

Annex C

Water Quality Case Studies

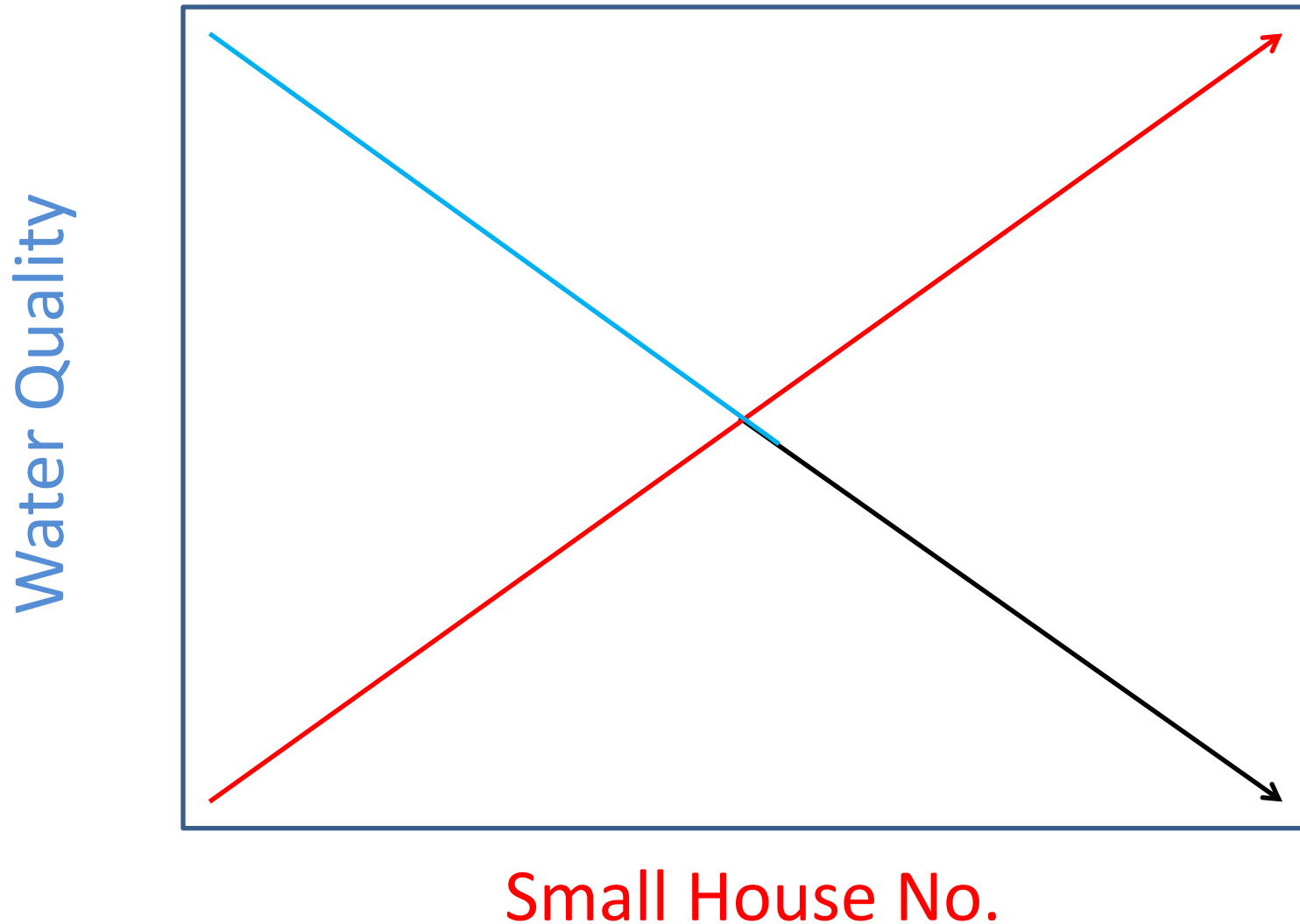
Discharge of restaurant waste and greywater in
storm water drains

