

# CALL FOR EXPRESSION OF INTEREST FOR ERP 14 – DEVELOPMENT OF SEASONAL FIRE PREDICTION TOOLS

Proposals due **27 July 2018** to [office@bnhcrc.com.au](mailto:office@bnhcrc.com.au)

## INTRODUCTION

The Bushfire and Natural Hazards Cooperative Research Centre (hereafter the CRC), in conjunction with our client, the Department of Environment Land Water and Planning (Victoria) (DELWP) is seeking expressions of interest for the following project.

### Development of seasonal fire prediction tools

## PROJECT AIMS AND OBJECTIVES

1. To conduct a needs analysis for the development of seasonal fire forecast products that can be implemented in Victoria (and potentially in Australia). Key questions will be answered on the frequency (i.e. two weeks, one month, three months), visualisation and acceptable levels of uncertainty in the seasonal fire forecasts.
2. To calibrate and assess long range Forest Fire Danger Indices (FFDI) forecasting models for use as a seasonal fire forecast product.
3. Development of proof of concept and experimental seasonal fire forecasting products that consider FFDI forecasts with possible enhancements to the base product that include:
  - a. Fuel availability
  - b. Comparison to similar season types

## BACKGROUND

### *Safer Together*

1. In November 2015, the Victorian Government released the Safer Together policy platform, setting out the future direction for bushfire management in Victoria. Safer Together is part of broader government reform to Victoria's emergency management sector and sees land and fire management agencies working together, in partnership with local communities to combine fire expertise with local knowledge.
2. A key pillar to Safer Together is science data and technology. The policy specifically states "we use the latest science, data and technology to make sure our actions are

targeted at reducing bushfire risk and protecting those things we care about. It also notes under “what we do:” “Commission bushfire science research” (p. 9), “What we will do: continue to invest in new science to address knowledge gaps and reduce uncertainties in our bushfire modelling.” (p. 17) and “Risk is dynamic and constantly shifting, so we need to keep building on our evidence base. We will continue our investment in science, and in partnership with research institutions, to build knowledge of the relationship between fire and the environment and to better manage risk.” (p. 18)

3. In May 2017 \$23m was announced to fund a two-year Safer Together program. In part these funds were allocated to ensuring that Victoria’s significant investment in bushfire preparedness and response is supported by a systematic and ongoing investment in developing scientific evidence.
4. The implementation of Safer Together is being improved by applying a systematic approach to understanding what some of the key sector knowledge gaps are, the resulting risks they may pose to the achievement of Safer Together objectives and determining how these risks can be mitigated by specific pieces of research.
5. Through being able to clearly articulate what existing research delivers, and where the priority knowledge gaps occur, the sector will be able to respond quickly and consistently in answering questions about resource requirements, in accessing external, collaborative or partnership opportunities, or in leveraging off existing programs.
6. This project is one of nine intended for delivery through the Safer Together program.

## CONTEXT

1. Land and fire agencies use the [‘Southern Australia Seasonal Bushfire Outlook’](#) to make strategic decisions on bushfire mitigation activities including the declaration of the fire danger period (FDP), resource planning during the FDP and prescribed fire management for the upcoming fire season. Since the outlook’s inception in 2006, it has evolved into a communication tool used by agencies to convey bushfire risk within their organisations and to the public so that community members can make better decisions around their bushfire preparedness planning
2. The outlook is a product produced by the Bushfire and Natural Hazards CRC and AFAC, in consultation with the Bureau of Meteorology, emergency service agencies and land management department in southern Australia. Formulation of the outlook generally begins in August and is finalised in early September. However, given that southern fire seasons regularly extend through the month of February, the outlook forecasts fire potential out to six months ahead.
3. One of the major limitations around the seasonal fire outlook product is that it has not been routinely updated (although an updated version has been released in November at the request of agencies for the last four years) and verified throughout the fire

season, as a result, there is a concern that the outlook does not meet agency or community decision making needs throughout the FDP

4. Building a solid foundation in which to base seasonal forecasts is paramount to improving support agency and community decision making needs in terms of preparedness.

## SCOPE

### INCLUSIONS

#### *Part 1- Climate research for experimental long-range prediction of FFDI*

1. Establishment of, and liaison with a Project Reference Group that includes representatives from fire agencies in Victoria and AFAC working groups.
2. Review of the current use of seasonal fire forecast products for risk assessment, followed by a business needs analysis – in consultation with the Project Reference Group, as well as other relevant agency stakeholders
3. Proof of concept long-range prediction of FFDI based on climatologically calibrated data
4. For the recent bushfire season, perform experimental forecasts to explore performance during "mock" operations.

