

CALL FOR EXPRESSION OF INTEREST FOR ERP 7 – DEVELOPING STRATEGIC INTELLIGENCE TECHNOLOGY AND CAPABILITY FOR THE ENVIRONMENTAL COMPLIANCE REGULATOR

Proposals due **19 July 2019** to office@bnhcrc.com.au

INTRODUCTION

The Bushfire and Natural Hazards 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.

Developing strategic intelligence technology and capability for the environmental compliance regulator

PROJECT AIMS AND OBJECTIVES

The project's primary aim is to explore new and emerging technologies such as big data analytics, machine learning and pattern recognition to further develop DELWP's ability to undertake environmental scanning to more proactively identify emerging issues and trends, as well as potential patterns and connections that enable us to better understand drivers and interactions.

The project's secondary but related aim is to develop capabilities (systems, tools and capacity) for DELWP to capture, analyse and use data in more dynamic ways to assess the performance and functioning of its environmental compliance regulatory systems. This enables better identification of emerging or intensifying issues for environmental compliance in Victoria.

To achieve these aims, the project will seek to generate strategic intelligence from new or under-utilised data sources, data mining and using innovative approaches to improve managing our resources and achieve the greatest reductions in harms objectives.

BACKGROUND

1. Environmental compliance means conforming to legislation and standards regarding public land to protect our natural and heritage values. Environmental compliance is regulated by legislation that sets out compliance obligations in the form of offences for which there are

penalties. DELWP officers are authorised under legislation to conduct compliance operations and enforce the regulatory framework.

2. The tools used in environmental compliance include: setting standards; informing and educating; issuing licenses, permits and authorisations; monitoring compliance; and enforcing compliance by applying enforceable directions or sanctions.
3. DELWP has invested in operational intelligence with resources and is in the process of procuring a new intelligence database and system.
4. Intelligence is the process of gathering, collating, analysing and making sense of unconnected and uncertain pieces of information. Sensemaking involves better understanding of circumstances, connections, patterns and trends. Using this information, we can better assess and manage current and future risks.
5. Intelligence can be gathered for operational, tactical or strategic purposes. It can be used to support compliance/enforcement and other (e.g. fire) operations, business and market assessments, and program and policy design. It can consider technology, economic, social and environmental information. Most organisations need forms of information or intelligence to support risk assessment and decision making across some or all of these domains.
6. Forms of intelligence often need to be brought together – although not always explicitly linked. Criminal operational intelligence is needed to support safe investigations and to achieve efficient operational outcomes. Business intelligence is needed to determine where and how resources are being used, provide insight into how efficiently they are being used, and to assist in identifying systemic issues with the regulatory frameworks, including relevant business or regulatory practices.
7. Criminal or operational/tactical intelligence supports the prioritisation, planning and undertaking of investigations, operations and programs aimed at protecting the integrity of particular laws and the values they are intended to protect. Making sense of criminal intelligence for operational and tactical purposes involves understanding the likely actions and intent of individuals and groups involved in illegal activities so that efforts can be targeted to prevent crime, apprehend offenders and ensure operational safety.
8. DELWP has developed a Compliance Information Management System to improve its capabilities to capture core business intelligence relating to wildlife and environmental compliance operations. Strategic intelligence is needed to understand changes to the operating environment. This includes identifying new emerging trends, and their underpinning patterns and connections so these issues can be more proactively identified, understood and managed.
9. The focus of strategic intelligence is more at the macro, policy or program level. Strategic intelligence is used to support the design and delivery of corporate and higher-level objectives, programs and resource planning, and the development of strategies. An organisation might also use intelligence about societal trends at a regional, national and international scale that may signal new forms of harm (e.g. next-generation drugs that cannot be detected) or modes of operation (e.g. media devices) that current policies and capabilities are ill-equipped to manage.

