From hectares to tailor-made solutions for risk mitigation: An integrated prescribed burning research project

Research Forum / **2019**

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Australian Government Department of Industry, Innovation and Science

Business Cooperative Research Centres Programme

Talk outline

1) Project b/g

2) Approach

3) Results

4) The Atlas

Response to Expert Reference Group – Bushfire Management Reform

October 2014

Department of Environment and Primary Industries

State Government Victoria

2009 Victorian Bushfires Royal Commission

RECOMMENDATION 56

The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of 5 per cent minimum of public land.

Figure 2:

Figure 2: Measure of changing residual risk through time. The maximum risk level of 100% represents the "no treatment", including no bushfires, or maximum risk scenario landscape, with all fuels at maximum load. The residual risk profile for a particular treatment represents the changing level of risk as a particular fuel reduction treatment is applied through time.

RECOMMENDATION 56

The State fund and commit to implementing a long-term program of prescribed burning based on an annual rolling target of 5 per cent minimum of public land.

X

No explicit level of risk reduction defined

Decisions based on risk analysis

31 Bushfire risk cannot be eliminated. Decisions about bushfire management will be based on risk analysis and will be transparent. Integrated risk analysis requires the Department to be part of a multi-tenure, multi-agency bushfire management approach.

Relative risk versus ‘true’ risk?

Tailor-made solutions: regional focus?

Risk mitigation across a portfolio of values?

Cost-effectiveness of risk mitigation?

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RESEARCH » PRESCRIBED BURNING AND CATCHMENT MANAGEMENT | CRC CORE PROJECT

From hectares to tailor made solutions for risk mitigation

This project aims to deliver:

1. A Prescribed Burning Atlas to guide implementation of tailor-made prescribed burning strategies to suit the biophysical, climatic and human context of all bioregions across southern Australia. The Atlas will define the quantitative trajectory of risk reduction (including resultant residual risk) for multiple values (such as property, water, carbon, vegetation structure) in response to differing prescribed burning strategies (including spatial configurations and rates of treatment), across different Australian environments based on their unique climatic, biophysical and human characteristics.

2. Continental-scale, biophysically-based models of ignition and fuel accumulation for Australian ecosystems, for use in dynamic risk management planning and operational decision-making about prescribed burning at seasonal and inter-annual time scales, accessible via the Atlas.

3. Detailed scenarios of future change in risk mitigation effectiveness of prescribed burning strategies in response to integrated scenarios of changes to climate, fuel (including elevated CO2 effects) and ignitions. These will also be accessible through the Atlas.

KEY TOPICS

fire, prescribed burning, risk management

PROJECT STATUS

Research + Utilisation

RESEARCH LEADER

Prof Ross Bradstock
University of Wollongong

Focus across entire of South East Australia.

Tailor-made solutions

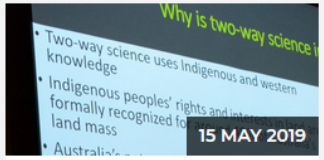
Risk mitigation across a portfolio of values

