



bushfire&natural
HAZARDSCRC

INTEGRATED URBAN PLANNING FOR NATURAL HAZARD MITIGATION

Alan March

Melbourne School of Design, University of Melbourne, Victoria

© BUSHFIRE AND NATURAL HAZARDS CRC 2017



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme



THE UNIVERSITY OF
MELBOURNE



Australian National
University



THE UNIVERSITY
of ADELAIDE

BACKGROUND: EXPOSURE TO NATURAL HAZARDS

Cities and 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**



URBAN PLANNING AND NATURAL HAZARDS

1. Urban Planning already allows/prevents/ modifies many risks...

+

2. Need to improve Urban Planning

+

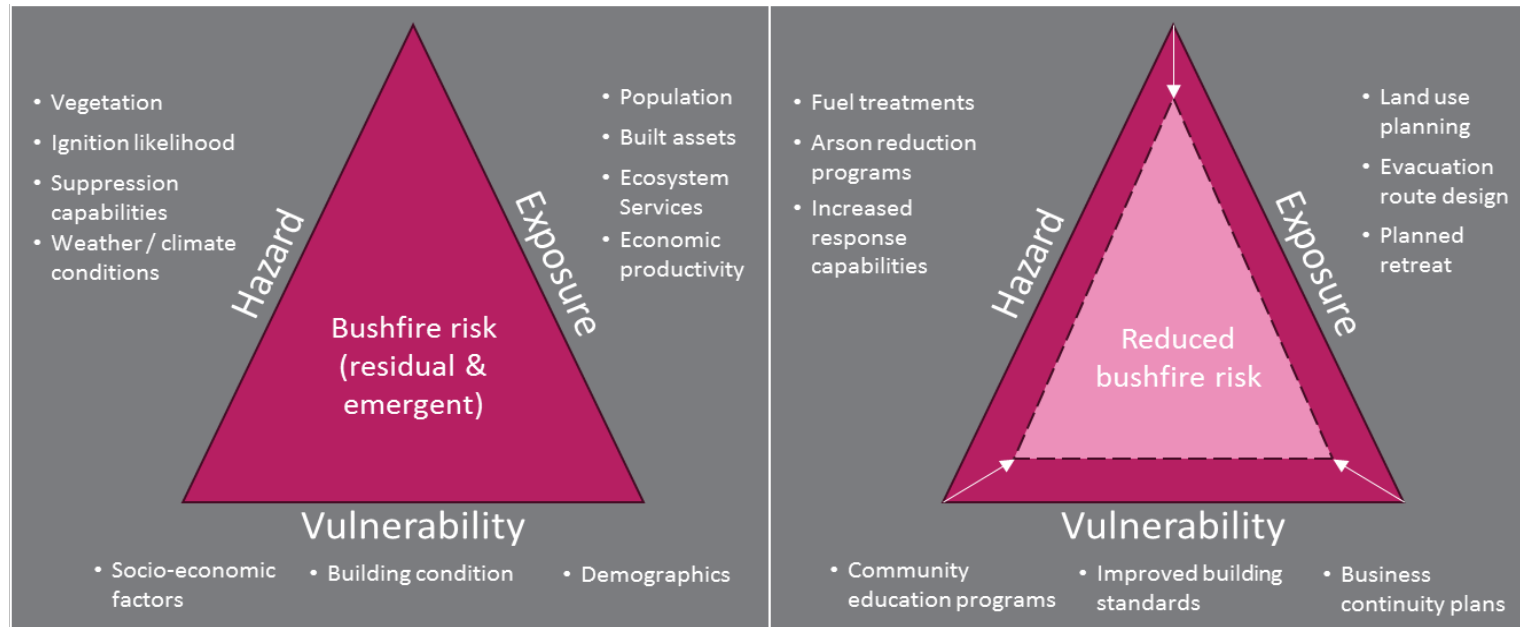
3. Improve Urban Planning's *Integration* with:

- Emergency Management
- Other Relevant Agencies & Processes
- The Public



URBAN PLANNING & 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).



URBAN PLANNING: BUILT ENVIRONMENT *OUTCOMES*

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

PLANNING'S POTENTIAL: PROCESS

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
- develop and apply new tools
- account for human behaviour, physical, social, economic, and ecological matters...

