

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

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Presentation content

- Context – Why this topic?
  - Significant Infrastructure boom
  - Flood modelling and mitigation a key element of these projects
- The Project
  - NEPA: North Eastern Program Alliance
- My Role
- Challenges
  - Technical modelling
  - Coordination
  - Communication
- Lessons learnt/advice
- Conclusions and wrap up

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The Project

- NEPA – North Eastern Program Alliance
- Upgrades to the Hurstbridge line

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The Project

- Level crossing removal at Grange Rd, Alphington
- Track duplication between Heidelberg & Rosanna
- Level crossing removal at Lower Plenty Road, Rosanna
- Substation upgrades

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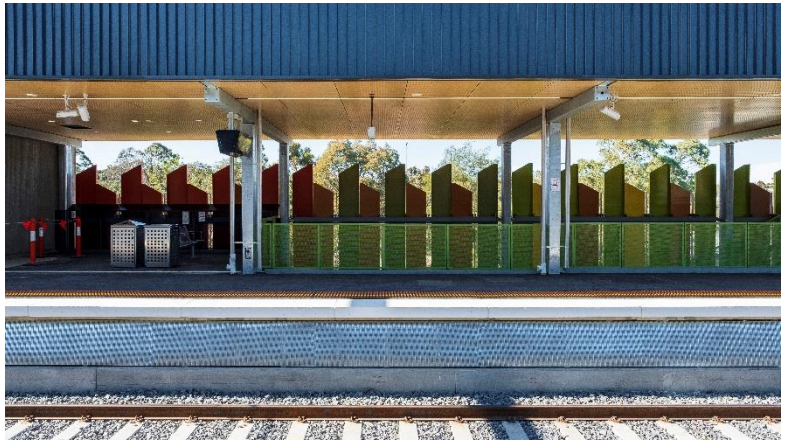
My role on the project

- Flood Lead
  - Point of call for all flood related works across the project
- What were we trying to achieve?
  - No impact
  - No loss of floodplain storage
  - Climate Change and Blockage assessments
- Main responsibilities
  - Modelling work
  - Internal communication and coordination
  - External stakeholder coordination and approvals



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The project area in detail

- Existing flooding issues at Rosanna
- Level crossing removal at Lower Plenty Road and construction of new Rosanna Station

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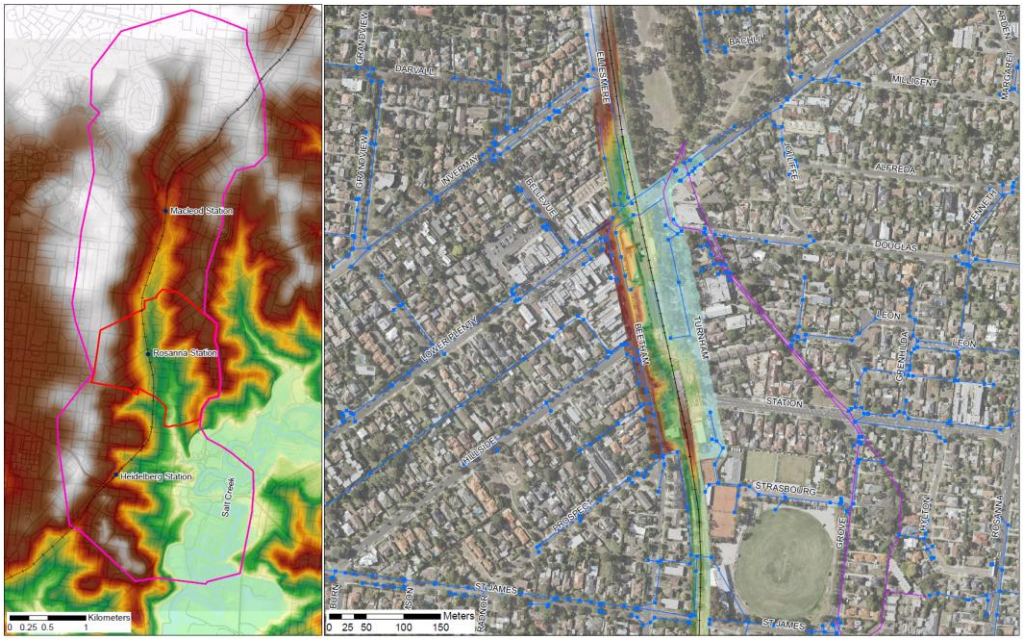
Challenges – base case model

- Hydrology and Hydraulics – RORB and TUFLOW
- Working with an established model
- Establishment of a Base Case model
  - Review and rebuild of model needed
  - Greater model refinement needed around the areas of interest
  - Discussions with Melbourne Water and original consultant
  - Taking an unapproved model to an approved model
  - Project Timelines