Case Studies

Lung Mei

Ma Wan New Village

Small House number increases =
Water Quality **seriously** impacted



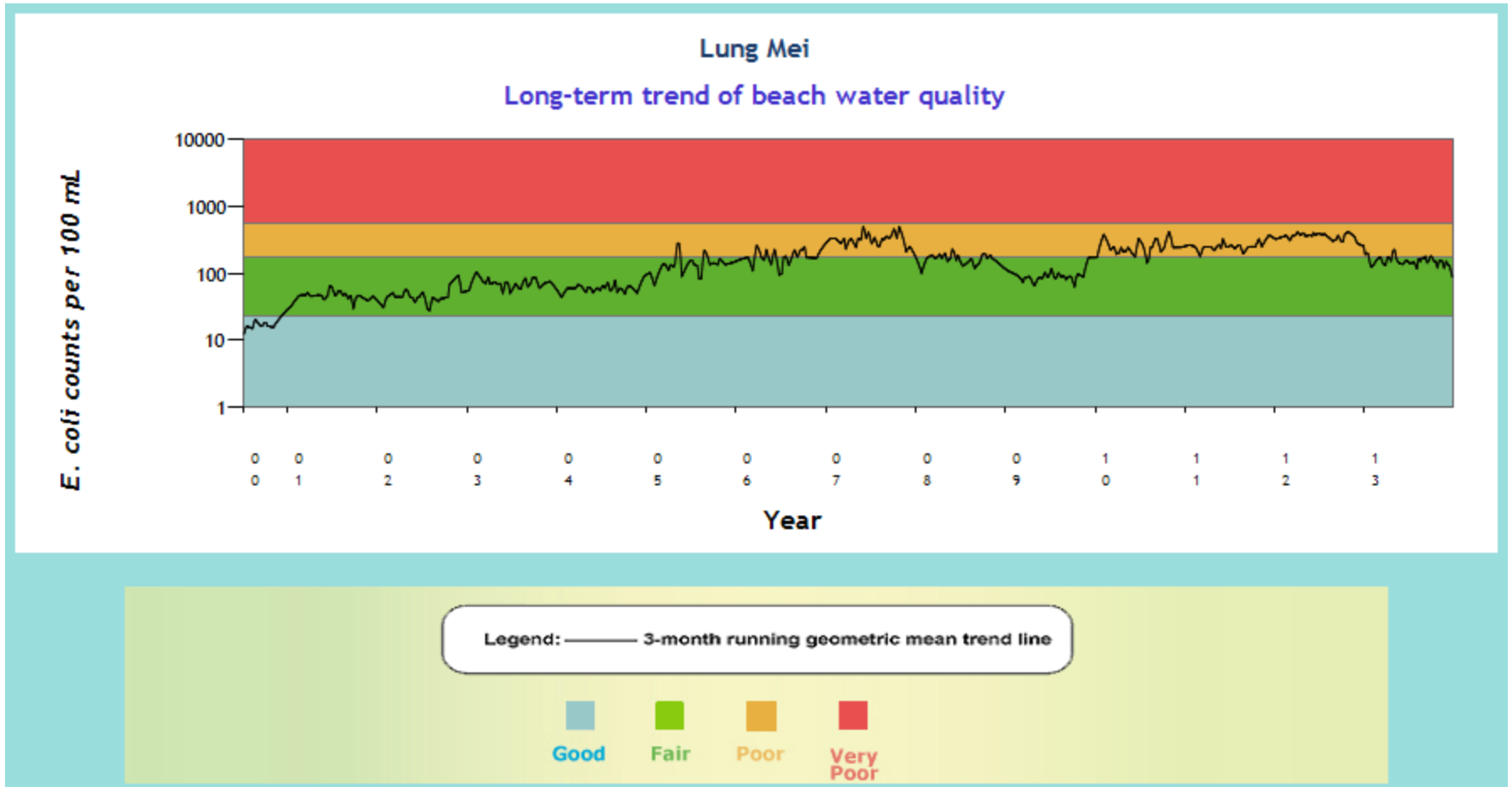
How bad is the situation?