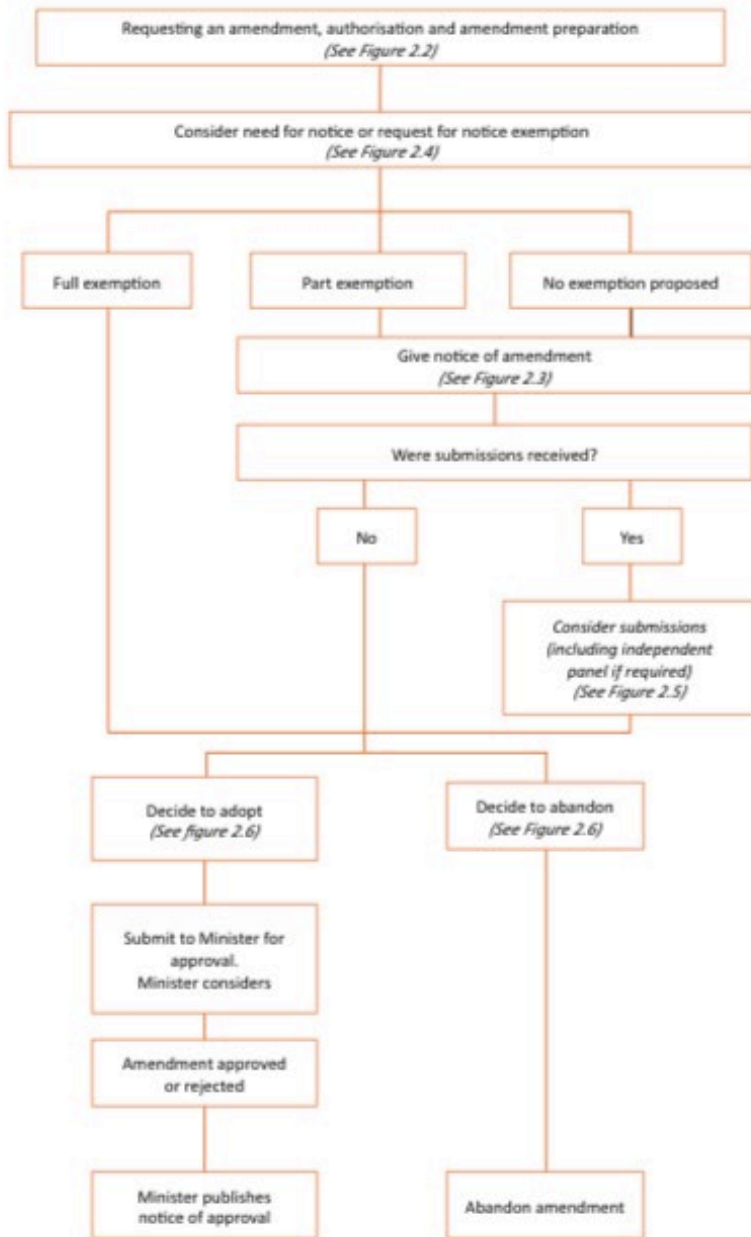
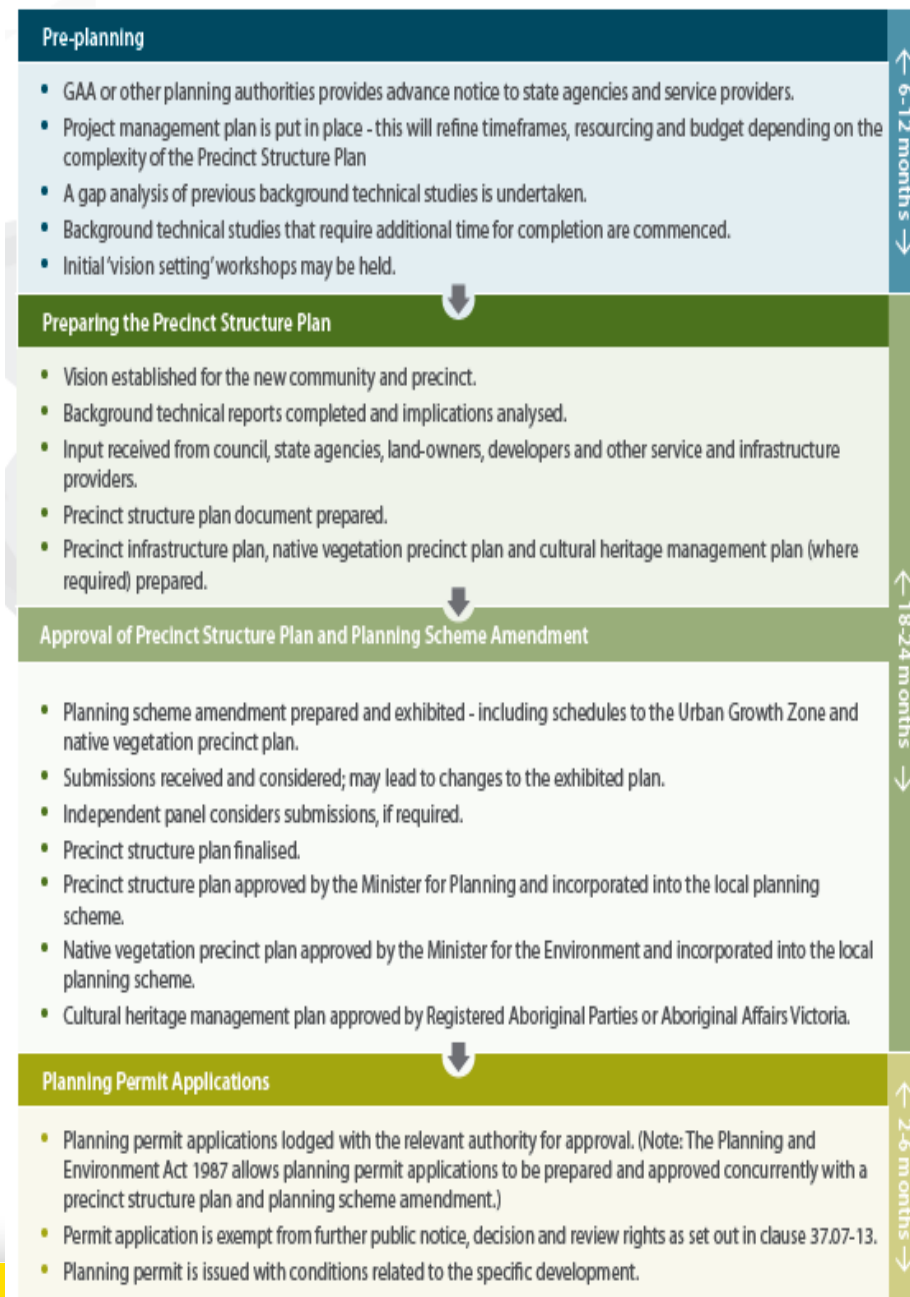


