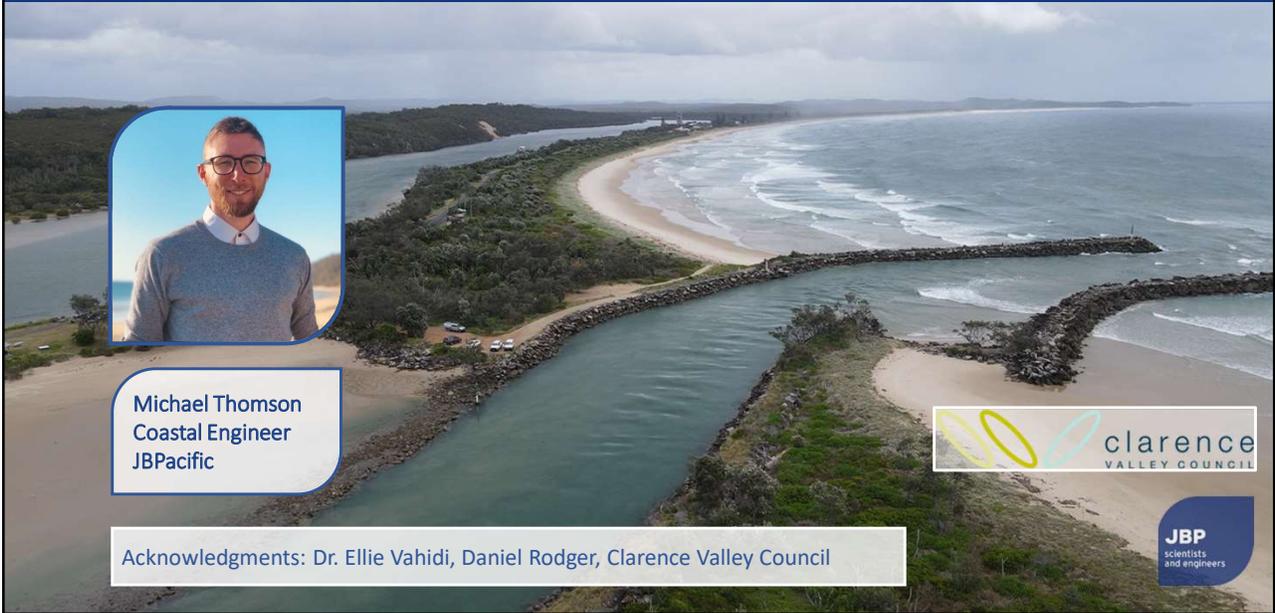
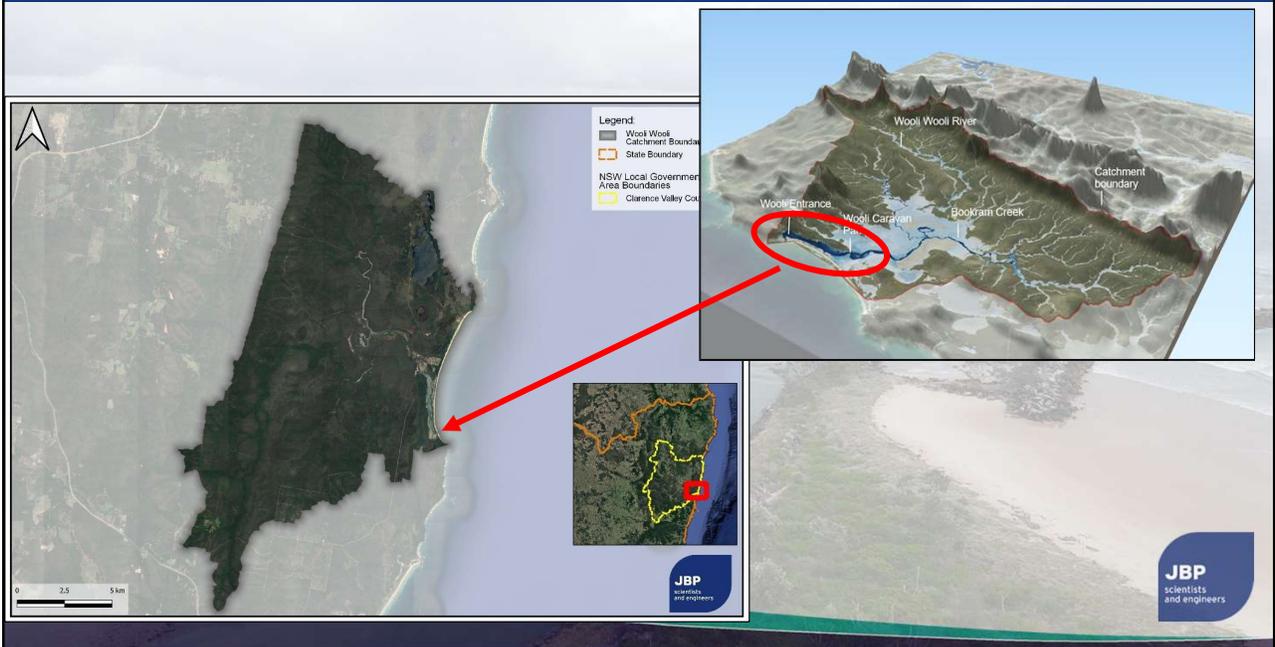


