

**Manuscript:** Draft Synthesis Report, Chapter 5

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**Name of Reviewer:** Colin Rennie

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| 1. Are the objectives of the work clearly stated?  | 1 2 3 4 5 |
| 2. Are the methods employed valid, appropriate and sufficient to address the questions, hypotheses or the problem?                               | 1 2 3 4 5 |
| 3. Are the observations, conclusions and recommendations supported by the material presented in the manuscript (e.g., data, model and analyses)? | 1 2 3 4 5 |
| 4. Are the assumptions used valid and are the mathematics presented correct?   | 1 2 3 4 5 |
| 5. Is the manuscript well organized, material precise and to the point, and clearly written using correct grammar and syntax?                    | 1 2 3 4 5 |
| 6. Are all of the figures and tables useful, clear, and necessary?   | 1 2 3 4 5 |
| 7. What is the quality of the overall work?  | 1 2 3 4 5 |

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100 90 **85** 80 70 60 50 40 30 20 10 0



observed change in required head ranging from 7 cm to 20 cm to produce equivalent discharge.

5) p 122-123. The justification for model approach appears to consider only the question of conveyance. This may be due to the specific science questions posed for Chapter 5, but the overall study objectives were not limited to an evaluation of conveyance change. 1D modelling may be appropriate for conveyance estimates, but not for local sediment transport and morphodynamic modelling. Further, the justification for 2D versus 3D focuses entirely on the (lack of) importance of vertical velocities. This discussion fails to recognize that 2D models do not readily predict cross-stream currents in channel bends due to inadequate consideration of momentum exchange, as was previously stated by the review team. Accurate prediction of secondary currents is important for sediment transport and morphodynamic modelling in channel bends. The study team, supported by the review team, considered 3D modelling to be excessive to address the study objectives. However, limitations of 2D modelling should be acknowledged. A 3D model study was in fact also conducted, but this was not mentioned in the Draft Report. Liu and Parker compared shear estimates from their 2D model to shear estimates from a 3D model. The results were comparable. It would be useful to mention this in the Draft Report, as further justification for the 2D approach.

6) p 129. This reviewer previously raised an issue regarding the model bathymetry uncertainty analysis performed by Bruxer and Thompson. Bruxer and Thompson employed random bathymetry errors, whereas bathymetry errors would have been greater in non-surveyed areas of the river bed where interpolation was required. This criticism was acknowledged by Bruxer and Thompson as a weakness of the uncertainty analysis. Perhaps some discussion is required in the Draft Report.