Independent Review Panel
Review of SDLA-EE Report

SDL Adjustment Ecological Elements Method Trial Implementation Review

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28 April 2015
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OVERALL COMMENTS

This trial period has helped build confidence that the SDLA-EE method is scientifically fit for the purpose intended. While there remain in the method approaches and parameters that could be further argued from a scientific perspective, with just one exception (initial conditions), the IRP does not believe that any of these areas of residual debate significantly affects the accuracy, precision or applicability of the method. Subject to the required changes below, and review of any unexpected outcomes that may arise when the full suite of works and measures is assessed in the coming months, we reaffirm our previous advice that the SDLA-EE method is fit for the purpose for which it was designed.

CHANGES REQUIRED

Sensitivity to initial conditions

The revised CSIRO report confirms that initial conditions have a significant effect on the outcome of equivalence tests. The sensitivity to initial conditions no doubt reflects that there is a slow response of mean scores over time. The solution proposed by CSIRO in their revised report is to append a 30 year 'burn-in' period to set initial conditions, and then restart the analysis from the beginning of the flow record. The IRP does not believe this solution provides an improvement over any other arbitrary method for setting starting conditions. The conditions at the end of the 30 year burn-in period simply become another arbitrary initial conditions set used for the EE testing. We suggest a 'least-worst' approach (acknowledging the modelling constraints re. stochasticity – see further below) is to run the ecological elements method - for benchmark and SDL adjustment scenarios - three times using initial EE scores equal to 0.1, 0.5 and 0.9 (i.e. different initial conditions for each of the three runs). We suggest that SDL adjustments should comply with the test of equivalence (proscribed in Schedule 6 of the Basin Plan) for all three runs.

Scaling the final equivalence score

We note that equivalence scores at the regional score at the fourth decimal place are significant in terms of volumes of SDL adjustment. There is a risk that scores of 0.0001 are erroneously considered by non-scientists to be 'miniscule' or effectively equal to zero. In order to communicate the practical significance of such scores in reporting equivalence tests we suggest that all score be scaled by a factor of 10,000. This will have no effect on the equivalence testing or number of significant figures, but will assist with

communication of results. References to fourth or fifth decimal point in the report will need to be changed to fourth or fifth significant figure.

OTHER COMMENTS

Lack of Stochastic Analysis

This is more a lament than a critique from the IRP – it is recognised that there are modelling constraints that have been imposed that prevent proper stochastic analysis of time-series parameters in the SDLA-EE method. The IRP sees as regrettable the lack of opportunity to include stochastic elements in the model, which may have helped resolve issues such as accounting for the effect of rare events, starting conditions and the estimation of confidence limits. It should be noted that the CSIRO team have reported that single (rare) flow conditions do not affect the model output unduly and a means of resolving issues relating to starting point of the time series has been proposed above. Under these circumstances the current SDLA-EE method should be used to evaluate the use of works and measures in modifying SDLs for the Basin.

Inconsistent logical argument

The IRP has raised this matter previously under the heading of better presentation of 'lines of evidence' and elsewhere. This issue is better dealt with in the latest version of the report, nevertheless, there remains more than one place in the report where ambiguous or subjective lines of argument are presented for why a change to the method was, or wasn't, made during the trial phase (eg. number of ecological elements). The IRP is not proposing that any specific changes are required in this regard at this late stage, but a final careful reading, and re-stating where necessary, of the logic/evidence syntax (regarding certain method processes and steps) would be helpful.

Proof-reading

The report still contains several typographical and lay-out errors (including inconsistent line spacing, residual comments left in, etc.). It would benefit, when in final version, from a thorough going-over by a professional proof-reader.

Additional Comments on Jurisdictional Feedback

Victoria

From a scientific perspective, the IRP is sympathetic to the point raised by Victoria that the final test of the SDLA-EE method should be reviewed, in some way, when the full package of proposed works and measures has been run through the method. If such a scientific review is considered by MDBA, it should be done only against objective scientific criteria, and not become an opportunity to subjectively refine input parameters in the method to meet non-scientific objectives.

The IRP has does not believe that there is any significant scientific weight to the arguments raised by Victoria that the SDLA-EE method is (i) inconsistent with the ESLT method referred to in Schedule 6, (ii) is overly sensitive to frequency (or, conversely, is insensitive to dry spell), or (iii) that there is a bias to low range SFIs (other than what would be expected based on river geomorphology). We have commented in more detail on these matters in previous IRP review reports, and no compelling evidence has been provided in the recent round of review to change those opinions now.

South Australia
Submitted comments seem minor matters of detail that would not influence the analytical determinations of the SDLA-EE method and, hence, they do not require any particular comment from the IRP.

No written comments were received by the IRP from other jurisdictions