# The role of morphodynamics in assessing flood hazard in tidally dominated estuaries



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# The role of morphodynamics in assessing flood hazard in tidally dominated estuaries



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

### Context

#### 4.2 Unsteady state (dynamic) entrance conditions.

In the general and detailed approaches, unsteady state entrance conditions are used to represent changes to the downstream flood control mechanism over time during an event. This approach is less conservative than using steady state entrance conditions.

Initial entrance geometry conditions would be based upon the steady state entrance condition approach (Section 4.1). An understanding of the entrance dynamics and physical limits can be derived from:

- A particular historical event. This may require alteration to the entrance configuration within realistic limits in the model to match available calibration data.
- Peak shoaled (governing peak flood levels) and peak scoured (governing peak flow velocity and ocean inflow) states over time.
- The limits of the potential dynamics such as vertical and lateral limits of scour, including any headlands, rock shelves or reefs known to exist in the locality.

#### NSW OEH: Floodplain Risk Management Guide

- Unsteady state
- Less conservative
- Understand entrance dynamics and physical conditions
- Peak scoured state over time

JBP  
scientists  
and engineers

3

## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

### What's the problem?

- Upstream floods can cause erosion in estuaries
- Erosion can be in the form of deeper channels or shallow bars
- These changes to bathymetry can effect flood currents and volumes in the estuary
- Resulting in more or less inundation of adjacent areas

**How can we consider the influence of changes to the estuary when evaluating flood events?**

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scientists  
and engineers

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# The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

## Field Data



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# The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