Case Study No. 1

Lung Mei, Tai Po

Long-term trend of Water Quality degradation (Data from EPD)



More and more Small Houses built in Lung Mei

1998



2005



2001



2013



Area already equipped with Public Sewers and Facilities



Why is there still poor water quality?

“Eating Place” – Always Permitted at the Ground Floor of Small House



“Eating Place” of course generates waste waters



Construction and Operation of Small House both generate waste waters



An Outlet at Lung Mei



Who produces the waste waters?

In reality, how to enforce the law (Water Pollution Control Ordinance)?



Underground Drainpipe being Built at Lung Mei



Underground Drainpipe being Built at Lung Mei – Direct discharge to a nearby seasonal stream



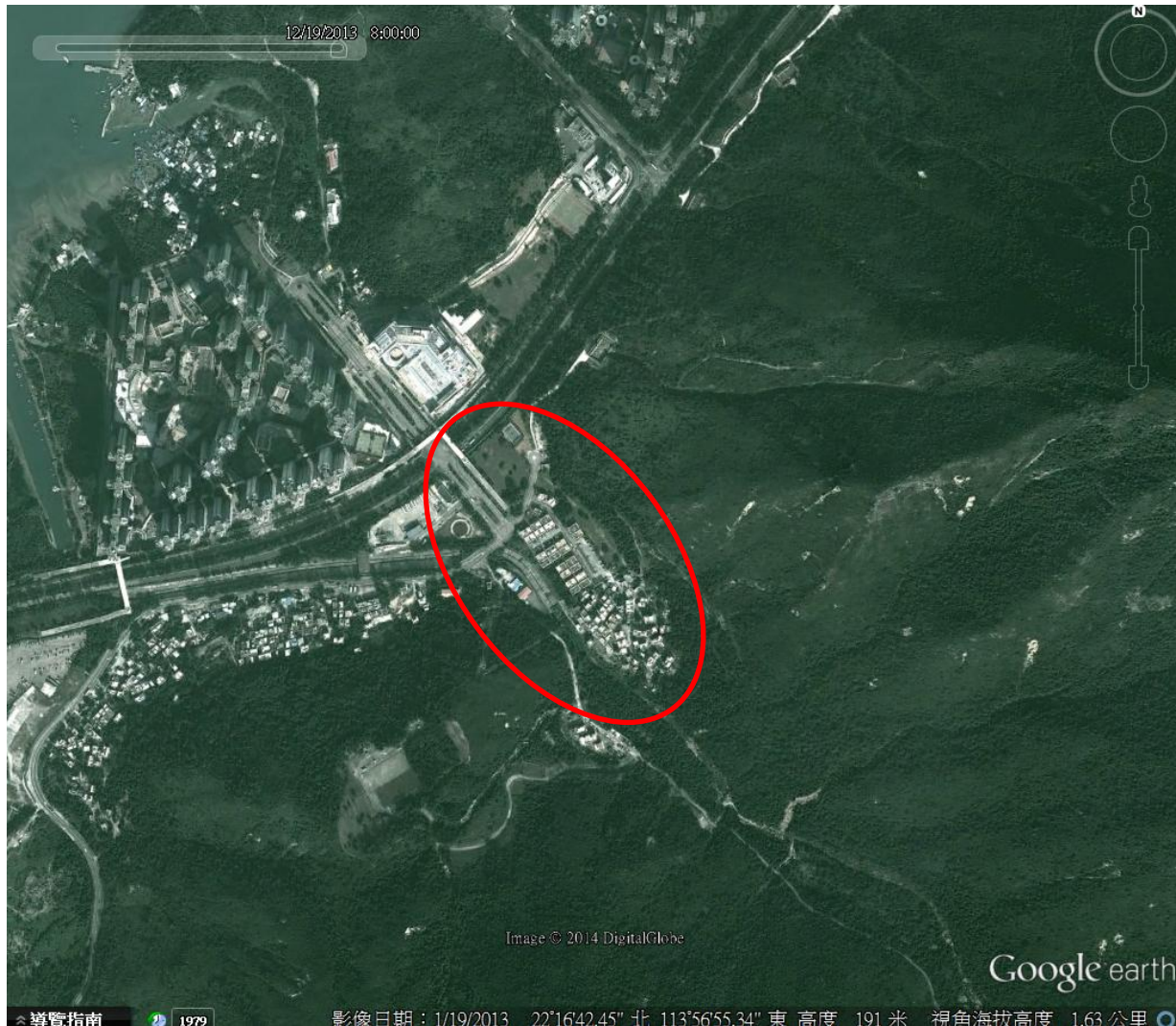
After the works is done, how to enforce the law?



