

WEA Napier Conference

Havelock North Water Crisis



Introduction

- Incident Background
- Inquiry Stage 1 & 2 key findings
- Reference consent
- Technology Used for the Reference Plant
- Technologies capable of meeting consent requirements.

Incident Background

- Outbreak of Gastroenteritis, caused by campylobacter.
- Estimated 5,500 people fell sick
- 45 people hospitalised
- The outbreak possibly contributed to 3 deaths
- Havelock North total population is 14,000
- Unknown number of people continue to suffer health complications

Incident Background

- Drinking water sourced from the Te Mata aquifer
- The aquifer was believed to be secure from contaminants, and was not treated
- Sheep faeces the likely source of contamination

Key findings

- Likely caused by heavy rain, inundating sheep paddocks.
- Contaminated water flowed into a pond, entering the aquifer.
- Te Mata aquifer is not confined.
- Te Mata aquifer is believed to have been compromised by nearby earthworks.



**Havelock North
Borefield**

Legend

-  Supply line
-  Mangateretere Pond Area
-  Te Mata Mushrooms
-  Brookvale bores

DATA FROM: Information obtained from the Hawke's Bay Regional Council's Geographic Information Systems Database.

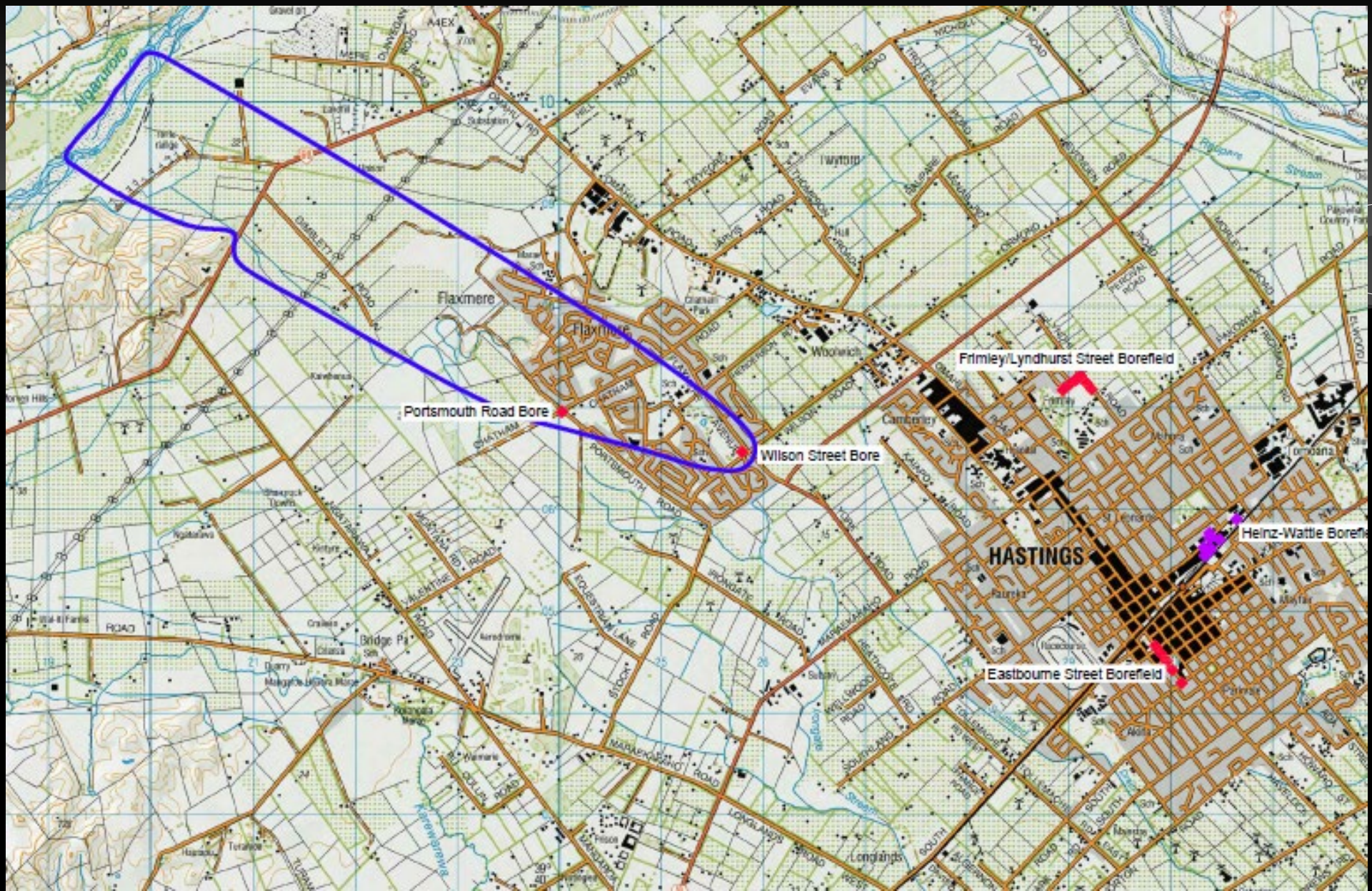
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Reference Consent Key Council Concerns

