

**Subject:** OFFICIAL: Response to queries relating to draft Victorian Bushfire Management Strategy

**From:** [REDACTED]@delwp.vic.gov.au>

**Date:** 10/08/2023, 1:21 pm

**To:** [REDACTED]

Dear Mr Legge,

This email is to respond to two queries you made regarding current consultation on the draft Victorian Bushfire Management Strategy. The two questions were about work to expand our monitoring, evaluation and reporting framework to address ecosystem resilience; and validation of Phoenix Rapidfire.

### **Ecosystem resilience**

In response to recommendations of the Victorian Auditor-General's 'Reducing Bushfire Risks' audit, DEECA is currently working to provide advice to government on new metrics and outcomes targets for ecosystem resilience in relation to bushfire management. These targets will be guided by the outcomes and strategic directions articulated in Victoria's Bushfire Management Strategy. The project you referenced in your email provides DEECA with a strong scientific basis to inform the adoption of new ecosystem resilience metrics and outcomes targets.

This work is ongoing and will be informed by consultation on the draft Strategy.

### **Phoenix RapidFire and bushfire simulators**

As you rightly note, the reliability of bushfire simulation tools is of critical importance to how we plan, deliver and assess bushfire management. I thought it may be of interest to you to share some information on past and current work to improve Phoenix as a simulation tool, and to add to our fire simulation toolkit.

The Auditor-General's report noted the lack of validation for fuel accumulation curves sitting behind Phoenix. In the last three years, fuel surveys have resulted in three fuel types having their fuel accumulation curves validated and changed.

DEECA also acknowledges the reality that it is not always possible to represent the nuance in how fuel accumulates post disturbance with a simple fuel accumulation curve. In reality, there are many environmental factors that influence how fuel will accumulate – climate trends, local conditions, types of disturbance. To address this we're investing in and pursuing alternative approaches to modelling fuel conditions. This includes exploring modelling based on landscape variables (such as climate and soil), in combination with satellite imagery and aerial LIDAR.

Collecting fuel attribute data in the field accurately is critical to improving our fuel accumulation models. To improve this DEECA is currently partnering with researchers and investing in terrestrial LIDAR scanning, which we hope to roll out regionally in 2024. This will provide an alternate and more rigorous method for collecting fuel data. Victoria also undertakes annual updates and improvements to its simulator input data, seeking input from partner agencies in South Australia and New South Wales, as well as input from research partners as appropriate.

I can also provide some broader information regarding the Phoenix RapidFire software package itself. DEECA and its predecessors have been using Phoenix for the last 15 years. The tool was the first of its kind and world leading, and continues to be used in a range of planning and fire response settings. DEECA and other jurisdictions are currently investing in the development of the new National Bushfire Simulator, SPARK. Following development by CSIRO and others, the SPARK simulator has recently been released to Australian fire agencies for testing and validation. DEECA will begin operational testing of SPARK over summer, and is planning an internal evaluation of simulator use in various strategic and operational settings, to determine which tool is most accurate and fit for purpose for Victoria in different circumstances.

As part of evaluating SPARK, DEECA will be validating simulated spread compared to actual spread of past bushfire where reconstructed spread information is available. DEECA will be doing this for both Phoenix and SPARK in parallel,

enabling a comparison of both bushfire simulators. This will in part use Natural Hazards Research Australia's reconstruction report from the 2019-20 bushfire season. DEECA contributed to this work (though I should note we did not fund it). If you're interested the report is available here: <https://www.naturalhazards.com.au/resources/publications/report/victorian-bushfire-case-studies-black-summer-final-report>.

Additionally, the Bureau of Meteorology led a project to evaluate the accuracy of several bushfire simulators against ten bushfire case studies. Two outcomes from this report were that no single simulator stood out as being superior and that Phoenix performed relatively well. The report also highlights the difficulty in evaluating simulator accuracy as the analysis is very dependent on the input data, with simulators performing differently depending on the conditions. Again if you're interested the report is available here: [http://www.bom.gov.au/research/publications/otherreports/FPS\\_Final\\_Report\\_v1.81\\_Evaluation\\_Of\\_Simulators\\_Release.pdf](http://www.bom.gov.au/research/publications/otherreports/FPS_Final_Report_v1.81_Evaluation_Of_Simulators_Release.pdf).

Lastly, you enquired about the status of the Black Saturday Fire Reconstruction Report. The report is not yet finalised; it was a groundbreaking first attempt at conducting a reconstruction of that magnitude. As there was not an established process or science for this type of work at the time, it took some years to compile accurately. Over that time the science of bushfire construction progressed significantly, and DEECA sought involvement from a number of eminent academics to review the report. This resulted in further delays as the scientists involved work to settle the text of the final report. It's now nearly complete and I expect it to be released later this year.

I hope the information above is of use to you. If you'd like to discuss further, please feel free to email or to contact me on 0409 621 160.

**Dylan Rowe** (he/him)

**Director Knowledge, Planning and Risk**

Policy and Planning | Forest, Fire and Regions | Department of Energy, Environment and Climate Action

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We acknowledge Victorian Traditional Owners and their Elders past and present as the original custodians of Victoria's land and waters and commit to genuinely partnering with them and Victoria's Aboriginal community to progress their aspirations.

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— Attachments: —

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