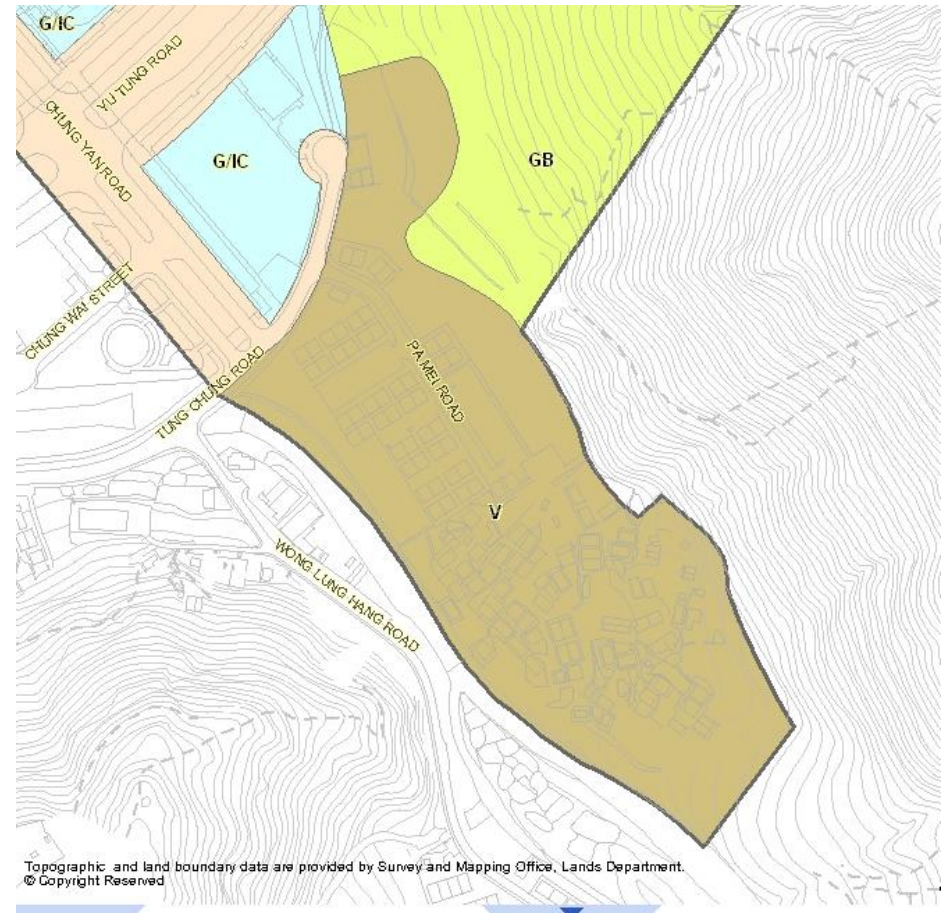
Case Study No. 2

Ma Wan New Village, Tung Chung

Re-located Village due to Tung Chung New Town Development



Surrounded by woodland, with a nearby stream and a V zone



Early village houses should have been connected with public sewer