#### *Part 2- Pre-production testing*

1. Assessment of enhancements to incorporate fuel availability and comparison to similar season types
2. Produce a real-time prototype version of the long-range prediction for the 2019/2020 bushfire season
3. Design of prototype production service based on user needs, and preparing plans for operational implementation

### EXCLUSIONS

1. Development of a communication strategy of prototype version will not be required

## PROJECT SPECIFICATIONS

### Key Steps

| Key Steps – Part 1                                | Lead | Due Date |
|---|------|----------|
| 1. Project commencement                           |      | Jul 2018 |
| 2. Engagement of Project Reference Group          |      | Jul 2018 |
| 3. Calibration of model and validation of outputs |      | Nov 2018 |
| 4. Proof of concept long-range FFDI forecasts     |      | Jun 2019 |

| Key Steps – Part 2   | Lead | Due Date |
|--|------|----------|
| 5. Incorporation of enhancements based on options review   |      | Nov 2019 |
| 6. Experimental long-range prediction of FFDI  |      | Dec 2019 |
| 7. Undertake a review on the performance of the experimental service, with a view to refining possible operational service |      | Feb 2020 |
| 8. Design of production service  |      | Jun 2020 |

### Expected Outputs

#### *Part 1 – Climate research for experimental long-range prediction of FFDI*

1. Report detailing the validation of the FFDI base model
2. Experimental forecasts at lead times of two weeks, one month and three months
3. Report detailing performance and applicability of using experimental forecast product

#### *Part 2 – Enhancements and pre-production testing*

1. Options review to define and incorporate enhancements
2. Production of real time version of experimental forecast product
3. Design of plans for operational implementation

## Quality Control

### Final report and other project outputs

It is the expectation of the Bushfire and Natural Hazards CRC and our client DELWP that the material delivered as part of this project will meet the highest scientific standards and will be suitable for internal and external distribution.

It is a requirement of this project that the final report (and any supporting material) is 'submitted to the States' satisfaction'. To ensure the final report meets this expectation it will be subject to up to two rounds of review (with a minimum of two weeks for each review) by DELWP. Research organisations are required to ensure an internal peer review process is undertaken prior to the draft final report being submitted for DELWP consideration.

Before the final report is submitted to the State's representative for approval it must also have been:

- Through an independent peer reviewer approved by the Bushfire and Natural Hazards CRC Project Manager
- Professionally proofread and copyedited

These steps must be arranged by the research organisation costed as part of project budget and completed within the project timeframe.

**Reports that have not been independently peer reviewed and professionally proofread and copyedited will not be considered final.** A copy of the independent peer review and the researcher response to any comments must be provided to the CRC.

### Communication

To further assist with the quality assurance it is expected that:

- The project team will utilise a consultative approach when developing the overall framework and data management processes/criteria and will demonstrate this by documenting engagement activities within the relevant reports. This will involve seeking input from DELWP subject matter experts to ensure development of a framework and processes that are fit for purpose.
- The research team leader will give periodic presentations (e.g. annually) to key stakeholder groups (Ecological Risk Assessment Working Group, Landscape Evaluators Working Group) to gain critical feedback on project milestones.

Any further quality control processes that are required for this piece of work, as well as key success measures, will be agreed with the DELWP Policy Lead as part of the planning process.

## PROJECT MANAGEMENT AND PROCESSES

### Contractual Arrangements

This project is being delivered under an Agreement in place between the Bushfire and Natural Hazards Cooperative Research Centre and the Department of Environment, Land Water and Planning (DELWP) in the State of Victoria. Under this Agreement the CRC is responsible for the delivery of a number of bushfire related research projects. The contract put in place between the CRC and the research organisation selected to undertake this work will reflect the terms of the Agreement between DELWP and the CRC.

A copy of the draft contract the CRC will provide to the successful research organisation is provided with this document. This contract should be reviewed as part of the EOI process. This is a standard agreement, and any changes will be at the sole discretion of the CRC. If you would like to request amendments to any of the terms and conditions set out in the proposed contract, details of the proposed changes and the reason the changes are requested must be included with the submitted response. In considering this contract and proposing changes please note we have been advised by DELWP that (i) changes to provisions relating to the ownership of Intellectual Property will only be varied to take account of substantial in-kind contribution from the successful research organisation/s and (ii) no changes can be made to the publications approvals processes.

### Project Governance

Each project is carried out under the supervision of a Project Control Board (PCB) and in accordance with the governance arrangements agreed between CRC and DELWP.

While the contractual relationship for the delivery of this project will be between the research organisation and the Bushfire and Natural Hazards CRC there will also be a strong relationship between the research team and DELWP staff. Communication is an important element of the success of this project and Researchers will be required to maintain strong links with both the DELWP Policy Lead and the CRC Project Manager throughout the project.

A governance plan has been prepared which shows the roles and responsibilities of each of the participants. The successful research team will be required to comply with the processes and expectations as set out in that document.