10. Strategic intelligence is potentially most valuable when it is used to test the integrity and function of the regulatory system in advance of it failing. Regulatory system failures typically involve changes in community needs and expectations, changes in harms, or changes in the value or vulnerability of values being protected that go undetected or unaddressed. They often result from a lack of understanding of change across some or all of the social, economic and environmental domains.
11. Critical questions that need to be asked and answered by DELWP on an ongoing basis are:
 - a. Are policies and regulatory systems meeting desired outcomes, and do those desired outcomes still meet government and community expectations and needs?
 - b. Are the norms of practice that underpin the management of the regulatory system – including licensing, audits, inspections, education, investigation and prosecution - delivering expected results?
 - c. Are the values that the system has been designed to protect still valued?
 - d. Are these values more or less valuable or vulnerable?
 - e. Have changes in management practices caused increases or decreases in levels of use and impact?
12. Malcolm Sparrow (p172, *The Character of Harms*, Cambridge University Press 2008) describes eight categories of harms, including slow-acting harms, invisible harms and catastrophic harms, which have characteristics that make them difficult to reduce. Strategic intelligence needs to focus on understanding and teasing apart these types of harms and investigating what types of controls may be helpful for mitigating them.
13. Strategic intelligence involves elements of applied research or analytics in the gathering and analysis of information to identify patterns, relationships and trends. This often includes the integration of data, models and expert knowledge in defining assumptions and framing hypotheses, and prediction, projection or futures/foresight thinking to assess future scenarios and risks and evaluate strategies to manage these.
14. Patterns, trends and predictions from current management data and models contain significant uncertainty, and this uncertainty is potentially greater when tapping into a wider range of data sources. Acknowledging uncertainty is critical when making assumptions, assessing risks and setting strategies. A lack of knowledge should not lead to a lack of action, or at least a lack of decision-making but being able to quantify levels of uncertainty is needed to support decision-making and action. The best available information needs to be used to make decisions, with due consideration given to the direct impacts of action(s) or inaction in mitigating the harm being addressed, or the secondary impacts of different options on the entities being regulated.
15. In summary, strategic intelligence can help us better recognise and understand priority risks and harms in the operating environment, including new and emerging risks. It will enable us to more confidently determine where and how to target policies, regulatory tools and compliance effort for the best outcomes, gauge the impacts of our efforts, and adjust our approach accordingly.

Issues with existing strategic intelligence

16. DELWP currently uses unsophisticated approaches to gather strategic intelligence including data and information that, although robust in nature, are not timely or dynamic in identifying emerging and changing patterns. As a result, it cannot readily access multiple sources of data, pick up and interpret softer signals and identify anomalies that often signify change or disruption. When issues do break out, it can be slow to make sense of the circumstances which hampers its ability to focus on timely and proactive solutions.
17. This has improved in the area of bushfire management where sophisticated models and more dynamic approaches to risk assessment are being used to guide both tactical and strategic planning, and as tools for engaging with communities over the management of bushfire risk. Similarly, State of the Forests reports are being transformed to be more dynamic, and to provide more tailored and useful information for ongoing reflection and management. However, these are still limited in scope and while they can determine trends emerging within defined and established environmental data sets, they are not set up to assess the wider operating environment and external emerging trends.
18. A wider range of data and information exists than is currently being used, including environmental data held by universities and other groups. Also included, social data, such as social media data and information from customer management and stakeholder systems. This often has issues associated with data curation and in the case of social media data, it is not necessarily representative of broader community views.

SCOPE

INCLUSIONS

1. Data associated with all DELWP and Parks Victoria compliance responsibilities and compliance-related policy risks (relating to forests, public land, fire prevention, wildlife, threatened species, heritage, water)
2. Relevant data associated with themes that are the direct responsibility of other departments or agencies, but crossover with DELWP compliance responsibilities/risks (e.g. illegal hunting on public land, wildlife welfare, litter, pest animals)
3. Spatial data analysis
4. Purchasing data
5. Behaviour change initiatives
6. Hosting the data on our server
7. Data quality and resulting uncertainty, identification of systemic biases – sampling, measurement and confounding.

EXCLUSIONS

1. Data associated with compliance responsibilities that sit outside of DELWP and Parks Victoria (e.g. EPA responsibilities around pollution)
2. Operational intelligence collections
3. Illegal data mining, data mining that harms our brand

4. Some emerging technologies such as: drones, including the data capture, storage and analysis; spatial and mathematical modelling to estimate the gain or benefit of compliance control actions to biodiversity; and artificial intelligence, will be covered in other projects.