Cost-effectiveness of risk mitigation

RESEARCH TEAM | DESCRIPTION | RELATED NEWS | PUBLICATIONS | PRESENTATIONS & RESOURCES | POSTERS

New online - July 2019
EMERGENCY MANAGEMENT, FIRE

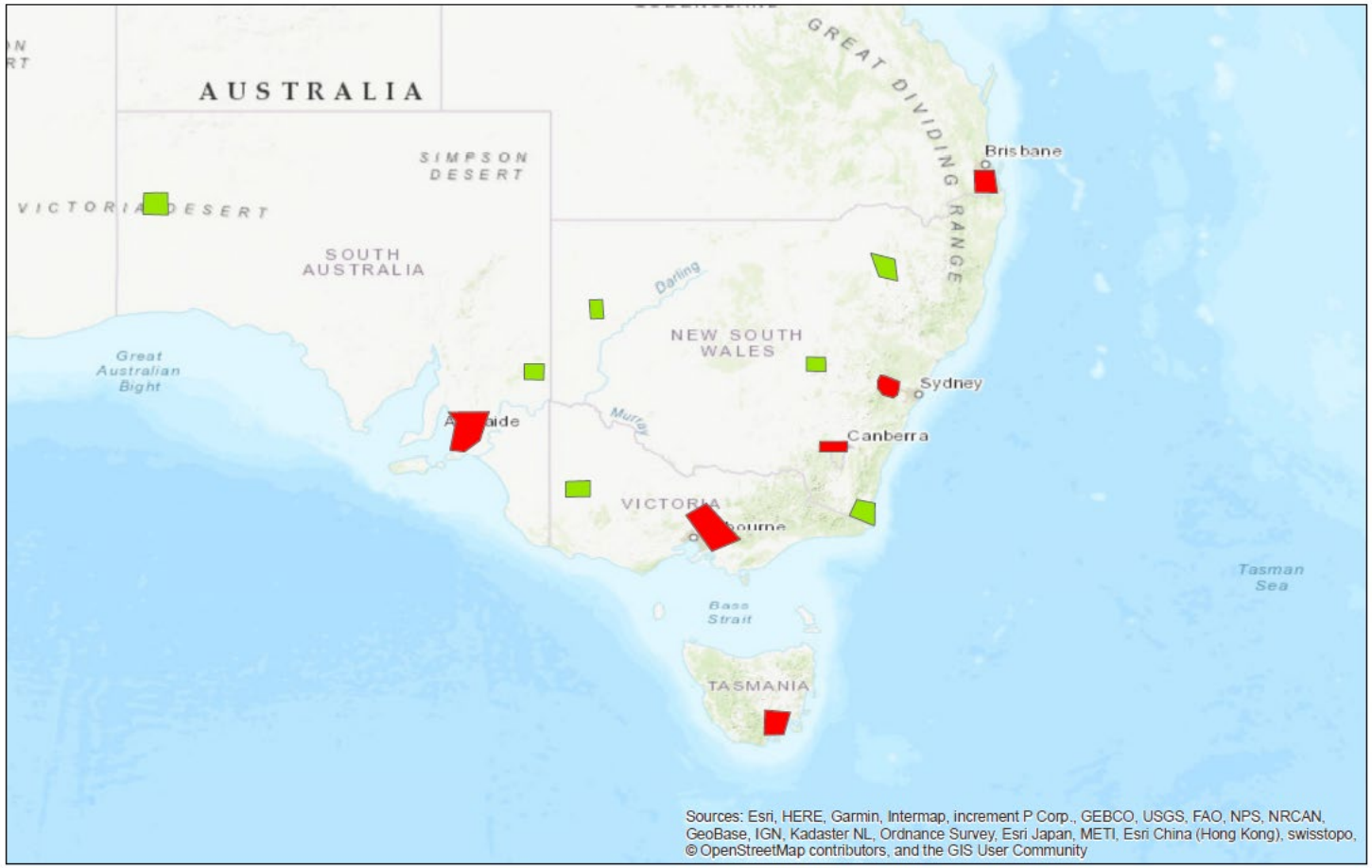
New online - June 2019
COMMUNITIES, EMERGENCY MANAGEMENT



Global fire focus on diversity, cultural burning and communities
COMMUNITIES, DIVERSITY AND INCLUSION

Prescribed burning research warm up to conference
FORECASTING, MITIGATION

Study landscapes



Key Methods

Management decisions

- Prescribed burning 0, 1, 2, 3, 5, 10, 15% p.a.
- Edge and landscape treatment (all combos)

