

Development and Implementation of an ArcGIS Platform for Drinking-Water Supply Source Protection

Hastings District Council Drinking-Water Supply

Chris Shanks, Hydrogeologist, Tonkin + Taylor

Brett Chapman, Hastings District Council, Water Services Manager

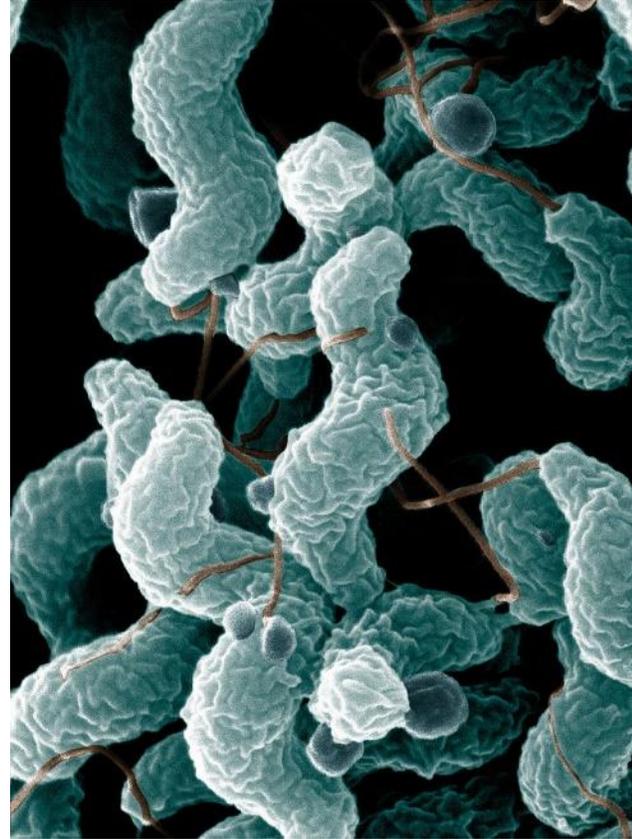


Exceptional thinking together

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The Havelock North outbreak

- Havelock North public water supply suffered a significant *Campylobacter* contamination event in August 2016 – followed heavy rainfall
- Source of the contamination - Brookvale Road bore field - part of the HDC water supply system
- Estimated 5,500 residents became ill with campylobacteriosis - 45 hospitalised, possible contribution to 4 fatalities



Government Inquiry into Havelock North Drinking-Water - the catalyst for major reforms in the drinking-water sector

T&T Tonkin+Taylor



Hastings
District
Court

Six fundamental principles of drinking water safety:

Principle 2 - Protection of Source Water

Protection of the source of drinking water provides the first, and most significant, barrier against drinking water contamination and illness.

- HDC developed SPZs in 2017/2018 – All supplies, including Havelock North
- HDC amended its Water strategy to include SPZ – Objective to secure the best possible water with the lowest risk
- Developed a ArcGIS platform to assess contamination risk