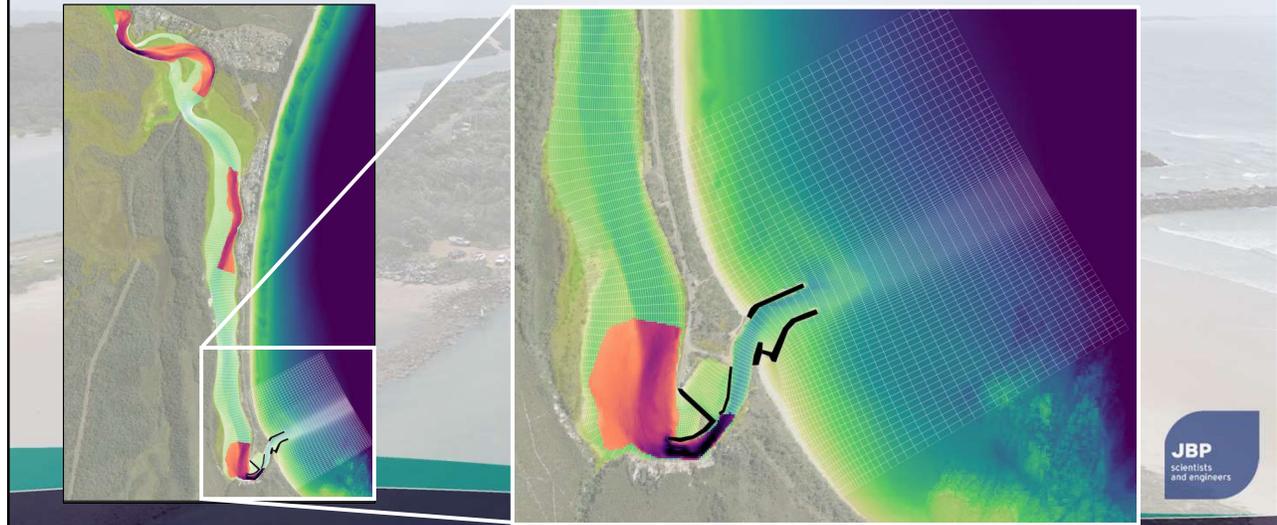
## Field Data



6

## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

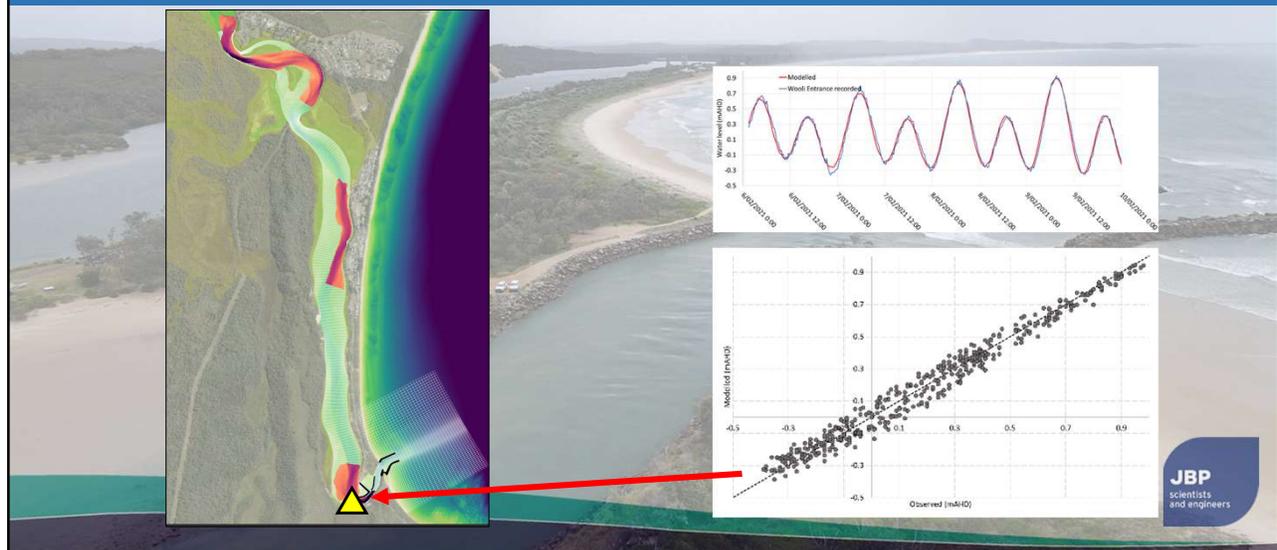
### Morphological modelling



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

### Morphological modelling



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The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

