Comments from the Editors and Reviewers (if available):

Reviewer #3: (Administrative Editor)  
Our usual check shows shared text and content (8%) with the following published article, which appears to cover similar ground. Although this submission is much more comprehensive and includes model comparison and validation, a further minor revision is required to

- List the published work in the bibliography.

*The following has been added to the Bibiography:*

*C.~Zoppou, J.~Pitt and S.~Roberts, A solution of the conservation law form of the Serre equations, ANZIAM Journal, 57 (2015) 385-394.*

*We have not referenced this paper anywhere else in the paper as it is a summary of the Ph.D work of the first author, which is cited in the body of the text.*

- Cite the published work in the body of the manuscript

*This has been done in the Introduction.*

- Make very clear in the Introduction section the novel content of your manuscript when compared with published work, and particularly in relation to the paper listed below.

*This has been done by adding the following paragraph in the Introduction:*

*This paper significantly expands the work presented by Zoppou et al., where the second-order finite volume scheme is briefly described and used to simulate a hypothetical dam-break problem over a horizontal bed using the Serre equations. In that paper, although second-order accuracy of the model was established using an analytical solution to the Serre equations, the model was not validated using experimental data nor analyzed in detail. This paper remedies these deficiencies by describing in detail a first, second and third-order finite volume solutions to the Serre equations that contain bathymetric terms. Data from several laboratory experiments, including one that has not been previously published in the literature, are used in this paper to validate the models. There is also an extensive analysis of the dispersion properties of the numerical schemes, which were not included in our previous paper. This paper provided more detail of the models enabling the reader to implement these schemes as well as justification for using at least a second-order scheme for solving the Serre equations.*