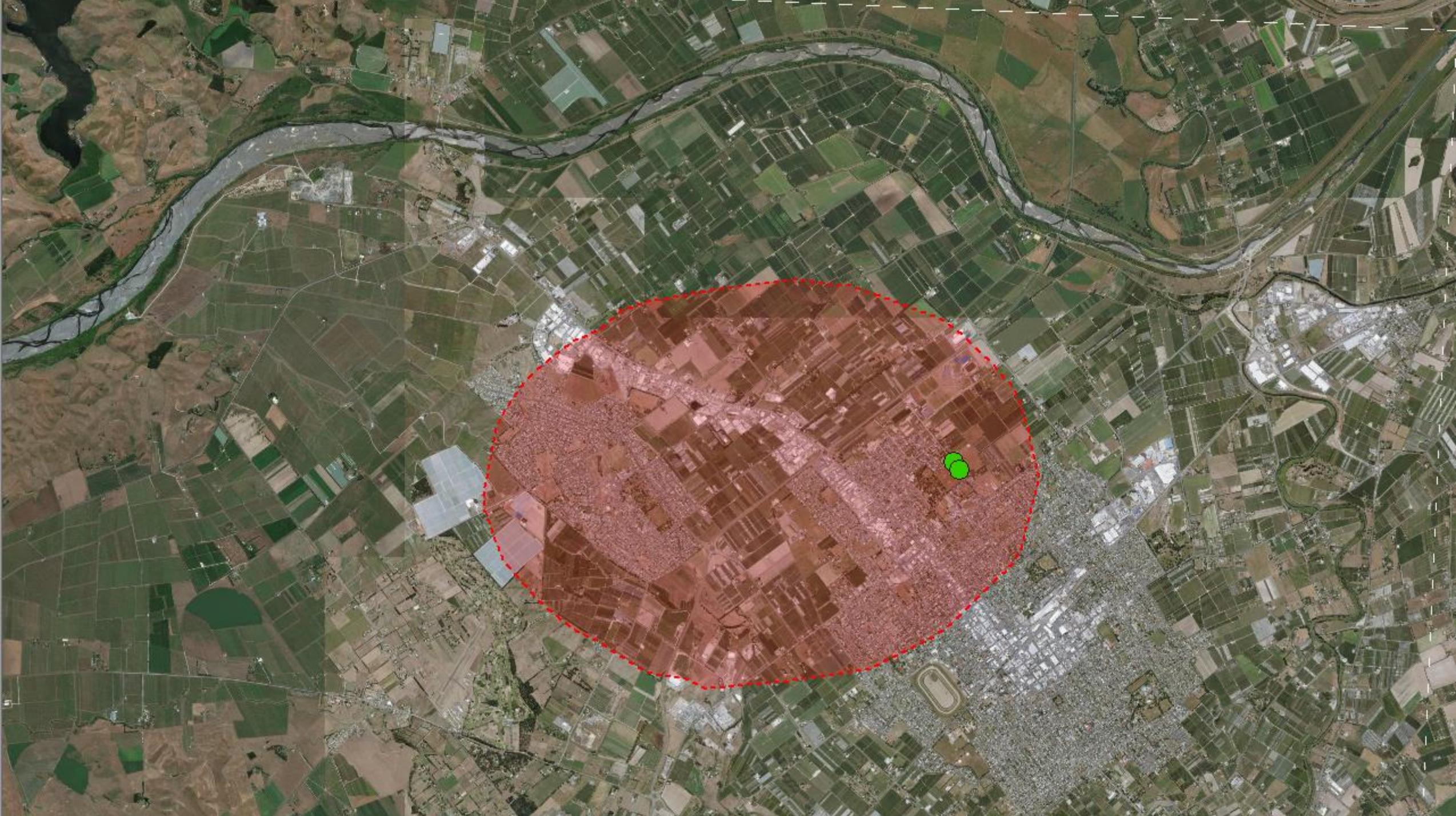
REPORT OF THE HAVELOCK NORTH
DRINKING WATER INQUIRY: STAGE 2

DECEMBER 2017

Traditional Catchment Risk Assessment

Havelock North example:

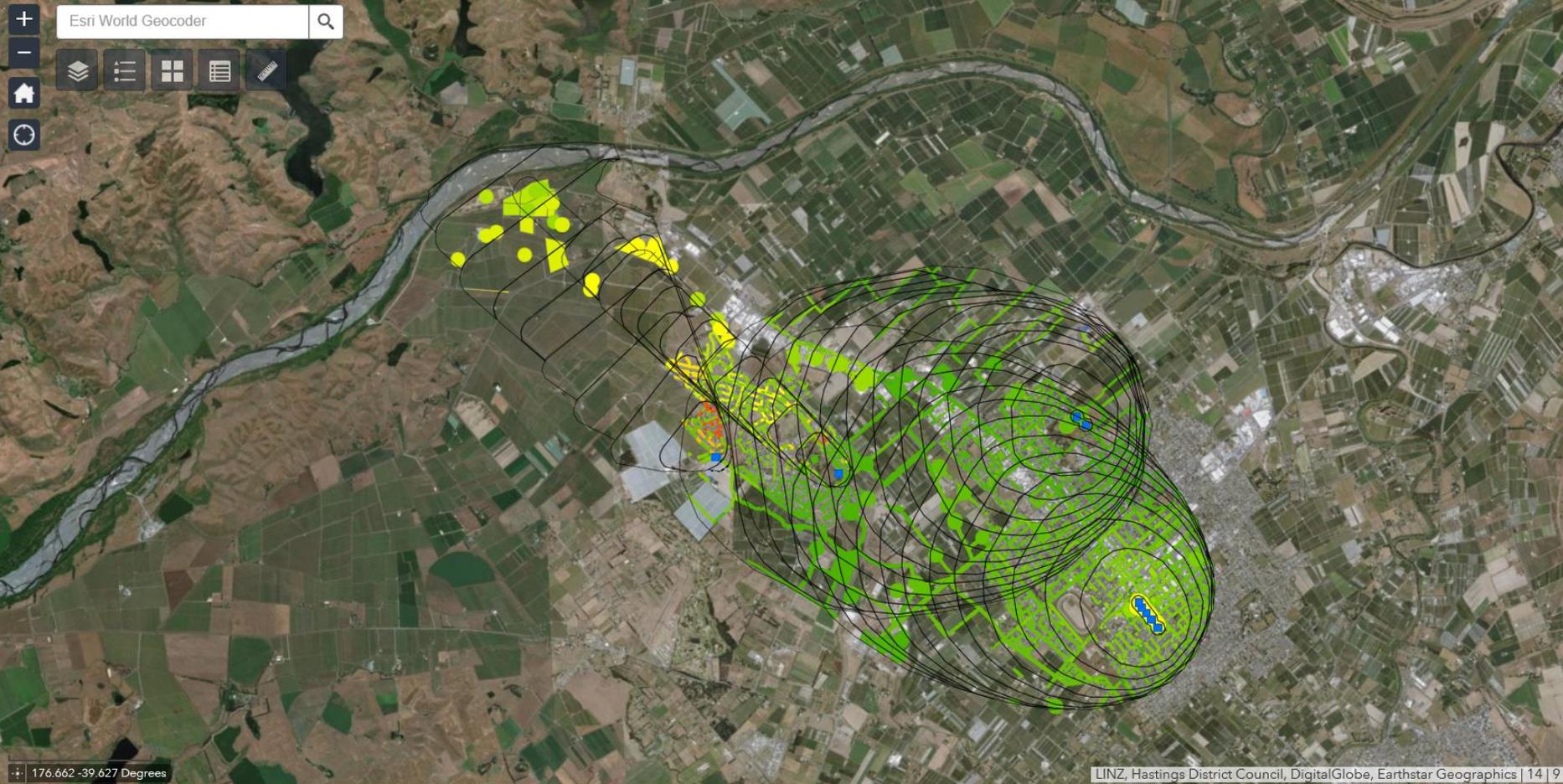
- Reviewed property files, historical aerials, discharge consenting information, private bores and conducted interviews
- Prepared a conceptual geological model to determine aquifer vulnerability
- Prepared a report, identifying a long list of potential sources/pathways for contamination



The GIS Risk Screening Tool...

HDC Catchment Sanitary Investigations

Eastbourne Frimley Lyndhurst Portsmouth Wilson All Catchments About



Catchment Risk

- Risk = Likelihood x Consequence
- In a catchment risk sense “likelihood” means:
How likely is a source to exist on a particular site?
How likely is it that containment might fail? And if it does, will anyone notice?
How likely is the contamination to reach the aquifer (or stream),
Once in the aquifer (or stream), will sufficient contamination reach the abstraction point?
- And “consequence” means:
If it gets there, how toxic/destructive is the contaminant?