Fire behaviour simulations

- PHOENIX RapidFire
- Multiple weather streams

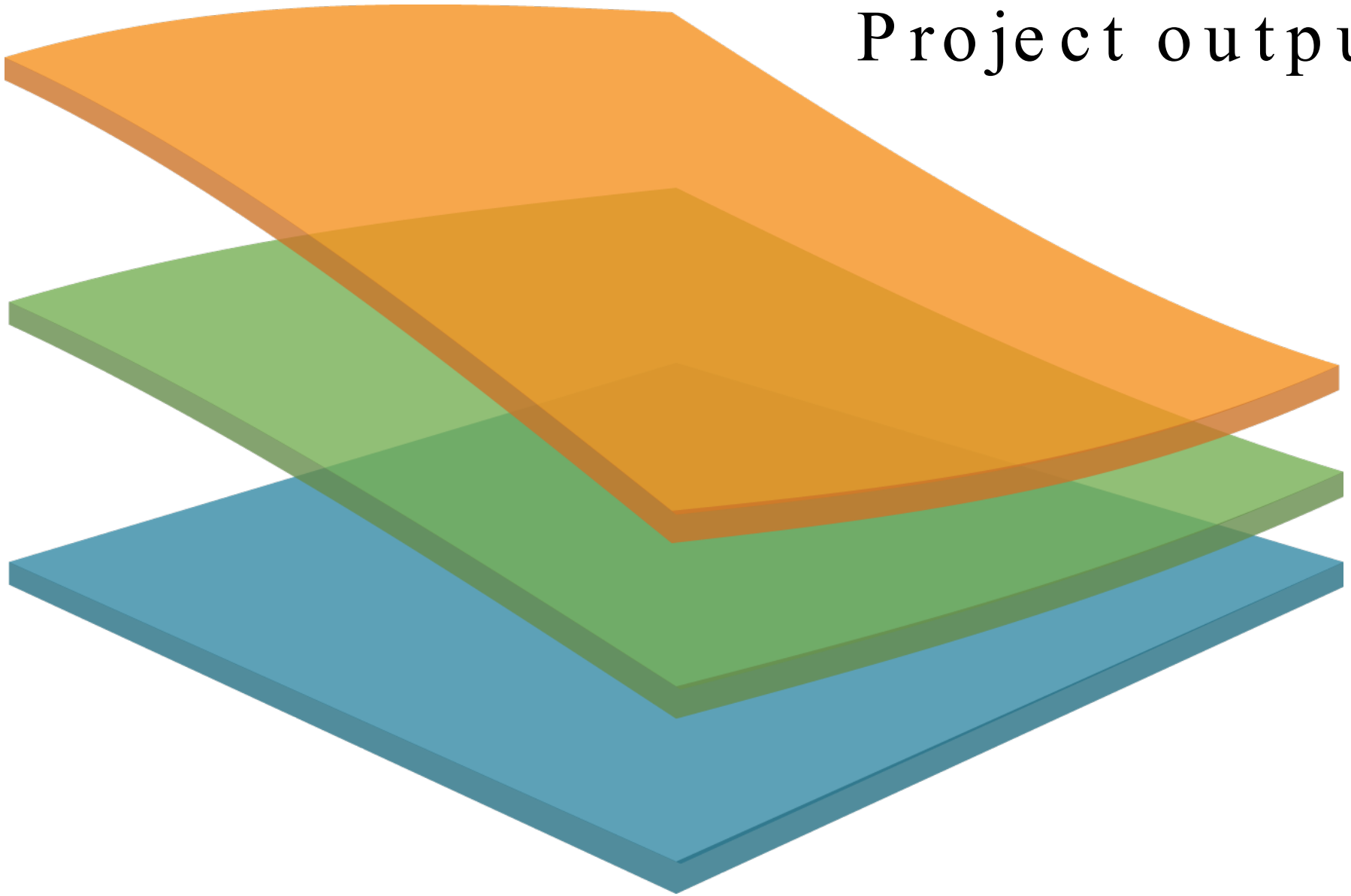
Impact estimation

- Life loss, house loss, road & powerline