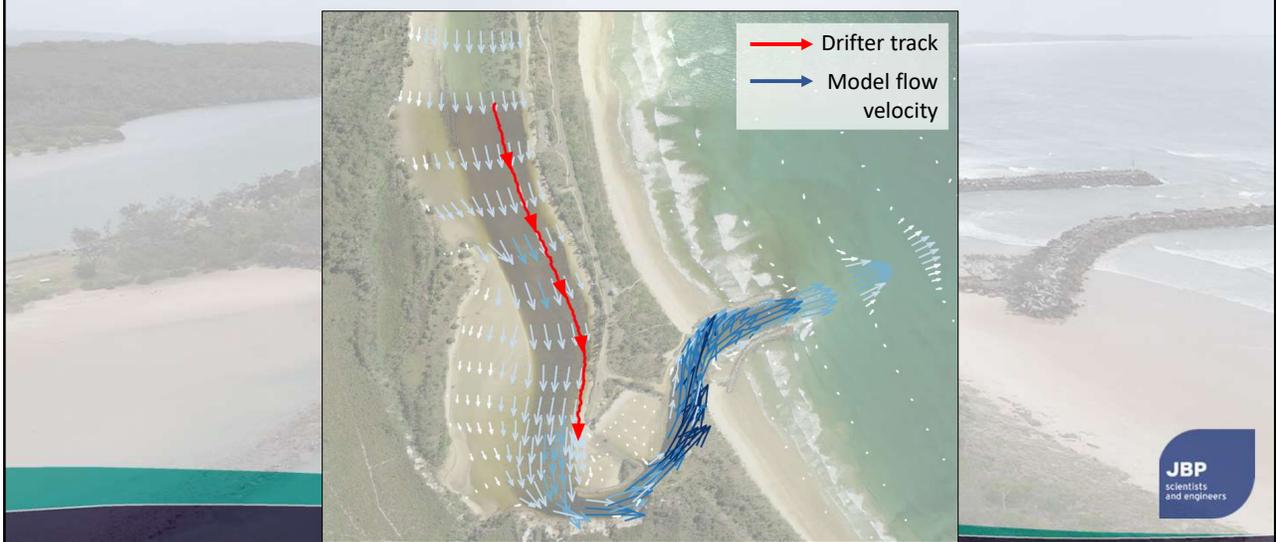
Morphological modelling



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The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

