

FORM TITLE - Request for Project Funding – Research into Future Land Use and Climate Change scenarios

Working title:

What to Expect for Catchments and Reservoirs

Problem statement:

Water industry decision makers would benefit from insights into future impacts on catchments with regard to land use changes, including research into modelling of water quality catchment parameters.

Background/ Description:

This task can be made easier through desktop analyses of potential future impacts with regards to climate, land use and water quality changes. Water utilities are thus the target audience; however, stakeholders from other sectors will be engaged and will benefit from the development of this research i.e. environmental, planning authorities, and government research organisations.

The background information feeding into this project will stem partly from the WaterRA project #1100 “Better data-driven decision making under future climate uncertainty” being led by Dr Leon van der Linden with notable outcomes to underpin ongoing research such as:

“Survey of Utility Partners: Decision making and use of climate related data”

“Appropriate decision-making tools to support the WSAA Climate Change Adaptation Guidelines”

“Decision database / toolkit”

As mentioned in the WaterRA project #1100, this proposal would support the WSAA Climate Change Adaptation Guidelines, and will develop upon the identification of utility decisions that use climate and land use information, and hence the need to consider future climate and land use change. It will provide guidance; principles and process for both climate and land use change, include natural barriers and identify triggers to alert for changes in the system.

The project will benefit from the ability to utilise the WaterRA Data Science Community of Interest Portal to build upon modelling information and provide code sharing between utility partners.

Defining the required information:

To develop a robust report of future impacts on climate and land use the project will also aim to increase the knowledge base, particularly in reference to changes in water quality, climatic scenarios and the potential to use natural barriers to offset the potential changes. The project would also investigate security and benefits in relation to catchment management, risk based research based on non-compliance of development conditions, and quantifying the risks and benefits of changing land use; cultural and social changes, including private landholders – custodians and owners and possible trade-offs in societal values and the role of adaptation and resilience thinking and how we can ensure there is no mal adoption.

Objectives:

The objective of this project is to increase the knowledge base of future impacts to catchments with regard to land use changes and research into modelling of water quality parameters.

Alignment with strategy:

The intention of this project is to support the WSAA Climate Change Adaptation Guidelines and develop upon new knowledge being generated in this area, such as the WaterRA Project #1100, with more detail to ensure industry practitioners use the most appropriate data and techniques for the type and scale of their water industry decision-making in light of projected climate and land use scenarios.

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Overall, the research should align with relevant state and federal legislative requirements, as well as take into consideration the corporate strategies of the contributing utilities and their regulators.

Broader contextual alignment should be with state or regional growth plans, and climate predictions as needed.

Primary deliverable:

A research package to expand the understanding around future climate and land use scenarios, based upon:

- A synthesis of the information available for future land use and climate planning
- An investigation and development upon existing models and analytical tools available and development of new models or tools where necessary
- A summary of techniques and approaches to analysing the land use and climate change information available, including how to deal with uncertainty and gaps in the information and how to transfer knowledge to practice

Other deliverables:

Knowledge transfer plan that identifies activities to support the implementation of the research framework.

Communication plan:

This project requires extensive stakeholder engagement to achieve its purpose. Participants will need to engage with organisations nationally, research organisations as well as several water utilities. The communication plan will need to show how regular engagement, knowledge sharing and model/ data analytic sharing/forking and uploading will occur, and will increase the budget to allow for face-to-face meetings.

The project team will be required to co-design the deliverables with the research organisations and keep the data user and decision makers engaged throughout the project.

In particular, government and political stakeholders will be important contributors and influencers of this project.

Outputs will need to be conveyed through the WaterRA network.

Project outputs to assist with ongoing communication of the project include:

- Factsheets – as determined by the project leader which succinctly convey the key findings of the project (particularly the data science components)
- Guidance factsheet on the framework
- Production of short informative video
- Final workshop or roadshow

Knowledge Transfer plan:

Knowledge transfer/sharing will be an integral part of this project, by utilising a developing platform for data science model and analytic sharing. The knowledge sharing will be ongoing throughout the project and upon completion of the project it is expected that utilities and project partners will have been able to adapt and create tools relevant to their state/region.

Building capacity within the data science areas of water utilities, particularly in future forecasting is a key deliverable of this project.

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Development of the Knowledge Transfer plan will be included as a milestone scheduled as determined by the project leader and included in the budget.

Interested Stakeholders:

From the workshop:

WaterRA members – Coliban Water, Water NSW

Non-WaterRA members – BOM

Potential others – WA Water Corp, Hunter, Seqwater, Melbourne Water, SA Water, Yarra Valley, SE Water, City West Water

All WaterRA members to be approached for interest

Indicative Funding required:

Indicative range \$250k – 350k cash, depending on the in-kind contributions

Duration:

The project duration is expected to be between 2 and 3 years.

Intellectual Property:

WaterRA will own the IP in accordance with the Members' Agreements.

Investigative or Research approach

In-kind contributions from water utilities are required to develop the research; which may include response to survey, interviews, case studies and analysis of IT records (web searches).

In-kind contributions from other (research) organisations are required to assist with development of data science analytics in each state.

<p>What are the anticipated benefits?</p>	<p>Utility Benefits</p> <ul style="list-style-type: none"> • Productivity • Service Delivery • Risk Management 	<p>Risk Management - Integrated and consistent approach to the assessment of water futures under climate and land use changes, which leads to better risk management</p> <p>Productivity - Increase in uptake and use of climate and land use information and transparency in decision making which will aid in regulatory approvals</p> <p>Productivity - Increased likelihood of investing in correct adaptation programs</p> <p>Service Delivery - Customers and communities will have better reliability of supply with greater price certainty and an appreciation of how their water service providers are managing the impacts of changing environments</p> <p>Risk Management – Reputational, though demonstrated improvements in planning, communication and management of variable situations</p> <p>Productivity - Better understanding of (and hence targeted investment in) research needed to monitor and analyse water futures under varying climate and land use</p>
	<p>Research Partner Benefits</p> <ul style="list-style-type: none"> • Publication outputs 	<p>Uptake - Application of research methods within water utilities</p> <p>Uptake - More targeted/better defined research questions to support industry</p> <p>Uptake – Open source data analytics allowing broader reach of outputs and ease of contributing on a wider scale</p>

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	<p>Capacity Building Benefits</p> <ul style="list-style-type: none"> • How will this result in practice change, organisational learning or improvements for society 	<p>Organisational Learning - Increase in skilled practitioners in data science, assessment and planning for variable scenarios</p> <p>Practice Change - Improved utility processes to assess climate and land use futures and incorporate the associated uncertainty into practical decision making</p> <p>Practice Change - Improved integration with other external stakeholders to deliver more robust outcomes</p> <p>Improvement for Society - Business and community confidence if water industry services are reliable into the future despite the impacts of land use and climate change</p>
<p>What will success look like (KPI's)?</p>		<p>Land use and / climate change adaptation is business as usual within the water utility through sound and robust forecasting and planning</p> <p>Regulator ready information to support business cases</p> <p>Water, wastewater services and costing are reliable and prices are certain</p> <p>Best practice planning for climate change</p> <p>Reliable water supply and water industry services</p>

Indicative Funding

Name:

Date:

FOR CASH FUNDING AMOUNT OF

\$.....

FOR INKIND FUNDING AMOUNT OF

\$.....

FOR FINANCIAL YEAR/S.....