damage, area burnt below TFI

Risk estimation

- Bayesian network
- Controls for weather difference between sites

Project output is layered

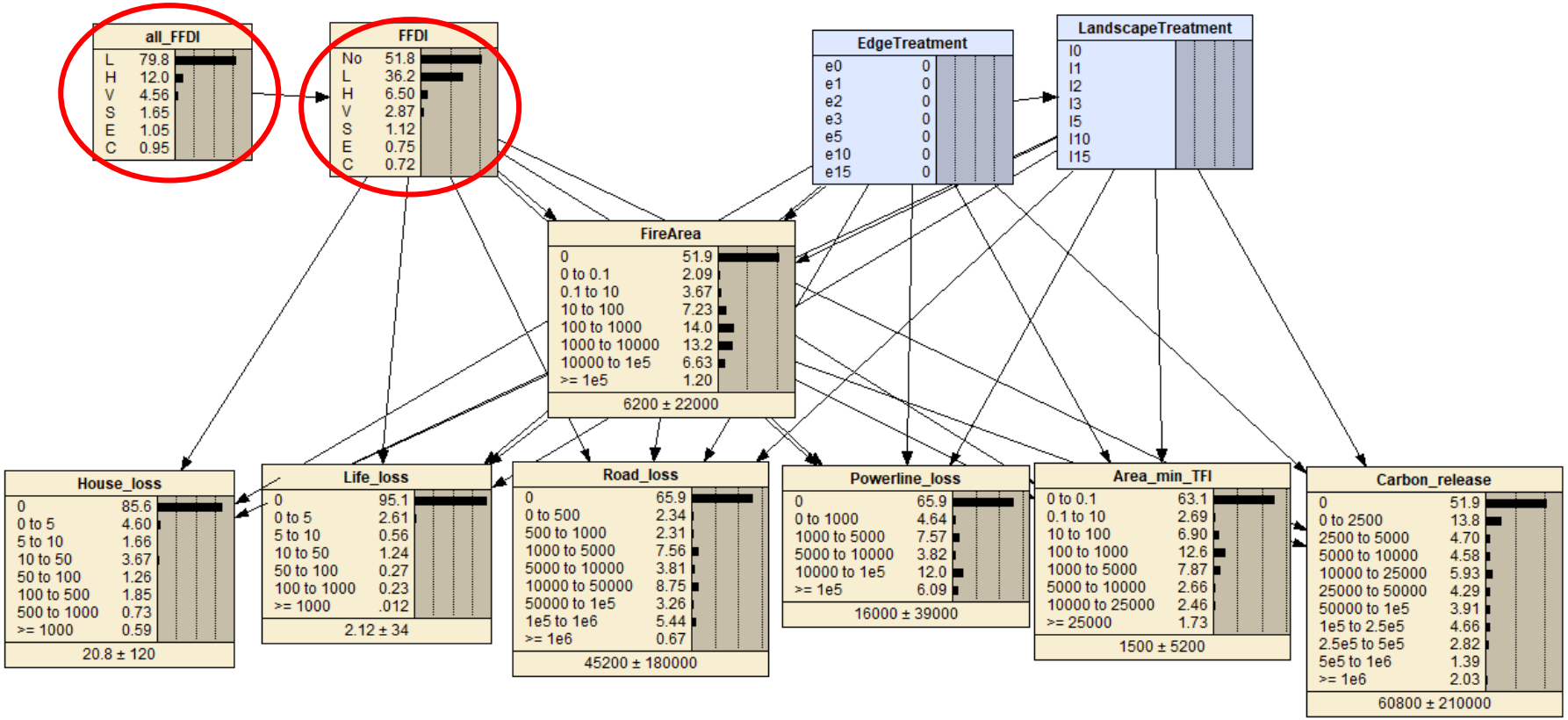