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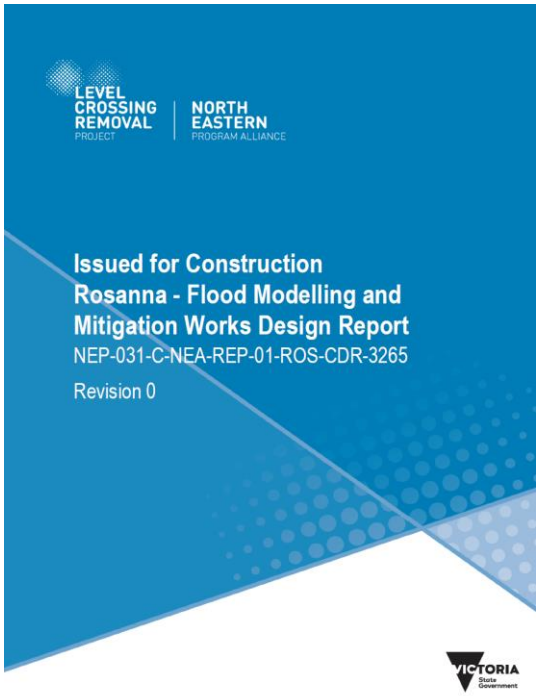
Challenges – coordination

- Alphington, Heidelberg and Rosanna
- Coordination with a number of disciplines
  - Civil Roads, Rail, Drainage, Carparks, Bridges, Geotechnical, Architecture, Landscape Architecture, Environmental, Substations
- Various points of contact for each site
- Internal and External
- Coordination of inputs
  - Data formats, alignment of dates
- 4 Design Stages for submissions:
  - Preliminary, Detailed, Final & Issued for Construction
- Constantly changing and evolving design
- Staying ahead of the game



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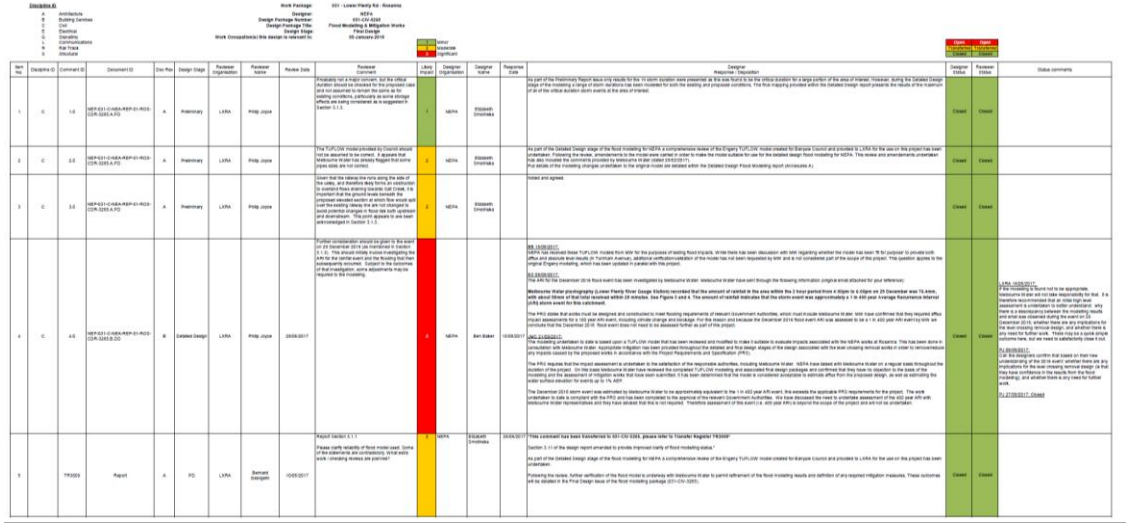
Challenges – external stakeholder liaison

- A large number of stakeholders
  - Melbourne Water, Local Council, LXRA, MTM, VicRoads
- Inception meetings
- Stakeholder Comment Review Sheets
- Closing out stakeholder comments
- Collaborative approach within the design team
- Ongoing meetings to resolve specific issues
- Finding the balance
  in mitigation solutions



Challenges – specific modelling issues

- Cutting down the Rosanna model to obtain WSE for forecourt
- Modelling of detailed features, e.g. wombat crossings
- Modelling of WSUD assets where they perform a dual flooding function
- IDO's – integrated development opportunities
- Timing of flows and discharges into MW assets – negotiations
- Modelling of areas or items that would have otherwise never required flood modelling

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Wrap Up

- Infrastructure boom
- The Project – NEPA, upgrades along the Hurstbridge lin
- Challenges:
  - Establishing a base case and approved model
  - Multi-disciplinary coordination
  - Internal and external contacts, varying for each site
  - Various design stages
  - Project timelines
  - External stakeholder liaison
  - Finding the balance in mitigation solutions
- For flood modelling and mitigation:
  - Get in early! Stay ahead of the game
  - Communicate
  - Drive the design outcomes you want

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Time-lapse

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Questions?

Thank you!

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