgement of **local, cultural, social, economic and ecological** matters; and
10. management of **legacy and emergent risks** in the built and natural environment.

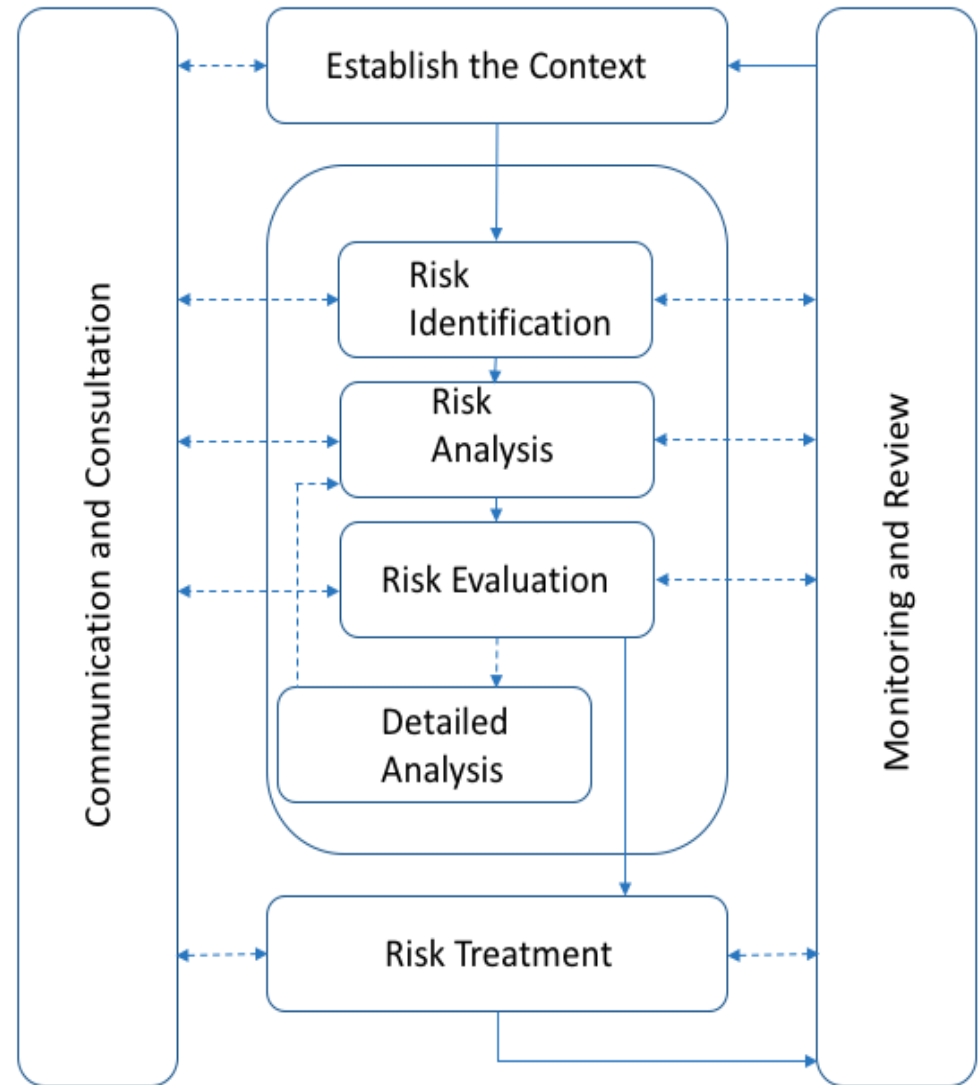
	Agenda/ Projects	Law, Policy & Regulation	Vision	Design, Masterplan	Strategic
Definition	Actions list and often match expenditure budgets and allocations	If - then rules for actions or proscription to guide decisions	Shared vision of desirable future	Description of fully worked out outcome	Contingent actions are taken in organised way, including changes to meet new emergent challenges and opportunities
Examples	Capital improvement projects  Funding allocations	If bushfire overlay, structure built according to BAL	Social equality, economic prosperity	Master plan, site plan, building design	Public transport is designed and constructed in way that meets community need in timely, fair and economic way as growth occurs