BN / Cost outputs

Asset impacts

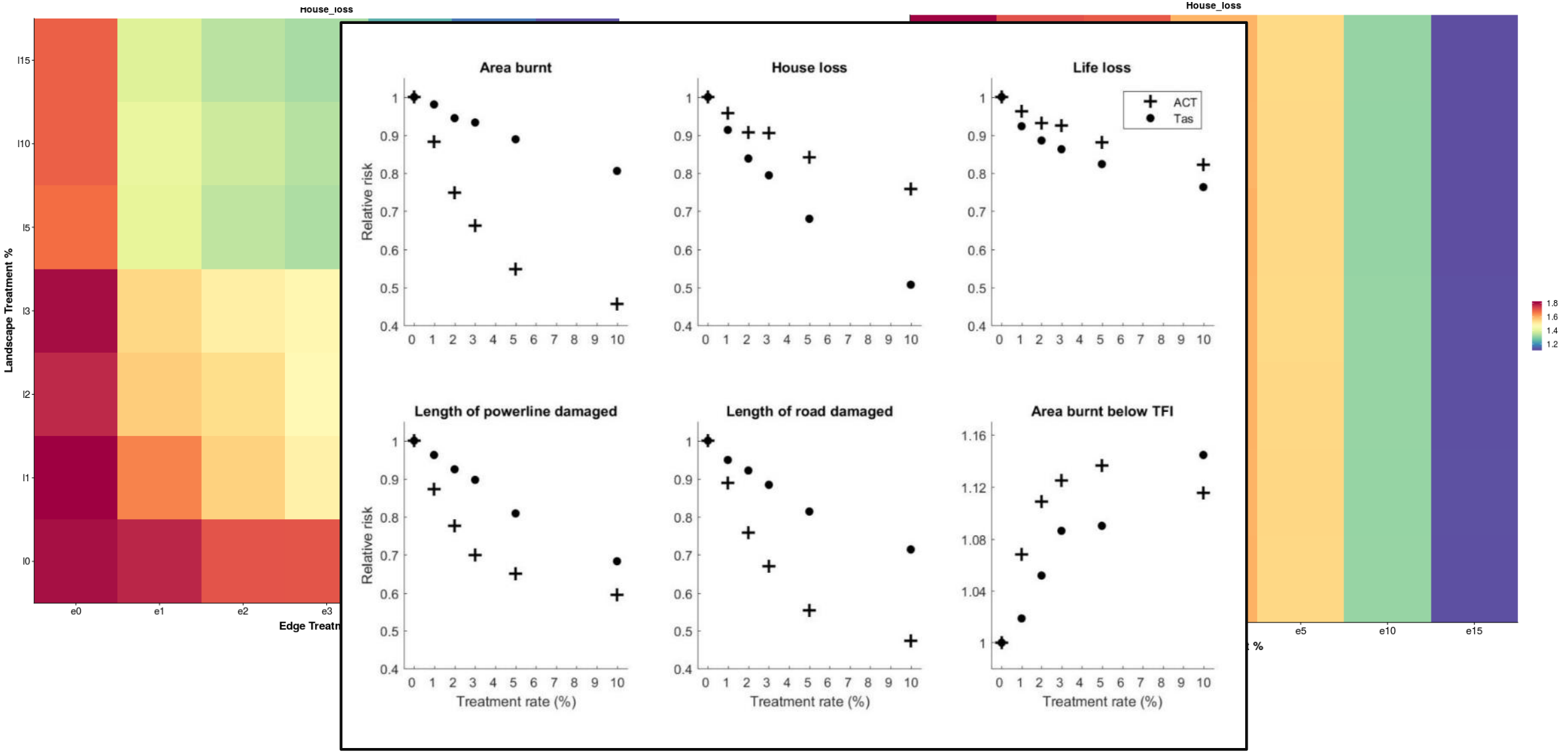
Simulation Outputs

Bayesian Network

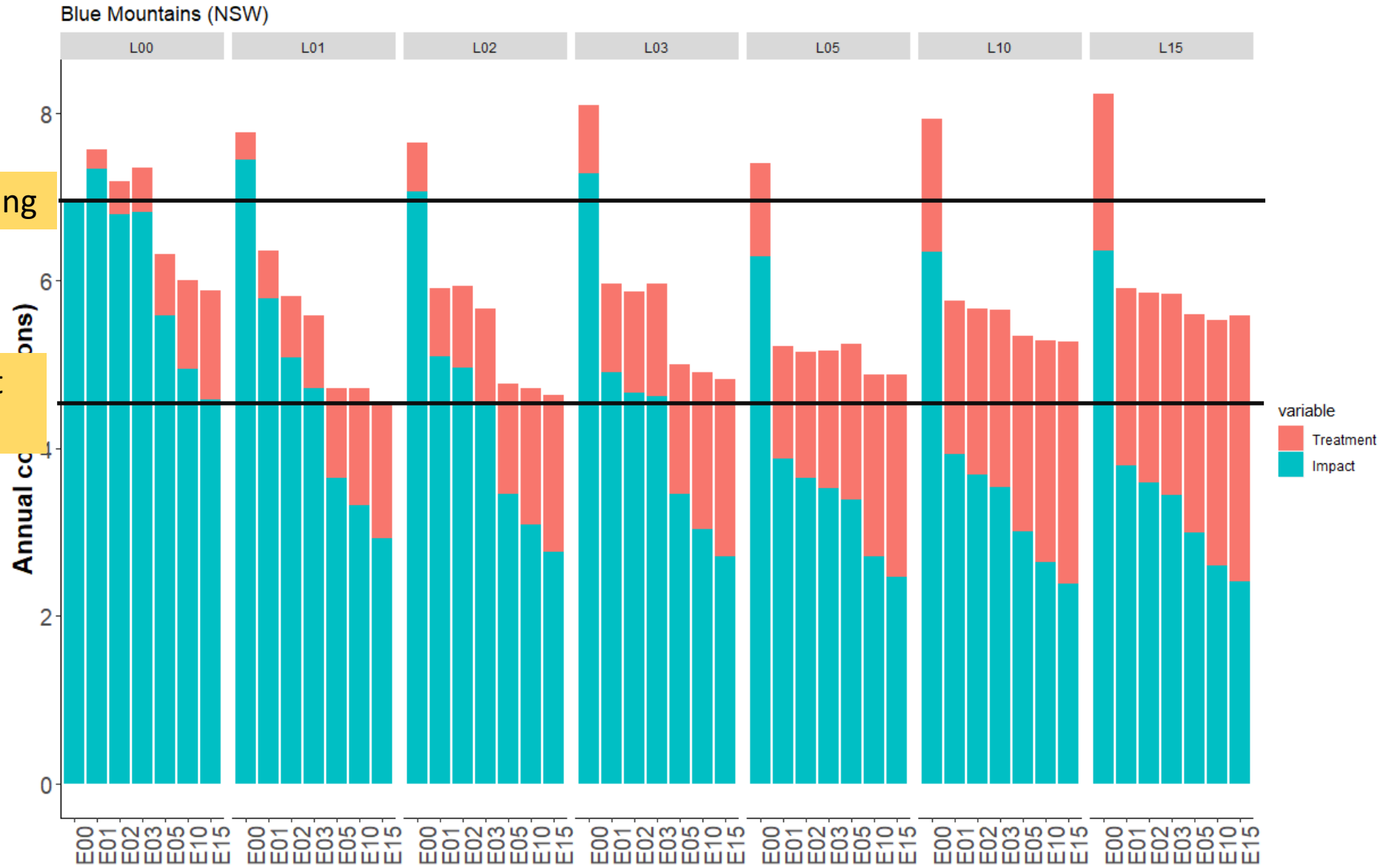