Figure 2: Planning Process Flowchart



PLANNING'S CHALLENGES: *PROCESS*

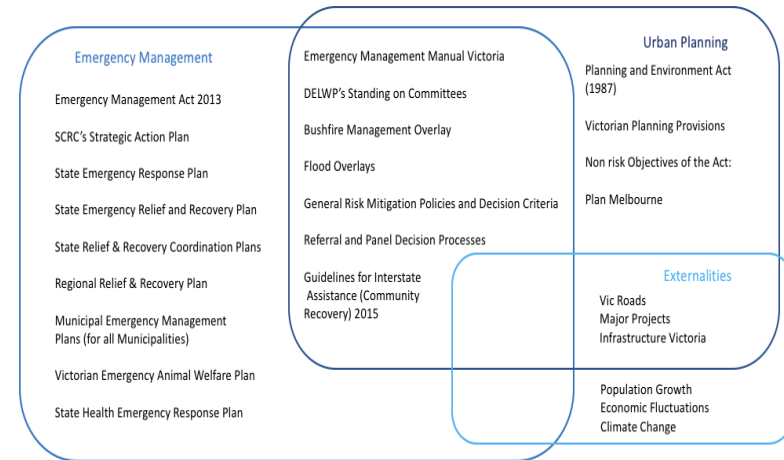
- Existing settlement patterns
- Governance disconnects
- Multi-tier & Multi agency
- Competing demands
- Strong urban population growth
- Incomplete or unused data
- Tendency to continuing existing approaches
- Lack of understanding between EM and Planning personnel.
- Dynamic, changeable risks
- A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

Lismore after Cyclone Debbie



ISSUES AND DIRECTIONS

	Agenda, Projects	Law, Policy & Regulation	Vision	Designs, Masterplan	Strategic
Overall assessment and example	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
Avoidance of exposure to hazards					
Reduction of hazard impacts or exposure in situ					
In situ reduction or increased resistance in situ					
Improve response					
Improve recovery					



AUSTRALIAN INQUIRIES INTO NATURAL HAZARD EVENTS

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

Alan March¹, Leonardo Nogueira de Moraes¹, Graeme Riddell², Stephen Dovers³, Janet Stanley¹, Hedwig van Delden^{2,4}, Ruth Beilin¹, Holger Maier²

¹The University of Melbourne, ²The University of Adelaide, ³Australian National University ⁴Research Institute for Knowledge Systems,

Urban planning: historical changes integrating bushfire risk management in Victoria

Constanza Gonzalez-Mathiesen^{1,2}, Professor Alan March¹, Justin Leonard³, Mark Holland⁴ and Raphaele Bianchi³

1. *University of Melbourne and Australia and Bushfire Natural Hazards Cooperative Research Centre, Melbourne, Victoria.*
2. *Universidad del Desarrollo, Concepción, Chile.*
3. *CSIRO, Melbourne, Victoria.*
4. *Country Fire Authority, Melbourne, Victoria.*

Submitted: 10 May 2019. Accepted: 3 June 2019.