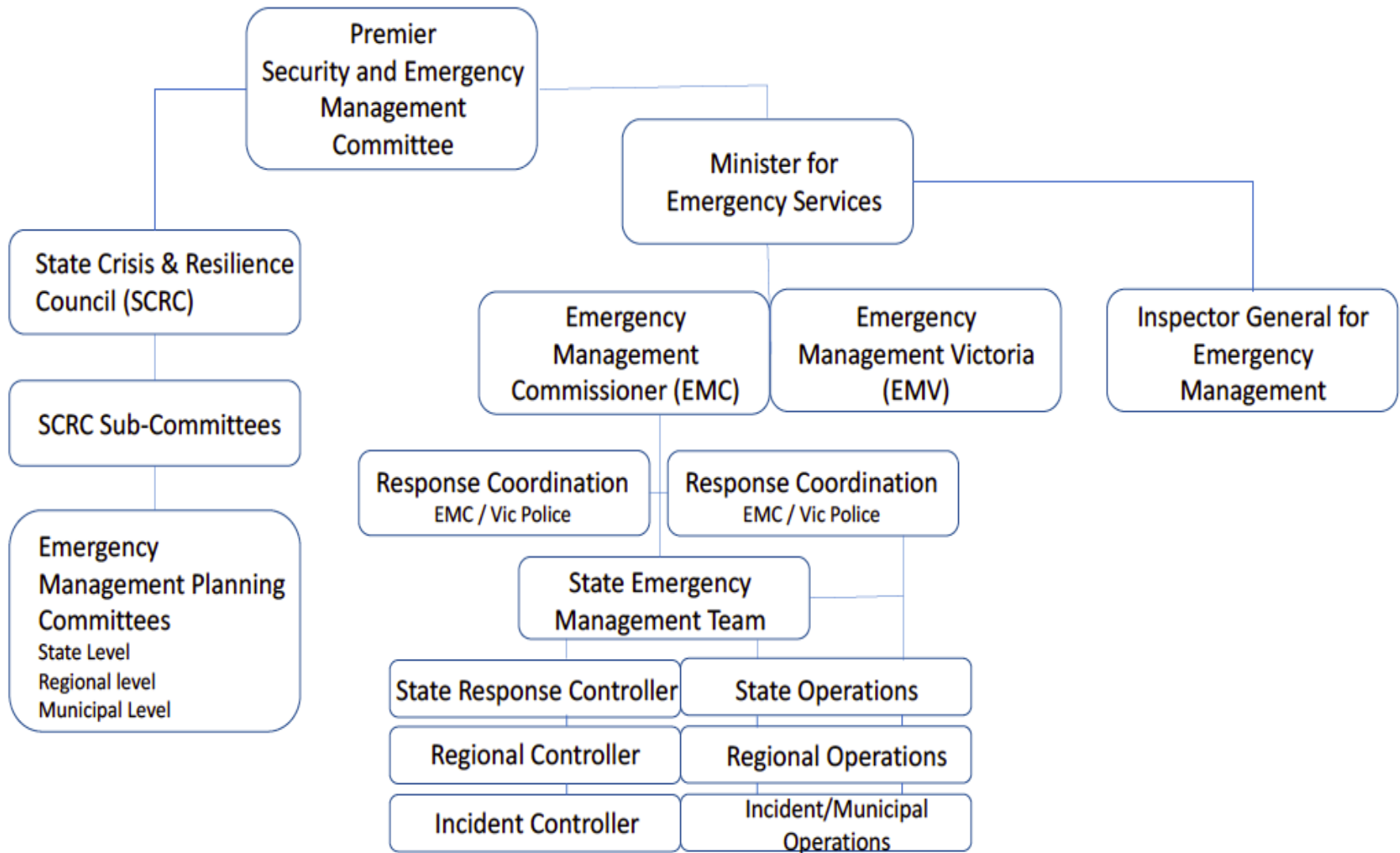
Types of Planning - Source: Adapted from Hopkins, 2001.