Blue Mtns - House loss

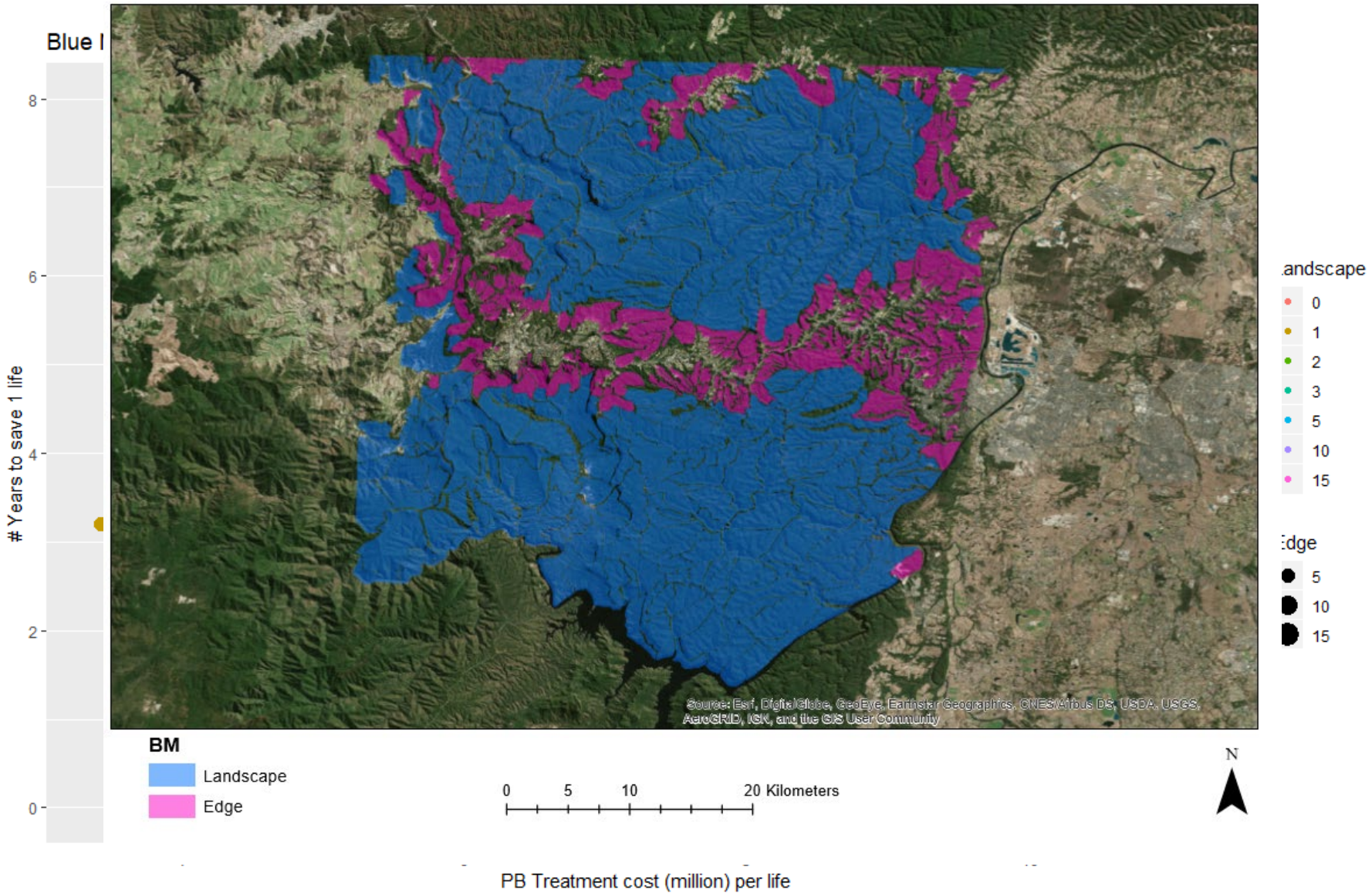
SE Qld - House loss

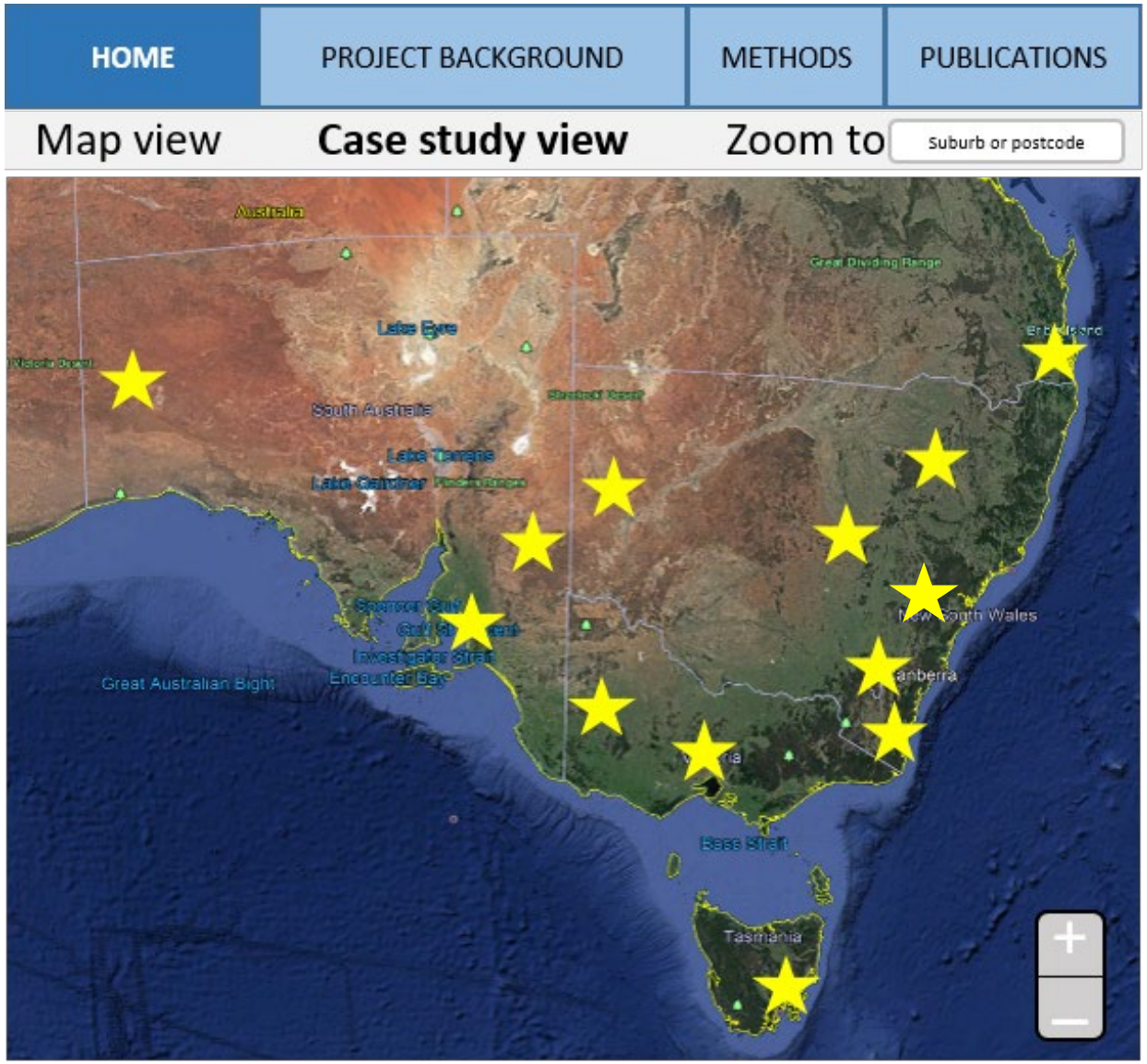


Tot
cost


Blue Mountains (NSW)
L00
L01
L02
L03
L05
L10
L15
Do Nothing
Most cost effective
Annual cc ons)
0
2
4
6
8
E00
E01
E02
E03
E05
E10
E15
variable
Treatment
Impact

How much does it cost to save a life or a house?





