Stormwater Pollution

Innovative Water Quality Approach

- Melissa Burrage, IWM

Mornington Peninsula Shire

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Shire

Context

- Mornington Peninsula Shire has over 190 kilometres of coastline and many popular recreational beaches and waterways
- These attract tourists from all over the world estimated to be worth over $1 Billion to the local economy annually
- Coastal commercial precincts, increased recreational activities and un-sewered townships are causing detrimental impacts on recreational water quality

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The need to improve water quality

- Bacterial beach advisories and algal blooms were identified during 2012-2013 and the EPA assessed Mornington beach as one of the worst-performing for recreational water quality

Mothers Beach Mornington January 2013 – beach closed due to harmful algal bloom

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The Approach

- Identify who needs to be involved to ensure success – Collaboration is the key!
- Conduct risk assessment of contamination sources
- Develop action plan to identify and address all known contamination sources

Melbourne Water

EPA VICTORIA

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Risk Assessment Findings

- Focused on potential sources of high bacterial levels in the beach water
- Likely sources –
    1. Dry weather flows in stormwater drains
    2. Wastewater from food businesses
    3. Boat wastewater discharge in the harbour

Rear of Food Premises in Main St Mornington June 2013

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Stage 1. The Action Plan

To address likely sources an action plan was implemented with two main strategies -

1. Dry weather flows in stormwater drains:

- Upstream drain investigation and sampling – conducted by CAPIM, funded by EPA

➡ **Identified two drain locations requiring action**

2. Wastewater from food businesses:

- Inspection of premises by Shire and SEW
- Provide education/information
- Compliance/enforcement if necessary
- Develop educational materials

➡ **Seek funding for a project officer and pilot study**

Rear of Food Premises – The Esplanade Mornington June 2013

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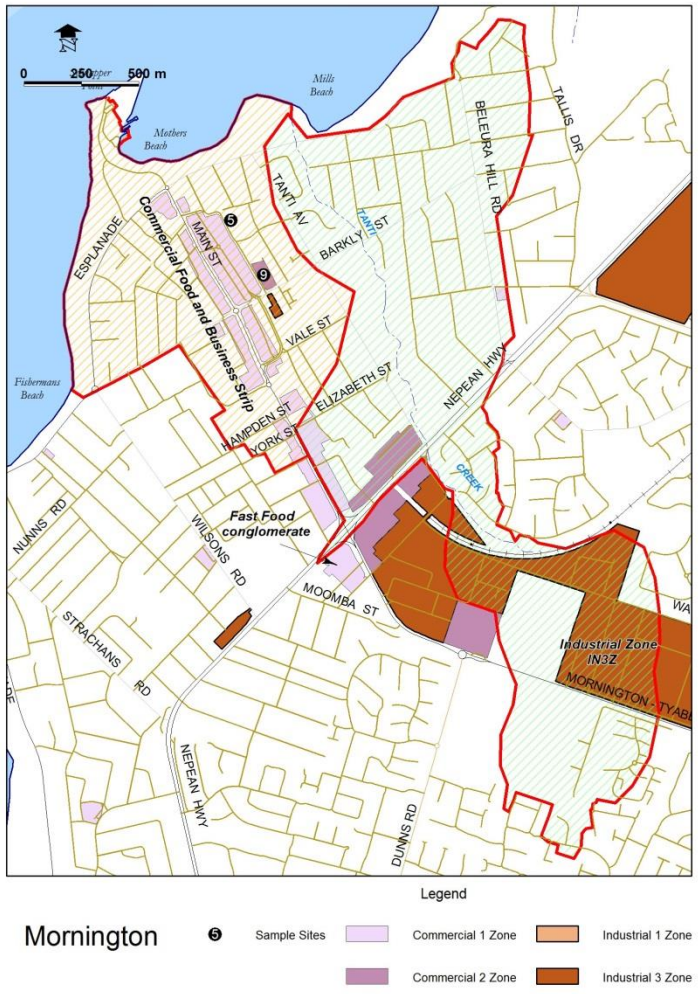
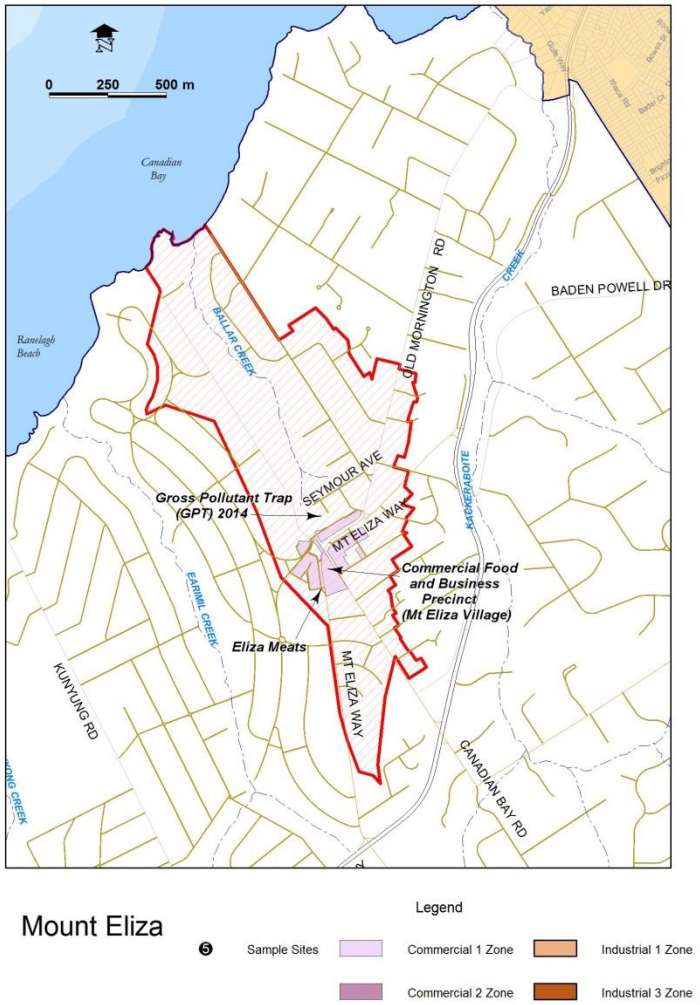
Stage 2. The Pilot Study





