

Quantifying the Risk Reduction from Roadside Fire Management Strategies

Research Fact Sheet

Forests, Fire and Regions Group invests in the Integrated Forest Ecosystem Research Agreement (IFER) with the University of Melbourne (UM), which delivers critical science projects to support policy and operational practices. The core research themes of IFER include biodiversity, carbon, hazards, socio-economic, vulnerability and water. 'Quantifying the risk reduction from roadside fire management strategies' is a Landscape Hazards supplementary project. The project commenced in August 2018 and is due to be completed by July 2019.

The Project

Roadside fuel management to reduce bushfire risk has been identified as an important fuel treatment type by several Emergency Management agencies and the community within the Barwon South West (BSW) region (and in many other regions within Victoria). In the BSW region, roadside fuel management is of key interest due to significant clearing in some locations. The remaining roadside fuel in this region is therefore a focus area for risk mitigation actions, however there is significant divergence in views on how roadsides should be managed.

A better understanding of roadside vegetation is important for meeting multiple objectives, including:

- reducing the risk of fires spreading from roadside ignitions
- the use of roads as "strategic" fire breaks to suppress or disrupt the spread of fire
- facilitation of safe access and egress for emergency service workers and community members

- protection of high conservation value native grasslands on linear reserves, which continue to be the focus of joint management activities between fire management agencies.

The project *Quantifying the risk reduction from roadside fire management strategies* will examine the capacity of the Phoenix RapidFire fire simulation tool to incorporate roadside fuel treatment actions that enable estimates of risk reduction.

A methodology will be developed that enables quantification of the roadside fuel treatments to be assessed. In addition, methods that have the capacity to consider trade-offs between management actions (such as between roadside fuel treatment options and prescribed burning) will be explored.

Project Outputs

The project will provide the Department of Environment, Land, Water and Planning (DELWP) with:

- improved understanding of how roadside fuel treatments can be modelled in landscape fire simulation tools
- methods to incorporate roadside fuel management into landscape risk modelling
- an estimation of the efficacy of current roadside fuel treatments
- a methodology for considering roadside fuel management suitable for incorporation into the landscape risk evaluation framework
- a methodology for the inclusion of roadside fuel treatments in landscape fire risk assessments.

Policy and Operational Implications

The project aligns with the *Safer Together* priority "reducing the risk of bushfires".

This work will assist DELWP to model roadside fuel treatments in landscape fire simulation tools and increase the capacity to incorporate roadside fuel management into landscape risk modelling.

The project will support cooperation between land and fire management agencies and a tenure-blind approach to planning and delivery of fuel management.

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Figure 1: Example polygon around existing roadside vegetation to be used in the Phoenix simulations assessing fire behaviour at roadsides

The Research Team

The project is being delivered by the School of Ecosystems and Forest Sciences at the University of Melbourne. The research is being conducted by Associate Professor Trent Penman, Dr Kate Parkins and Brett Cirulis.

Project Status

- Phase 1 – A structured decision-making workshop was held in September 2018 with stakeholders from DELWP, CFA and local councils. The workshop defined the issue of roadside fuel management, outlined potential strategies and expected risk reductions.
- Phase 2 – Phoenix RapidFire is being used to evaluate:
 - how sensitive the model is to changing grid sizes
 - how sensitive the model is to ignition location in relation to the roadside
 - how roadside vegetation can be best represented in the model.
- Phase 3 – Based on the results from the first two phases of the project, a standardised methodology will be developed for modelling the risk reduction provided by roadside fuel management for use in residual risk calculations. The method will be tested in a series of case-study locations.

- Phase 4 – Development of a Bayesian Network (BN)¹ for incorporating trade-offs between competing management strategies. A draft BN was designed during a workshop held in March 2019, with representatives from DELWP.

The final phase of the project involves a model validation workshop, where results from the study will be presented for comment and feedback, to be incorporated into the final report.

Feedback will be sought on:

- the proposed methodology
- results from the case studies
- recommendations from the Bayesian Network analysis.

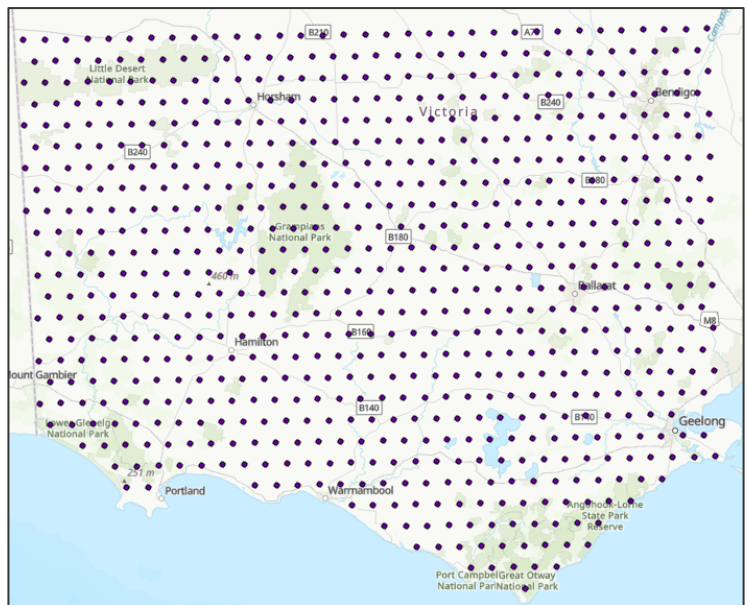


Figure 2: Distribution of the ignitions (10km offset grid) across south western Victoria

¹ A Bayesian Network is a framework for linking relationships between multiple variables in a sequence to provide probability distributions for the final output measure.