Small Houses built later are using Septic Tank and Soak-away System

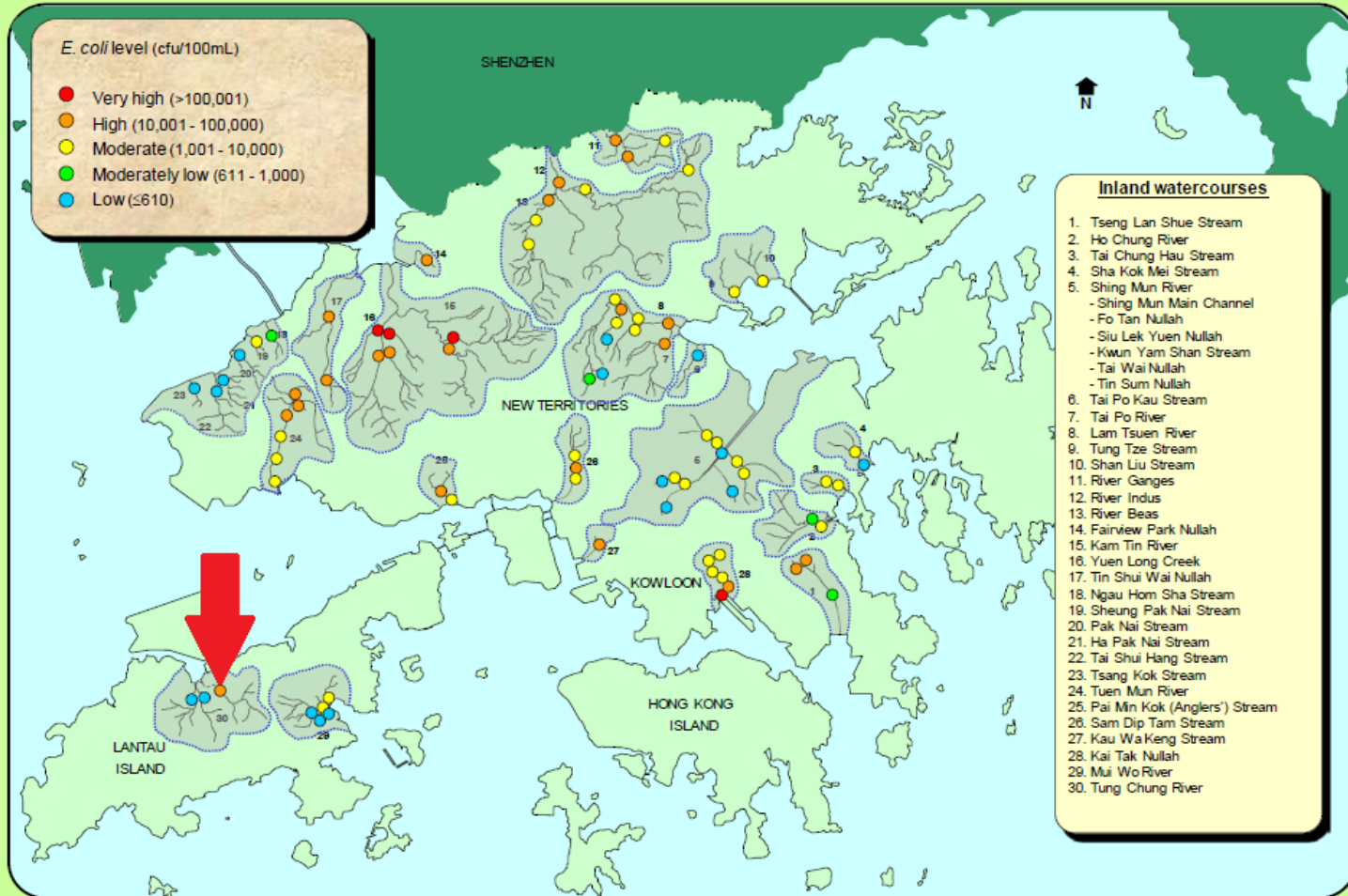


Full of Small Houses now



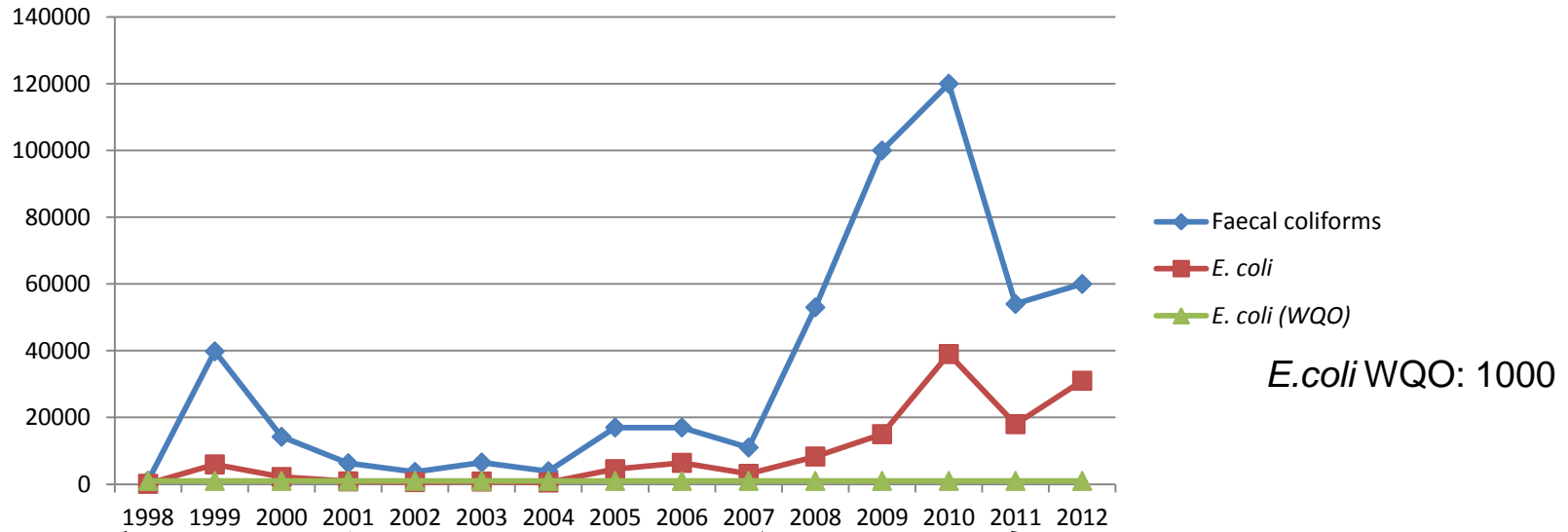
Location of the site, and the *E. coli* level in the nearby stream (Data from EPD)

Map of river monitoring stations and levels of *E. coli* in 2012 (Annual geomeans)