PROJECT SPECIFICATIONS

KEY STEPS

Key Steps	Lead	Due Date
1. Establish a community of practice to inform research and act as a learning feedback loop to test tools, systems etc.	DELWP	September 2019
2. Project Inception including initial meeting with DELWP, CRC	CRC, DELWP Contractor	September 2019
3. Develop detailed project plan	Contractor	November 2019
4. Review new and emerging technologies (review of literature or environmental scan of new and emerging technologies)		
5. System design and development of a strategic intelligence system to better understand and manage social, economic and environmental changes or trends that indicate changing regulatory risks	Analyst, BRAU, one DELWP region	
6. Data aggregation rapid metadata mapping and updating in a distributed data/ cloud environment Assessing trends, pattern and anomaly identification, and connections, as well as systematically assessing and describing uncertainty in rapidly compiled products understanding of the representativeness of social media		
7. Application of method to previous under-utilised data to Assess emerging trends, patterns and linkages to enable DELWP to better understand and manage emerging or changing regulatory risks		
8. Use insights in delivering compliance – trial initially with business planning and strategic assessments.	Analyst, BRAU, one DELWP region	

9. Discovery methods and analyses that morph with newly available or previously under-utilised data and allow us to translate/extract reports/insights / new opportunities.		
10. Training in futures thinking and analytics		
11. Final report		
12. Final presentation/workshop		June 2022

EXPECTED OUTPUTS

1. Strategic system design and development of strategic intelligence products needed to assess emerging trends and support strategic risk assessment and regulatory design
2. Definition of cloud /distributed data sources of interest to DELWP.
3. Methods of data aggregation, rapid metadata mapping and updating in a distributed data/ cloud environment.
4. Means of assessing trends, pattern and anomaly identification, and connections, as well as systematically assessing and describing uncertainty in rapidly compiled products.
5. Means of understanding of the representativeness of social media.
6. Discovery methods and analyses that morph with newly available or previously under-utilised data and allow us to translate/extract reports/insights / new opportunities.
7. Support to undertake cross-department analytics project.
8. Training in analytics for department personnel.
9. Training support for environmental scanning and future thinking.
10. Links to compliance performance systems.
11. Practical support to manage compliance-related policy risks.

ADDITIONAL SPECIFICATIONS

The expectation is that this project will be supported by a suite of strategic assessments at a range of scales, including forms of environmental scanning and future-like thinking. Through this, its utility will be tested and improved, and DELWP will improve its ability to test and improve the functioning of its regulatory systems in advance of fault or failure.

Technologies and datasets that could be included in the project:

- spatial, social and industry/economic (e.g. recycling and waste)
- mathematical modelling
- artificial intelligence
- machine learning
- social media

- use of 'big data'
- other analytic methods.

While drawing on new technologies and methods the project be underpinned by:

- intelligence
- research and analytics, including basic elements such as:
 - system design
 - stakeholder engagement to test and improve products (although an initial push model is proposed)
 - data curation (including links and updates to source data)
 - version control
 - understanding and expressing uncertainty.

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 report is 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
- Professional proof read, and copy edited.

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 proof read, and copy edited 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 though out 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 3 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/BNHCRC conferences
- provide detailed progress reports on a quarterly basis; 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 (4-6 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 4 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 \$1,181,750 (excl GST) and all work must be completed by 30 June 2022.

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

Applications must be submitted to: office@bnhrc.com.au by 19 July 2019.

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 27 August 2019 and it is expected work on the project will commence no later than 17 September 2019.

The decision of the BNHCRC and our client DELWP will be final. The BNHCRC 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.

Evaluation Criterion	% weighting
Research Capability The capacity and capability to deliver an excellent applied research project in a Victorian environment.	15
Project Proposal A clear demonstration that the research team has an understanding of the project scope through the proposed research approach The proposal must also include an indicative timetable of work and interim milestones/project outputs as described in this document Quality Control Clear documentation of quality control processes including proposed internal and external reviewers. Identification of copy editors and proof readers.	50
Industry Engagement 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 Victorian Focus Ability to undertake research in Victorian environments individually and/or in cooperation with land and fire managers	15
Value for Money Delivery of required outcome within available budget along with the ability to leverage the funds provided with in-kind contributions or supplementary opportunities. The evaluation team will consider the membership of the project team and the proposed roles and time commitment.	20

Attachments

1. Call for expression of interest in this project
2. Copy of the Governance Arrangement
3. BNHCRC subcontract including project plan template and evaluation report template
4. Quarterly report template
5. DELWP report template.