## Urban Planning



## ISO 31000

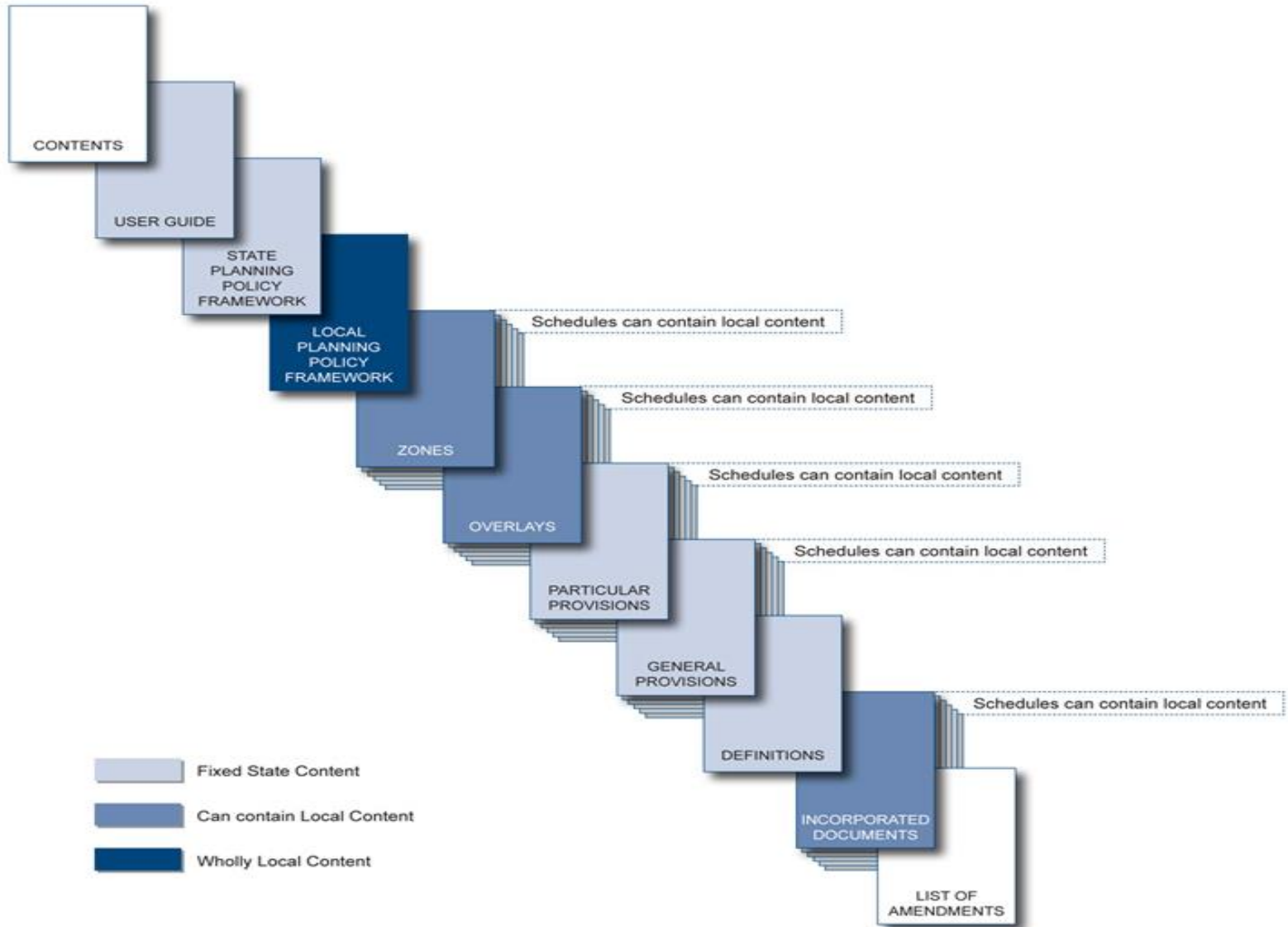


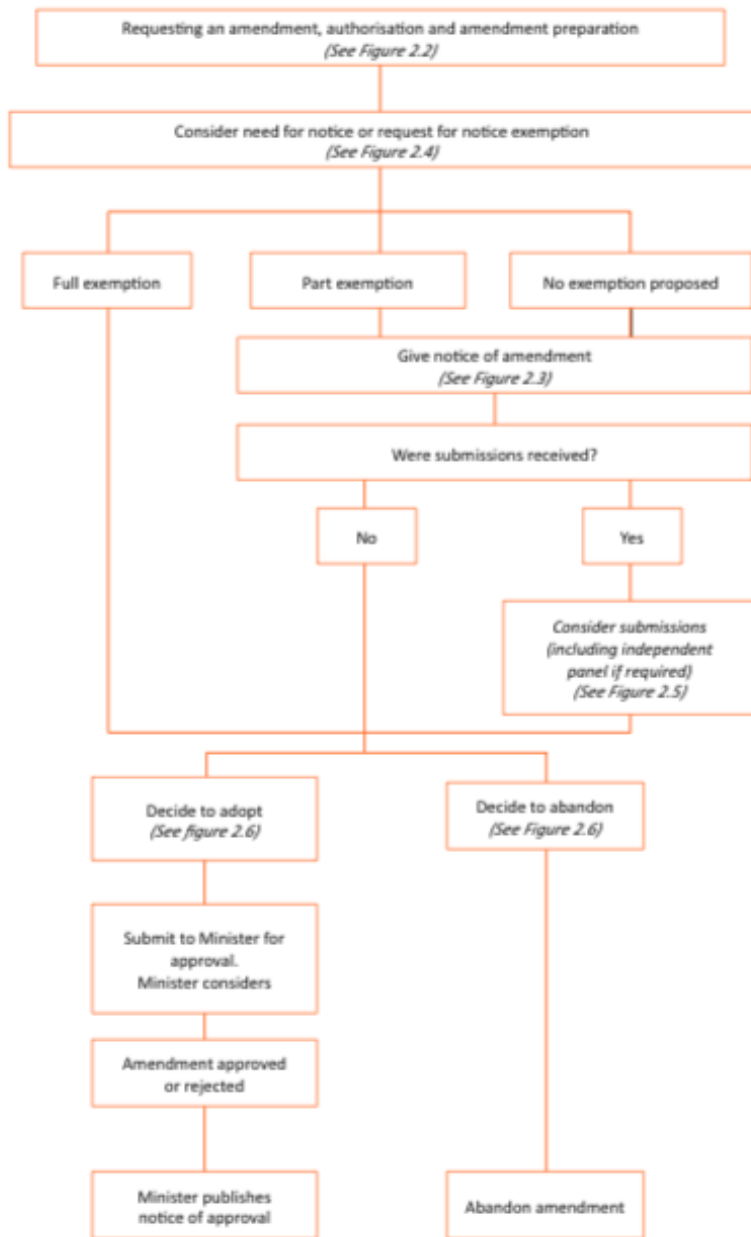


Examining the forums and processes of EM + Urban Planning: Victorian Example



# Planning and Environment Act





## Emergency Management

Emergency Management Act 2013

SCRC's Strategic Action Plan

State Emergency Response Plan

State Emergency Relief and Recovery Plan

State Relief & Recovery Coordination Plans

Regional Relief & Recovery Plan

Municipal Emergency Management Plans (for all Municipalities)

Victorian Emergency Animal Welfare Plan

State Health Emergency Response Plan

Emergency Management Manual Victoria

DELWP's Standing on Committees

Bushfire Management Overlay

Flood Overlays

General Risk Mitigation Policies and Decision Criteria

Referral and Panel Decision Processes

Guidelines for Interstate Assistance (Community Recovery) 2015

## Urban Planning

Planning and Environment Act (1987)

Victorian Planning Provisions

Non risk Objectives of the Act:

Plan Melbourne

## Externalities

Vic Roads

Major Projects

Infrastructure Victoria

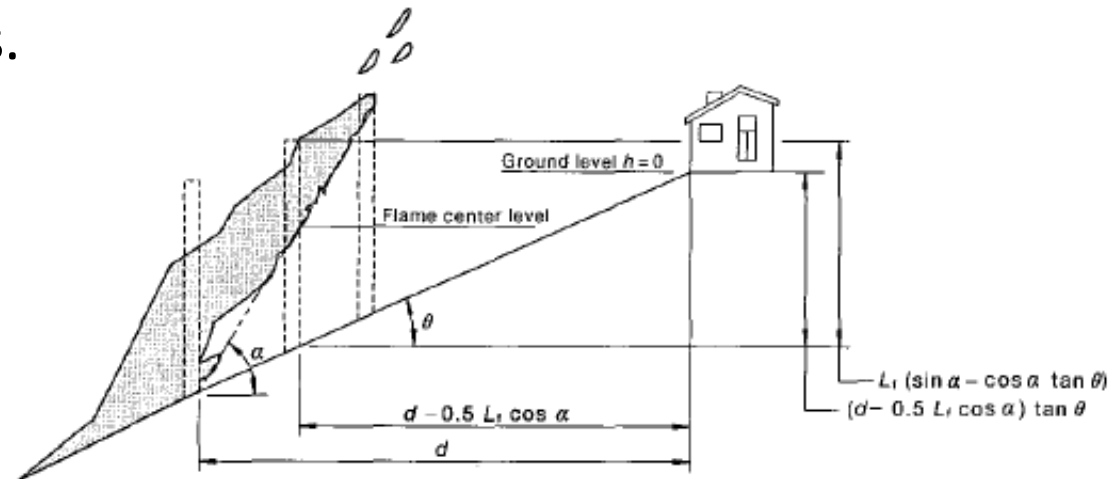
Population Growth

Economic Fluctuations

Climate Change

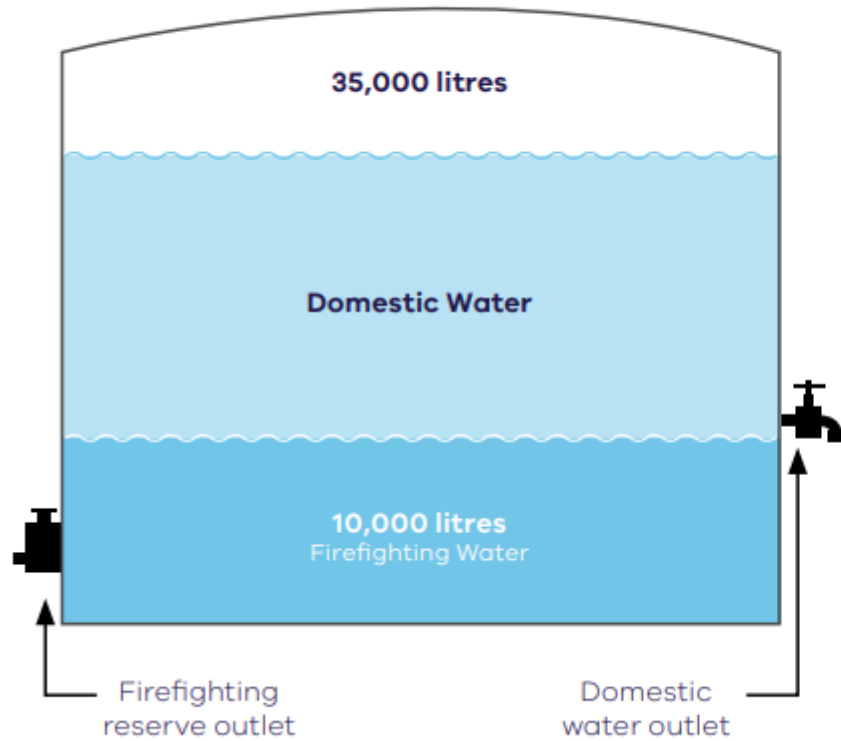
# Improved site specific fire weather and heat impact modelling?

...Modified operationalisation in planning and building regulations.

