



## Complexities in flood modelling and mitigation for large infrastructure projects – Rosanna level crossing removal

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### **Biography:**

Elizabeth is a Senior Water Engineer and works for Jacobs in the Surface Water and Civil teams, predominantly on flood modelling and water sensitive urban design for large infrastructure projects.

She has undertaken a number of complex flood modelling related projects, having modelled both large and small scale urban and rural catchments across a number of modelling platforms. She also has experience in the preparation of stormwater management plans, environmental flow assessments, water sensitive urban design as well as water quality modelling and monitoring.

*Elizabeth is a Chartered Engineer and holds a Master's degree in Hydrology and Water Resources Management from Imperial College London. She is currently also the Team Leader for the Civil and Aviation group at Jacobs, responsible for the management of a group of staff working on large infrastructure projects across the Transport business.*

Victoria is currently experiencing an infrastructure boom, with a significant amount of investment into road and rail infrastructure across the state. Flood modelling and mitigation have now become key elements in the design and delivery phases of these large projects.

This presentation will explore some of the complexities associated with undertaking flood modelling and mitigation works on these complex, multi-disciplinary projects and report on lessons learnt. The Northern Eastern Program Alliance (NEPA) level crossing removal along the Hurstbridge line will be used as an example, focusing in on Rosanna station and more specifically Salt Creek, which flows through the adjacent Rosanna Parklands area.

The topography of the surrounding area is generally very steep, with the Rosanna Parklands located in a low-lying area at the bottom of the upper part of the catchment. The flows from the large catchment that are conveyed down Salt Creek enter two Melbourne Water drains just east of the level crossing removal site, creating a flow bottleneck during large storm events and spilling out into the adjacent Parklands area. This flow constriction, combined with an ageing and undersized local Council drainage network, results in significant flooding around Salt Creek, the Rosanna Parklands and surrounding streets and properties.

As part of the level crossing removal works at Rosanna the landscape of the area was changed significantly. This presentation will cover off on some of the main challenges associated with flood modelling and mitigation on projects of this nature. This includes the management of numerous inputs from a multi-disciplinary team (including road, rail, bridges, drainage, architecture and landscape architecture), ongoing internal and external communication challenges, an ever-changing



and progressing design, numerous design stages as well as most importantly – ongoing stakeholder engagement and approvals.

The presentation will also discuss key challenges associated with the modelling and mitigation work – namely, the review of the existing TUFLOW model, its re-build and calibration, obtaining Melbourne Water approvals for the Base Case model, cut down of the model to focus in on the area of interest as well as challenges in incorporating and modelling design elements and mitigation measures throughout the project.