The stormwater issue

- A lot of overground flow in heavy rainfall events

- Not a lot of knowledge of the system, i.e., what is in the ground, gaps in asset data

- What condition are the assets – some failing – truck through a box culvert
Project preparation

- Gain some confidence in our data
- Asset condition and inventory project
- Grant funding
- Scoping and tender process

2016-17 Grants and Subsidies Programs
- Local Government Grants and Subsidies Program
- Community Resilience Fund
- Natural Disaster Resilience Program
Modelling

- Two rain-on-grid TUFLOW models to set the existing scenario conditions
- Developed two 1-d DRAINS models of the hot spot areas (validated to the TUFLOW model)
- Multiple alternative design options, with multiple iterations
- Multi-criteria analysis
- Input preferred mitigation option into TUFLOW

Project involved the innovative use of complex 2-dimensional hydraulic modelling coupled with 1-dimensional modelling to iterate and optimise multiple mitigation schemes, which resulted in better project outcomes.
Modelling
Existing Capacity

Pipe Capacity Used, 10yr ARI (%)
- <50
- 70 - 90
- 50 - 70
- >90
DRAINS Modelling
Maximising Modelling Outputs
Mitigation Options

What we found, which is typical of older townships:

- **Older town centre/CBD**
  - Minimal drainage infrastructure with varying age, design standard and condition
  - Minimal allowance for major overland flow paths

- **New upstream development**
  - Modern design standards which connects directly into the older systems

Constraints for potential mitigation options:

- Inconsistent drainage standards
- Non-standard drainage infrastructure
- Minimal potential for augmentation within developed urban areas
Desired Standards of Service

QUDM

• Minor and major drainage systems

How should Council’s apply modern day drainage design philosophies and DSS retrospectively to older, historic townships?

Selected DSS might be:

• Best cost-benefit ratio

• A reduction to flood damage and risk to an acceptable level and capital cost within Council’s budget constraints

• Any improvement to the existing flooding conditions
Outcomes

Total concept level costs:

- $8 million (estimate)
- Mostly in the William, Spencer and Crescent Street area.
  - Large projects with large expense required at one time
- Smaller projects in southern end of Gatton
  - More palatable and numerous small wins for affected residences
Outcomes

Advice to community when they are affected in large events?

• Undersize network
• High cost to rectify
• No planned works
Next steps

- Smaller projects progressing to detail design, bid for capital budget in 2018-19 budget process

- Apply for funding to repeat the project in Laidley – same asset knowledge issues