

## ***Interactive comment on “A regional scale ecological risk framework for environmental flow evaluations” by Gordon C. O’Brien et al.***

### **Anonymous Referee #2**

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#### Overview

The manuscript presents an important development in the field of environmental flow assessments being able to bridge the gap between the biophysical constraints under which e-flows are set, and the requirements to maximise benefit for socio-economic/socio-ecological needs. The spatial discretization in relative risk regions for both aspects in a catchment is novel. This is achieved through the development of the PROBFLO e-flow assessment model which incorporates the relative risk procedures (bio-physical), meanwhile the construction of coupled Bayesian Belief Networks (BBN) allows for participatory scenario planning. As demonstrated through two case studies the authors make a case for the usability and adaptability of the combined PROBFLO-BBN Relative Risk model for a broad range of e-flow applications. The spatial representation of the RR presents an important contribution to modern catchment planning

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in this regard.

Some specific comments:

1. Field data was used to derive causal probability thresholds for the relative risk calculations, although none of this data is presented. In order to ensure that the proposed methodology is salient and credible, one would expect to see this information. Although given the length of the manuscript this could be compiled in a supplementary document for the published manuscript. 2. It was not clear to me where the driving hydrological data was sourced – modelled or gauged data (sources – where can the reader find that information)? 3. There were several examples within the manuscript that point to the utility of the tools for participatory approaches. Seeing that is probably a key selling point of the proposed tools, I would have expected some presentation/further discussion on the stakeholder ‘uptake’ of the tool – how do we know that the stakeholders: 1. Trust the methodology?; 2. Embed this information into their catchment vision? 4. Frequent reference was made to Adaptive Management, and the potential for these e-flows tools to be used in a learning-by-doing approach, this implies that the methodology becomes an operational tool, rather than a benchmarking tool. What was not clear from the discussion is how one would use this methodology iteratively to manage adaptively. This should be elucidated in the manuscript. 5. The issue of uncertainty and sensitivity was recognised in the manuscript, but no data was presented – it would be beneficial to also include this in a supplementary file.

Further comments are included in an annotated version of the manuscript.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/hess-2017-37/hess-2017-37-RC2-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2017-37, 2017.

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