### Project Planning

The project overview included in this document describes the way the DELWP subject matter experts believe the project can most successfully be undertaken. Alternative approaches can be considered. Any alternative approaches must ensure the delivery of the required outputs including any intermediate outputs identified in this document.

Following acceptance of a project proposal the successful research organisation must prepare a detailed project plan and risk treatment plan **using the DELWP template**. This plan must be approved by the DELWP Policy Lead and will become an attachment to the contract. The project plan must be approved within three months of the notification of the acceptance of the project proposal.

### Reporting

The successful research organisation will be required to make at least one presentation (and possibly two) annually to the Project Control Board or other nominated DELWP group during the life of the project.

Research organisations will also be required

- to provide a poster for the annual AFAC/CRC conferences;
- detailed progress reports on a quarterly basis; and
- and contribute to the Project Evaluation Report

Dates for submitting Quarterly Progress Reports

| Period covered           | Report required                    |
|--------------------------|------------------------------------|
| 1 July to 30 September   | 24 October                         |
| 1 October to 31 December | 24 January following calendar year |
| 1 January to 31 March    | 24 April                           |
| 1 April to 30 June       | 24 July                            |

## SUBMISSION OF EXPRESSION OF INTEREST

### Submission Requirements

Research teams responding to this Call for Expression of Interest are required to submit their response, including:

- A draft project proposal (four to six pages) clearly addressing the requirements of the specifications set out in this document. Proposals must include achievable timelines, which will be used to monitor progress. A statement of capability demonstrating the ability of the proposed project team to undertake the work. This statement of capability should include the names and experience of key team members and their proposed contribution to the project (The capability statement should not exceed four pages).
- Project budget including details of any in kind contribution from the research organisation. A statement of acceptance of the terms and conditions of the proposed

contractual arrangements. If such arrangements are not acceptable details of any changes must be included with the submitted response.

#### **Additional information**

- Research bids from a consortium of research organisations with expertise in the relevant fields are specifically encouraged.
- Attached is a draft contract which we ask your organisation to review. In your response to the EOI you should identify any items in this contract that will require attention /amendment should your organisation be selected to undertake this piece of work. This contract is based on the Head Agreement between DELWP and the Bushfire and Natural Hazards CRC and as such there is very limited scope to make changes to the draft contract.

**The total maximum budget for this project is Part 1: \$115,000 (excl GST) and Part 2: \$145,000 (excl GST) and all work must be completed by 30 June 2020.**

Any research proposal once submitted will be treated as commercial in confidence.

Applications, must be submitted to: [office@bnhrc.com.au](mailto:office@bnhrc.com.au) by 27 July 2018.

#### **Evaluation Criteria**

After the closing date the Bushfire and Natural Hazards CRC along with the DELWP policy lead will review proposals against the evaluation criteria below and make a recommendation to the State's representative on the most appropriate organisation to undertake this work. The evaluation criteria provide an indication of those matters that should be included in the project proposal and associated documentation. Details are provided below.

Successful applicants will be advised by 20 August 2018 and it is expected work on the project will commence no later than 10 September 2018.

The decision of the CRC and our client DELWP will be final. The CRC reserves the right not to offer the work, or only allocate a proportion of the available funding, if a proposal does not meet the client's needs. The Project Control Board reserves the right to invite any other specific researchers as it sees fit to submit proposals before or after the closing date.

| <b>Evaluation Criterion</b>  | <b>% weighting</b> |
|--|--------------------|
| <b>Research Capability.</b> The capacity and capability to deliver an excellent applied research project in a Victorian environment. | 15                 |

|  |    |
|--|----|
| <p><b>Project Proposal.</b> A clear demonstration that the research team has an understanding of the project scope through the proposed research approach.</p> <p>The proposal must also include an indicative timetable of work and interim milestones/project outputs as described in this document.</p> <p><b>Quality Control.</b> Clear documentation of quality control processes including proposed internal and external reviewers. Identification of copyeditors and proofreaders.</p> | 50 |
| <p><b>Industry Engagement.</b> Strong track record of industry engagement with the ability to support and influence bushfire management in Victoria through interaction with land and fire agency personnel.</p> <p><b>Victorian Focus.</b> Ability to undertake research in Victorian environments individually and/or in cooperation with land and fire managers.</p>  | 15 |
| <p><b>Value for Money.</b> Delivery of required outcome within available budget along with the ability to leverage the funds provided with in-kind contributions or supplementary opportunities.</p> <p>The evaluation team will consider the membership of the project team and the proposed roles and time commitment.</p>   | 20 |

#### ATTACHMENTS

1. Draft Contract
2. Bushfire and Natural Hazards CRC/DELWP Governance Arrangement
3. DELWP Project Plan Template (to be provided)
4. Project Evaluation Report Template
5. Quarterly Reporting Template