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Multipronged approach

1. <u>Further dry weather flow sampling and source tracking</u>

- The Blitz Methodology

2. <u>Wastewater from food businesses:</u>

- Understand the audience - Survey
- Develop education materials
- Build in house capacity
- Embed the approach

3. <u>DNA type tracing - Rye Yacht Club</u>

- To improve our understanding of the microbial sources of faecal contamination in Port Phillip Bay we also participated in the collaborative study with MW, EPA & Monash University.

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Dry Weather Flows – CAPIM investigation

- Phase 1 – Catchment-wide survey of major drains to prioritise sub-catchments. Passive sampling, DNA and water quality data were all used.
- Phase 2 – Defining microbial sources through a combination of blitz and passive sampling approaches

Multi-Tool Sampling Approach:

1. Ammonia passive samplers to identify high-risk sub-catchments
2. Ammonia test kits used as quick indicators of human microbial contamination – 5 minute test
3. DNA testing (via Quantitative PCR) to test for human faecal pollution
4. Conventional (grab) samples for *E.Coli*

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Ammonia Test Kits

- Ammonia is a surrogate for E. coli and microbial contamination
- Ammonia indicates sewage spills, cross connections, cleaning product spills and illegal discharges
- Test Kit methodology –
  - 5 minutes for a result
  - 5 mL aliquot used