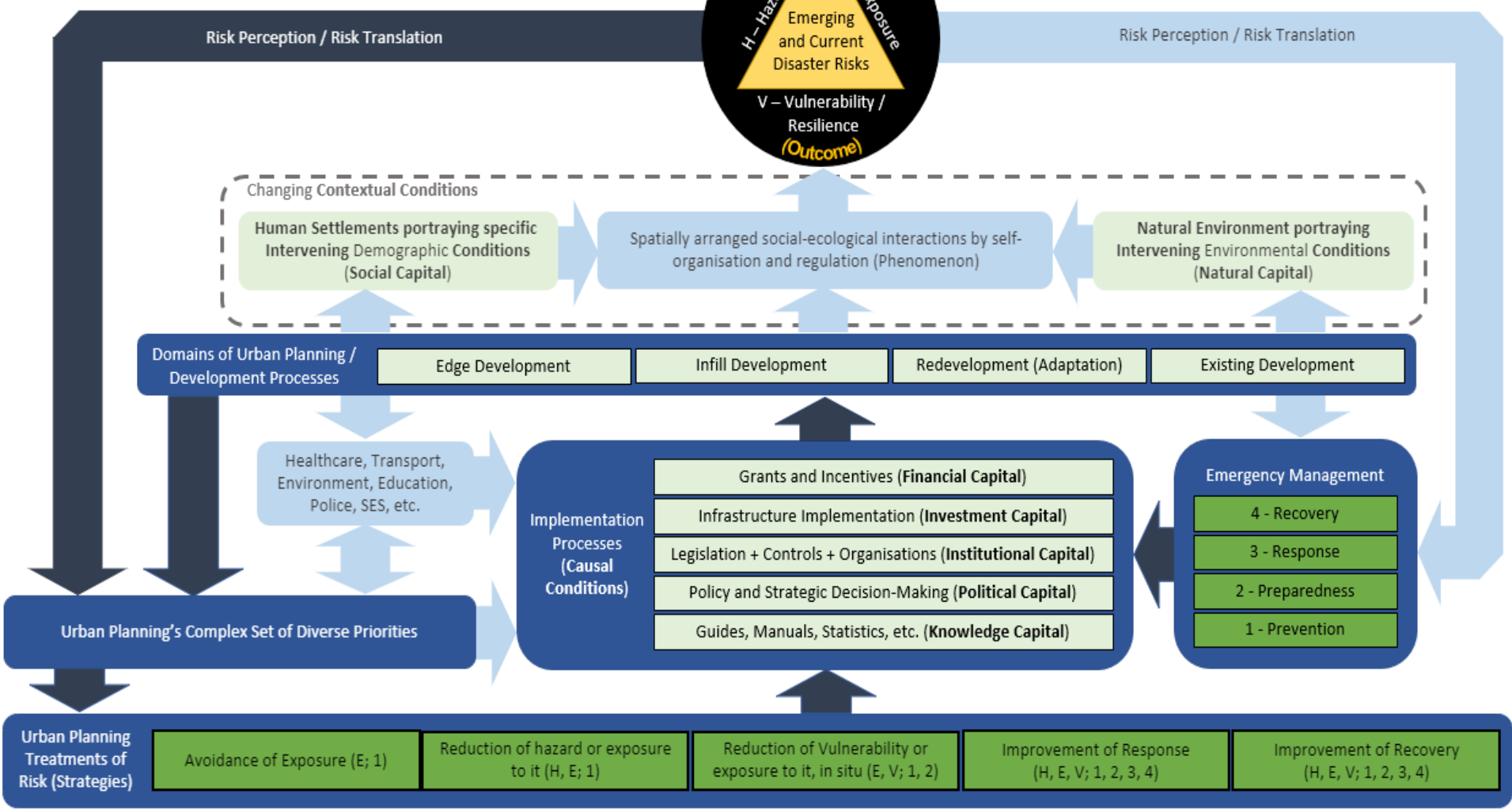
Issues and Opportunities

1. **Integration** of 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
10. Uncertainty regarding **municipalities’** role
11. Lack of attention to **equity and diverse social capabilities**
12. **Exclusion of transport and infrastructure**
13. Political and ministerial **executive control of urban planning**
14. “**Ignored**” **hazards** : heatwave, landslip, storm, food security, and environmental crisis.
15. Higher **density** and high rise settlements
16. **Legacy** risks
17. Improved **education**

Integrated Urban Planning for Natural Hazard Mitigation Analytical Framework

Legend

- Disaster Risk Reduction Strategies
- Domains of Action/Agency



Opportunities: Targeted Processes; Hazards; Case Studies

PROJECT TEAM

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