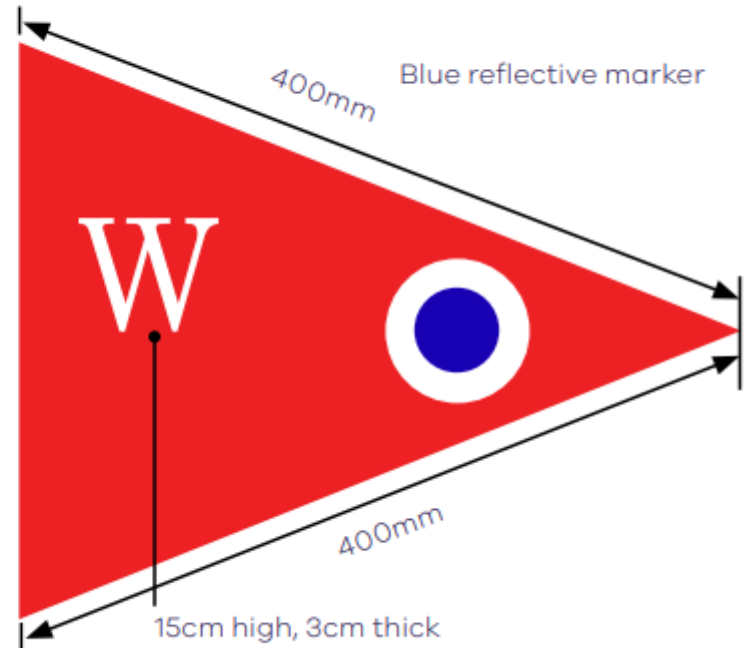




## Shared water tank



## Water supply identification



## Width



## Dips and gradients





# EARLY ISSUES AND DIRECTIONS

	<b>Agenda, Projects</b>	<b>Law, Policy &amp; Regulation</b>	<b>Vision</b>	<b>Designs, Masterplan</b>	<b>Strategic</b>
<b>Overall assessment and example</b>	Financial allocations to fund projects or actions. Eg mapping and research to identify flood risk	Zones, overlays and Buildings Codes	Evidence based development of overall agreed principles and approaches	Detailed design of a settlement's road patterns to achieve community resilience	Development & implementation of an overall risk assessment & management program that brings about ongoing improvement and change
<b>Avoidance of exposure to hazards</b>					
<b>Reduction of hazard impacts or exposure <i>in situ</i></b>					
<b><i>In situ</i> reduction or increased resistance <i>in situ</i></b>					
<b>Improve response</b>					
<b>Improve recovery</b>					



# Preliminary Issues – Across Hazards and Cases

1. Matching planning and risk assessment processes
2. The need for shared forums at appropriate levels and sequencing improvements
3. Use of a wider range of planning tools.
4. Planning actions across the whole range of PRR / PPRR.
5. Terminology inconsistency
6. Major and fast track “extraordinary” processes
7. Uncoordinated funding allocation for projects
8. Long term risk assessment and strategic forward planning
9. A need for ideals and best practice approaches in urban planning acknowledging risk  
Uncertainty regarding municipalities’ role
10. Lack of attention to equity and diverse social capabilities
11. Exclusion of transport and infrastructure
12. Political and ministerial executive control of urban planning
13. “Ignored” hazards and risks-scapes: heatwave, landslip, storm, food security, and environmental crisis.
14. Higher density and high rise settlements

# Paper 1 – Integration of Bushfire + Urban Planning: Victoria

Four overlapping themes:

1. Excessive focus upon statutory zoning and related tools
2. Weak strategic integration and sequencing
3. Lack of emphasis on recovery and improvement
4. A limited view of participation

## Report 2

### **AUSTRALIAN INQUIRIES INTO NATURAL HAZARD EVENTS:**

Recommendations relating to urban planning for natural hazard mitigation (2009-2017)

#### **FINDINGS**

1. The recommendations concentrate heavily upon statutory planning and regulatory mechanisms
2. There is an emphasis on physical resistance approaches
3. There are many calls for integration in the recommendations
4. There is little consideration of urban planning's role in response or recovery
5. Shared responsibility a common theme
6. The format and drafting style of recommendations varies considerably

# NEXT STEPS AND OUTPUTS

- Report and journal papers
- Scalable Whole-of System Model and Analytical Tool
- Investigate Best Practice for Selected Elements
- Further Engagement and Application to selected cases
- Develop modified approaches