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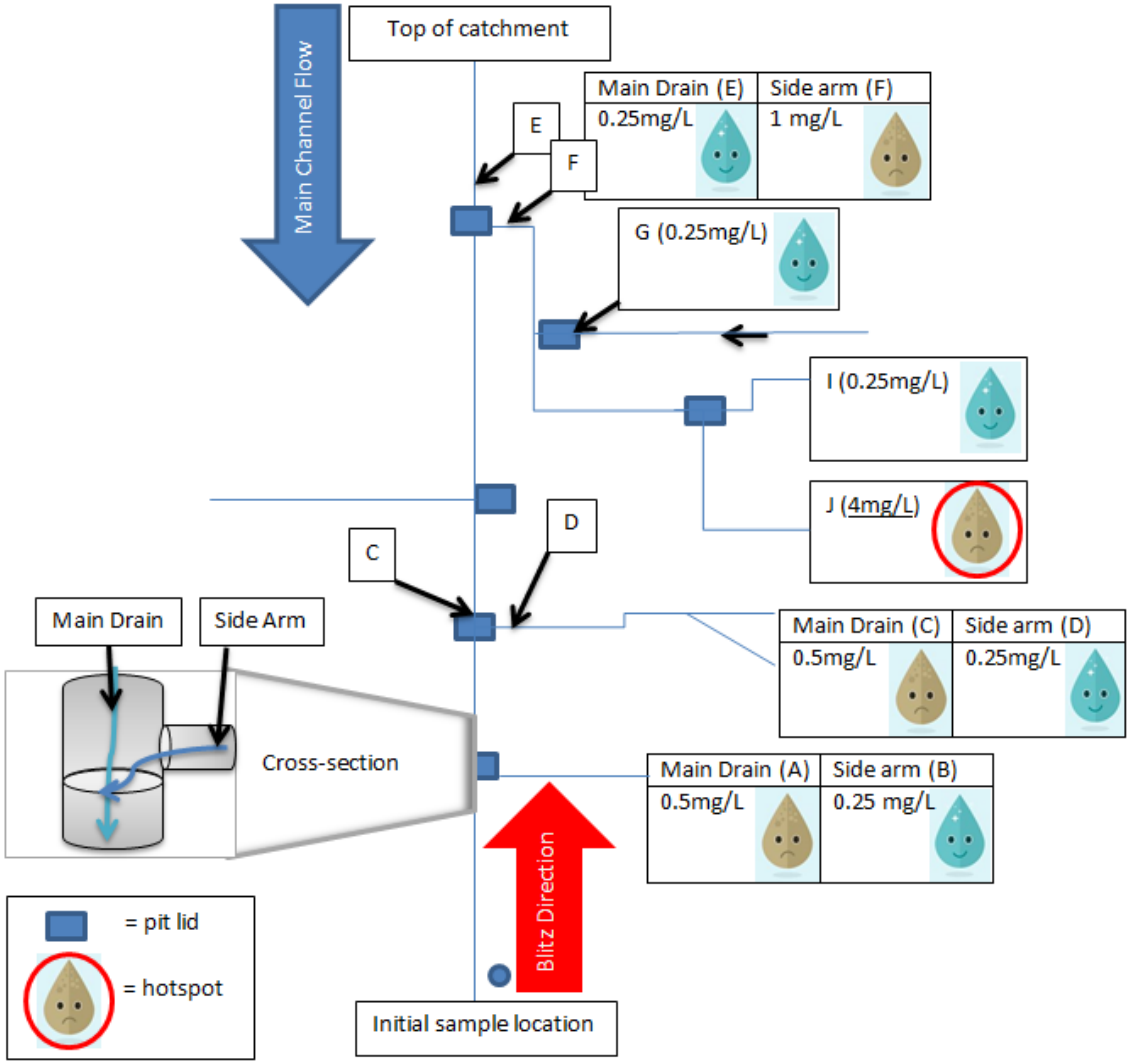
Blitz methodology



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What the food businesses were up to!

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The Education Materials

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Developing in-house capability

- The teams have been resourced with toolkits for opening stormwater pits and undertaking simple tests for ammonia and other standard water quality parameters
- A Standard Operating Procedure has been developed for water quality sampling by council staff
- Training by CAPIM was undertaken with the councils Environmental Health Officers and Water Quality Officers, in water quality testing

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Embedding the benefits

- Education materials distributed to all Class 2 food business on the Peninsula and incorporated in new business kits.
- New or replacement pit lids in commercial precincts are imprinted at the manufacturer with the 'Stormwater Drain Just for Rain' logo
- Raised profile re. importance /awareness with EHO's

- Standard EHO audit criteria includes review of wastewater procedures and relevant onsite infrastructure
- New infrastructure standard implemented for new, change of ownership or renovated Class 2 food businesses to have suitable access to a floor waste drain or cleaner sink
- A planned sewerage connection for Rye Yacht Club – capital works program

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New programs

1. sampling and proactively working with small to medium size industrial zones regarding stormwater contamination issues (MW, MPS)
2. monitoring septics and educating landowners on maintenance of systems or sewerage connection options, where available (MW, SEW, MPS)

Awards

- 2015 Tidy Towns Sustainable Communities Awards
  - State Finalist, Clean Beach/Waterway Category
  - Winner, Clean Beach/Waterway Category
- 2015 Stormwater Victoria Awards for Excellence:
  - State Finalist in 3 categories - Policy/Education, Research and Innovation, and Strategic/Master Planning
  - Highly Commended, Research and Innovation
  - Highly Commended, Strategic/Master Planning

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Questions?

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