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# Developing a Source river operations tool for the River Murray System

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The MDBA, with support from eWater, are developing an operations model of the River Murray system using the eWater Source platform. The ultimate aim is to provide a superior river operations decision support tool defined by automated real-time data integration, improved routing of river flows, integration of latest forecast technologies, and time efficient exploration of scenarios. In the new era of environmental water planning and delivery, the ability to explore alternative operational scenarios is becoming more and more desirable.

The **Source River Murray System operations model** was seeded from the Source River Murray System planning model — developed to support the implementation of the Murray-Darling Basin Plan and Sustainable Diversion Limits. Whilst the founding network configuration and parameters of the two models (operations and planning) are very similar, the scope and functionality of the operations model has been necessarily refocused.

River operators reside firmly in ‘the now’ of today and the immediate future. They make analyses on a daily or sub-daily basis, looking at current conditions, a range of forecast information and by testing scenarios. This helps to assess risks and understand complex trade-offs associated with each operational decision. Their focus is on the path ahead and a need to understand what may or may not occur depending on future conditions and the operational decisions they make. Model, workflow and analysis requirements are therefore fundamentally different to those of water resource planners or catchment managers trying to support long term policy decisions. This means data requirements and software user needs are different, and any operational decision support or modelling tool must function effectively within a range of dynamic operational and data work flow processes.

Important requirements include:

* functionality for quickly comparing a range of scenarios, including different inflow, demand and ‘loss’ forecasts by adjusting forecast conditions, and reviewing outcomes
* a clear and reliable interface to ‘drive’ the system by adjusting model parameters and interrogating results
* an efficient and robust process for ingesting operational hydrometric data of variable quality and completeness
* a means of exporting model scenarios and outputs for later reference and to use in reporting and other processes

Work thus far has gone a long way towards meeting these requirements, but there is still more to do. On-going testing and development by the MDBA has identified a range of critical user functional requirements and improvements that are specific to the use of Source in operations. These are being implemented systematically by eWater and are expected to boost performance and further improve suitability of Source as a river operations decision support tool.

Other challenges go beyond configuring the model and refining the software capability. For example, to address operational data quality and workflow needs, MDBA staff have significantly expanded capability of their River Operations Workflow system. This is MDBA’s primary hydrometric data workflow tool and is based on the Deltares FEWS system. This work has improved data provision for the Source model by integrating Source into existing workflows, improving data quality and ensuring latest data is reliably available for use in Source on a daily basis.