HDC Catchment Sanitary Investigations

Eastbourne

Frimley Lyndhurst

Portsmouth

Wilson

All Catchments

About



Esri World Geocoder

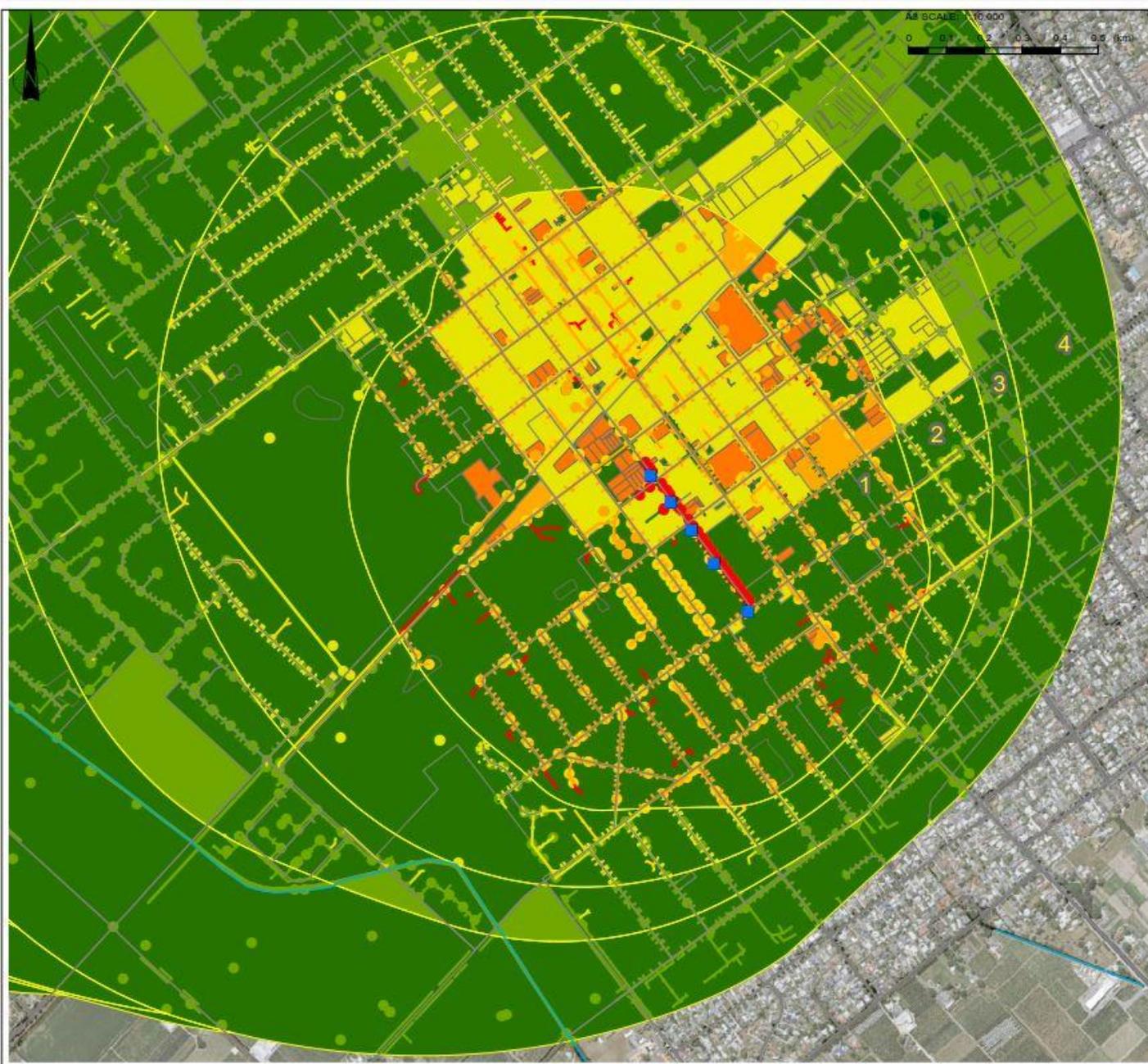


200m
176.786 -39.631 Degrees

(1 of 8)

IPS_Table_Name	SEWER MAIN
IPS_Diameter	150
IPS_Diameter_Confidence	GD
IPS_Material	RC
IPS_Material_Confidence	GD
IPS_Install_Date	June 1, 1965
IPS_Date_Confidence	GD
IPS_Ownership	PUB
IPS_Service_Status	INS
IPS_UnitType	GRVTY
IPS_UnitType_Description	GRAVITY
IPS_SurfaceCover	RDWY
IPS_Length	63.81
IPS_DiameterHalf	0.08
CatchmentName	Wilson Road

[Zoom to](#)



LEGEND

Combined Potential Contamination Risk

- Very Low
- Very High
- Boreholes - Operational
- Rivers
- Road Centrelines
- Proximity Zones

Notes:

Map data courtesy of Hastings District Council and Hawkes Bay Regional Council. Basemap sourced from the LINZ Data Service and licensed for re-use under the Creative Commons Attribution 3.0 New Zealand licence

DRAWN	ANTH	Sep.18
CHECKED		
APPROVED		
ARCFILE		
fig2_CombinedRisk_IndicativeGraphic_Initial_v0		
SCALE (if applicable):		
1:10,000		
PROJECT No:		
1005770.1000		

Tonkin+Taylor
105 Carlton Gore Road, Newmarket, Auckland
www.tonkintaylor.co.nz

Catchment Sanitary Investigation:
Eastbourne Bore Field Risk Mapping
Combined Risk
Sheet:

Figure 2

Where to now??

Questions..