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Prescribed Fire ATLAS

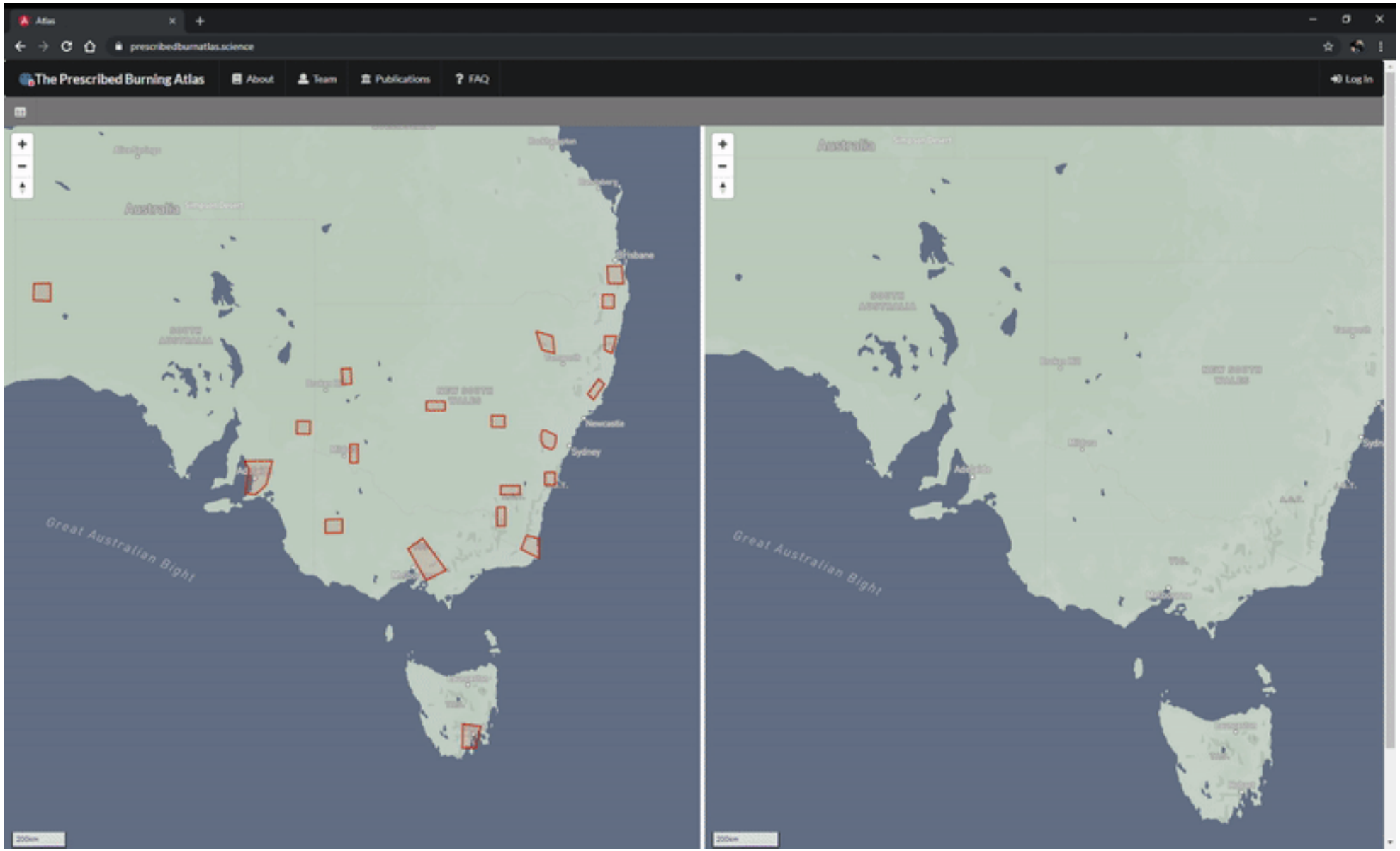
Relative and absolute measures

Bottom up and top down interrogation

Complementary & compatible with existing tools

Strategic planning & risk assessment

Internal & external comms & education


Atlas
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