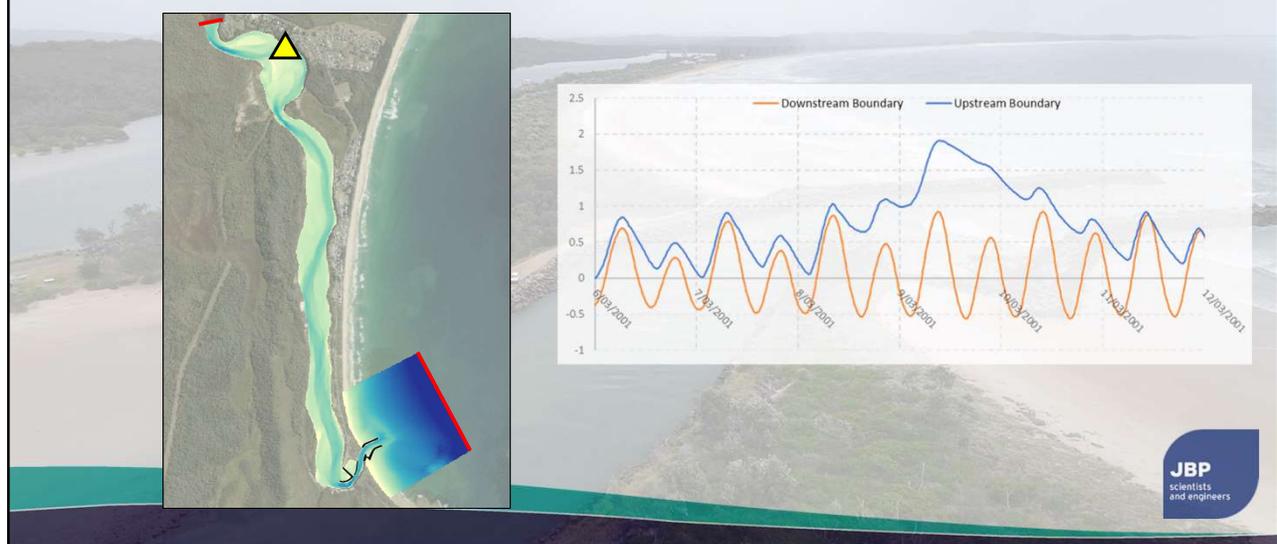
Morphological modelling



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

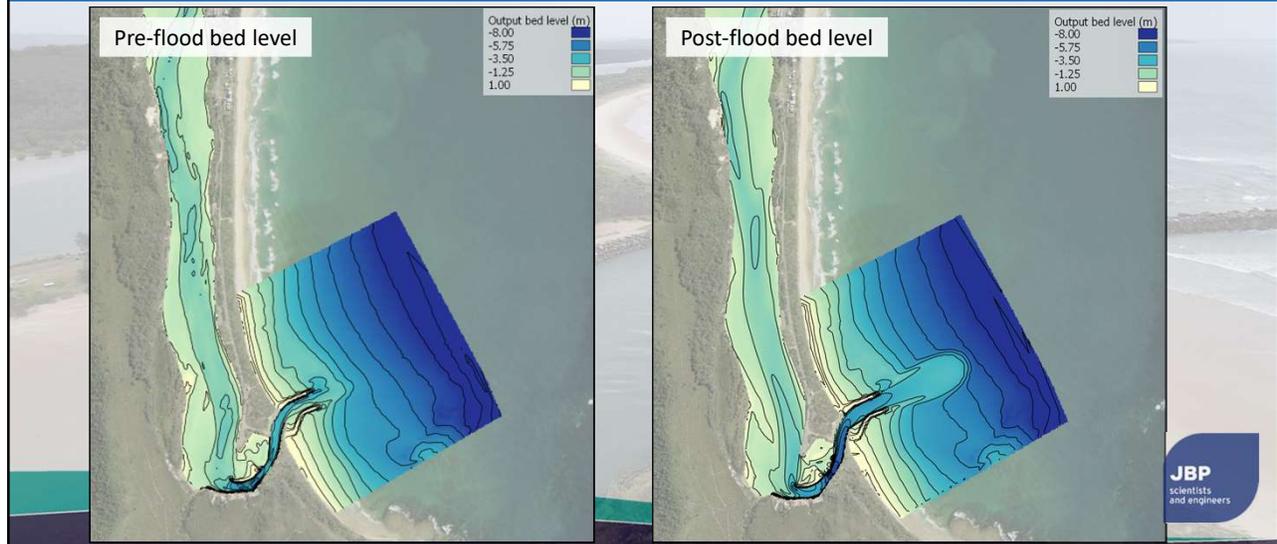
### Design event



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

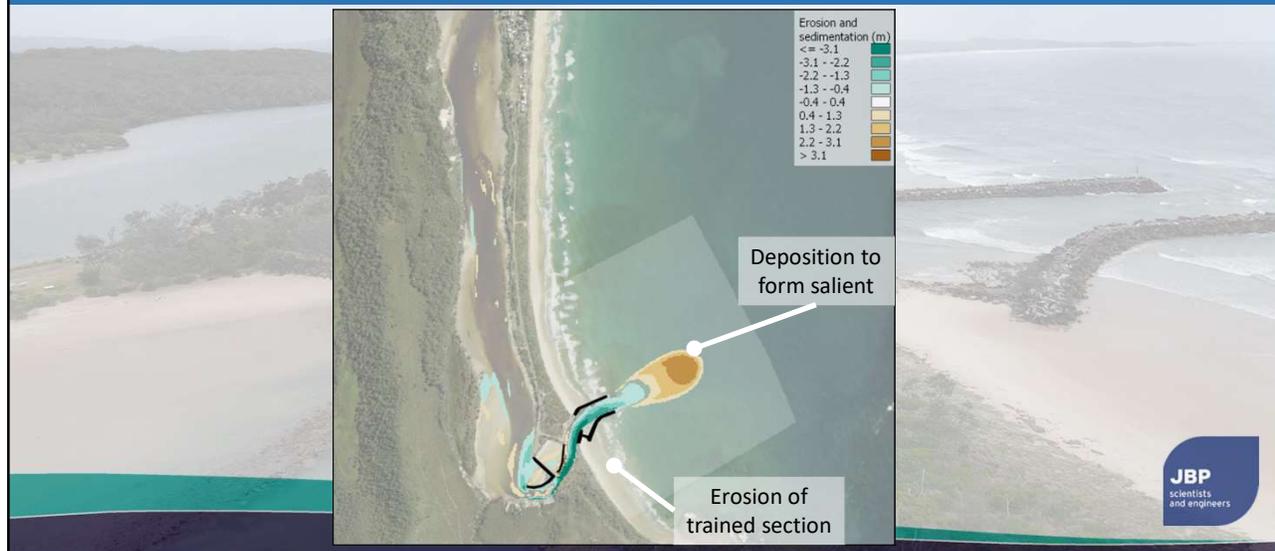
### Design event



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

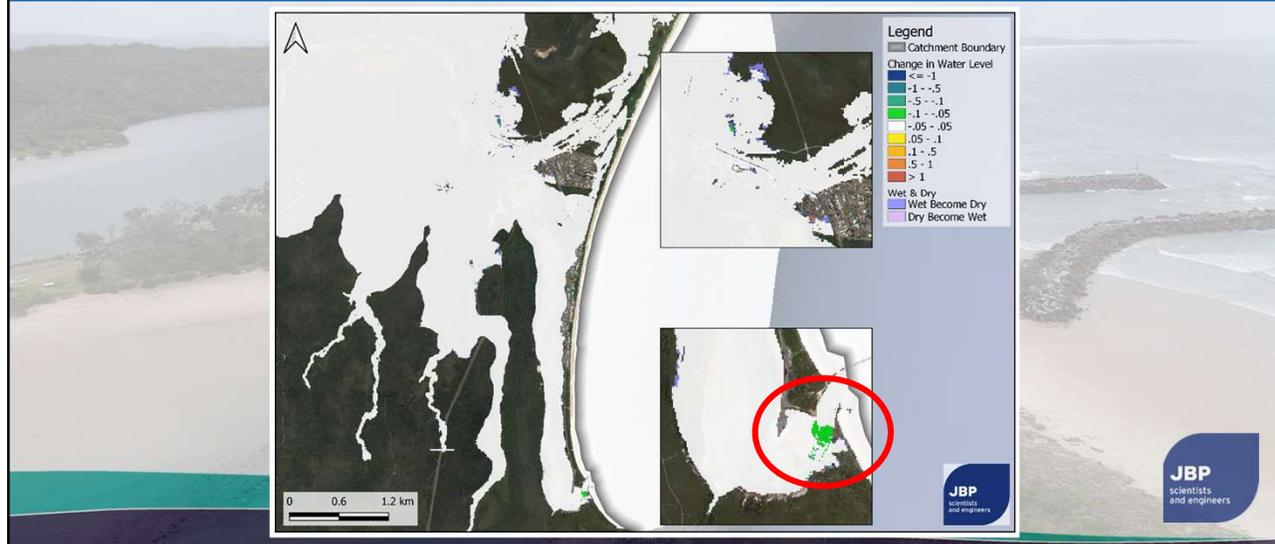
### Design event



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## The role of morphodynamics in assessing flood hazard in tidally dominated estuaries

### Morphological modelling



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The role of morphodynamics in assessing flood hazard in tidally dominated estuaries



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The role of morphodynamics in assessing flood hazard in tidally dominated estuaries



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## Improvements to Storm Tide Flood Mapping

### Questions

- Why didn't you use TUFLOW FV?: We didn't want to switch to a new package if we didn't think we had to, which it turned out we didn't