- Regional council listed the district council as an effected party. Vast majority of the consenting process was satisfying district council.
- Discharge directly over the Heratunga unconfined aquifer, a direct Hastings water supply
- Discharge was required to be nearly drinking water standard.
- Human waste was not combined with process waste.
- One of the tightest regional plan rules for discharging to land in New Zealand

Reference consent - requirements

- 39 consent conditions
- Loading rate of 5mm/day
- Total Nitrogen loading rate of 150kg/N/ha/year
- Regular servicing by a suitably trained organisation. Reports to be submitted to the council.
- Weekly sampling during vintage, and monthly non-vintage
- Installation of a Mag flow meter, with a data logger and telemetry

Reference consent - requirements

- High water level alarm monitoring
- The council had to certify the operation and maintenance plan
- Contingency plans for plant malfunction
- No discharge of wastewater within 30m of a well
- Twice yearly calibration of wastewater sprinklers
- Annual reporting
- Consent process took 4-5 months.

Resource consent tests

Required Water Testing

- BOD₅
- Total Suspended Solids
- Ammoniacal nitrogen
- Nitrate
- Nitrite
- Total Kjeldahl nitrogen
- Total nitrogen
- Total Phosphorous
- Dissolved reactive phosphorous
- Faecal coliforms
- E.coli
- pH
- Electrical Conductivity
- Sodium
- Calcium
- Magnesium
- Sodium Absorption ratio

Required Soil tests

- pH
- Sodium
- Calcium
- Magnesium
- Potassium
- Cation Echange Capacity
- Sodium Absorption ratio
- Total Nitrogen
- C:N ratio

Discharge limit comparisons

irrigating over the Heratunga aquifer

- BOD₅ = 100ppm
- TSS = 5 ppm
- TN = 30ppm
- Faecal coliforms = 10
- pH = 5.5 - 8.5

Discharging into a creek

- BOD₅ = 30ppm
- TSS = 5 ppm
- TN = 25ppm
- Faecal coliforms = 30
- pH = 5.5 - 8.5

Marlborough permitted activity

- BOD₅ = 5,000ppm
- TN = 200Kg N/Ha/yr
- Faecal coliforms = 100
- Free chlorine <1ppm

Technology Utilised













Treatment Options

- Membrane filtration to remove E.coli.
- UV or chlorine as an alternative to filtration.
- Discharge directly into the council sewer network.

Key Take Aways

- Health event of national significance.
- Regulations will get tighter.
- Discharge limits will be harsher.
- Reporting requirements and compliance monitoring will go up.

Questions