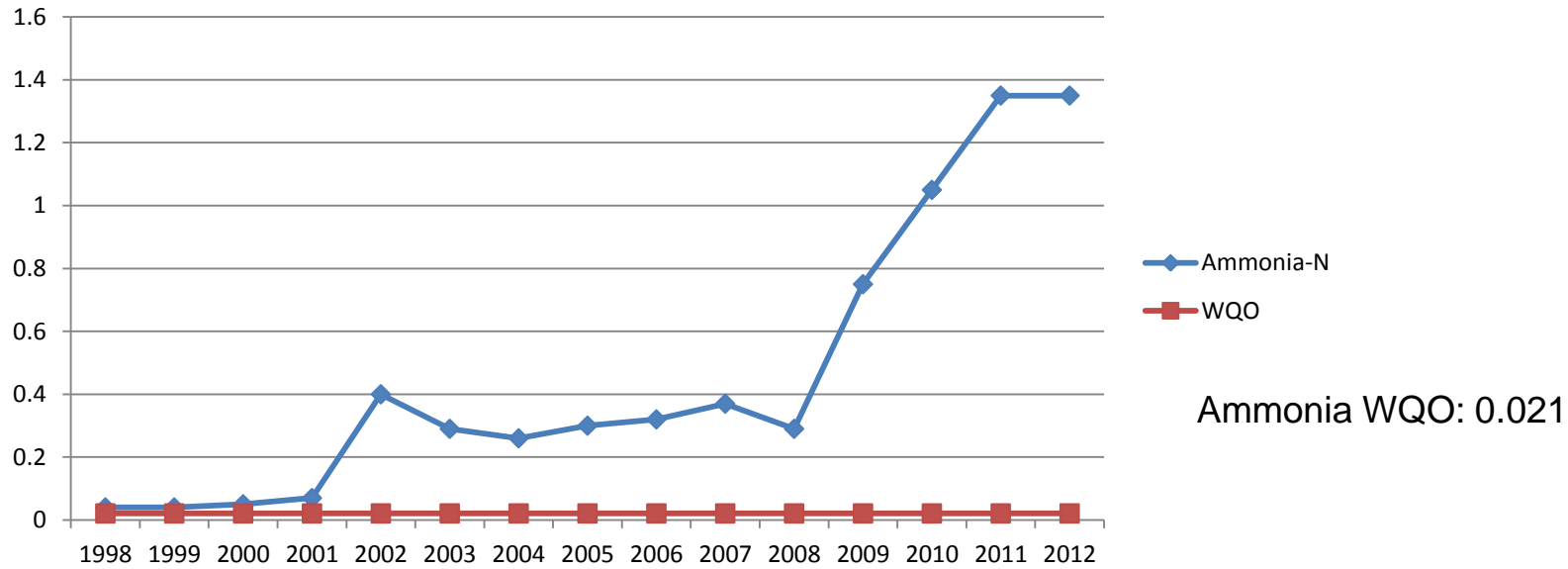
E. coli and Faecal Coliforms Levels –

Sharp Increase with Small House number (Data from EPD)



Ammonia Level –

Sharp Increase with Small House number (Data from EPD)



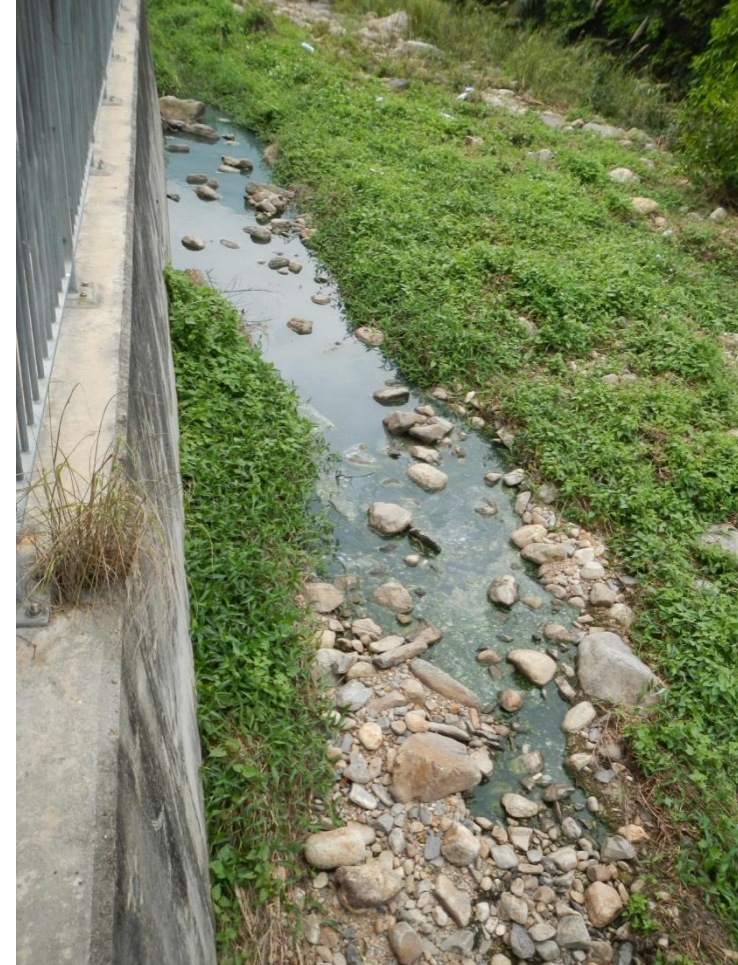
Ma Wan New Village



The stream next to Ma Wan New Village



Highly polluted water observed



Highly polluted water from an outlet



The outlet connected with U-channels running through Small Houses



Another outlet from unknown source(s)



Potential pollutants – domestic sewage and discharge from the operation of the restaurants



Outlets (supposed discharging stormwater only) along the channelised section of the same stream

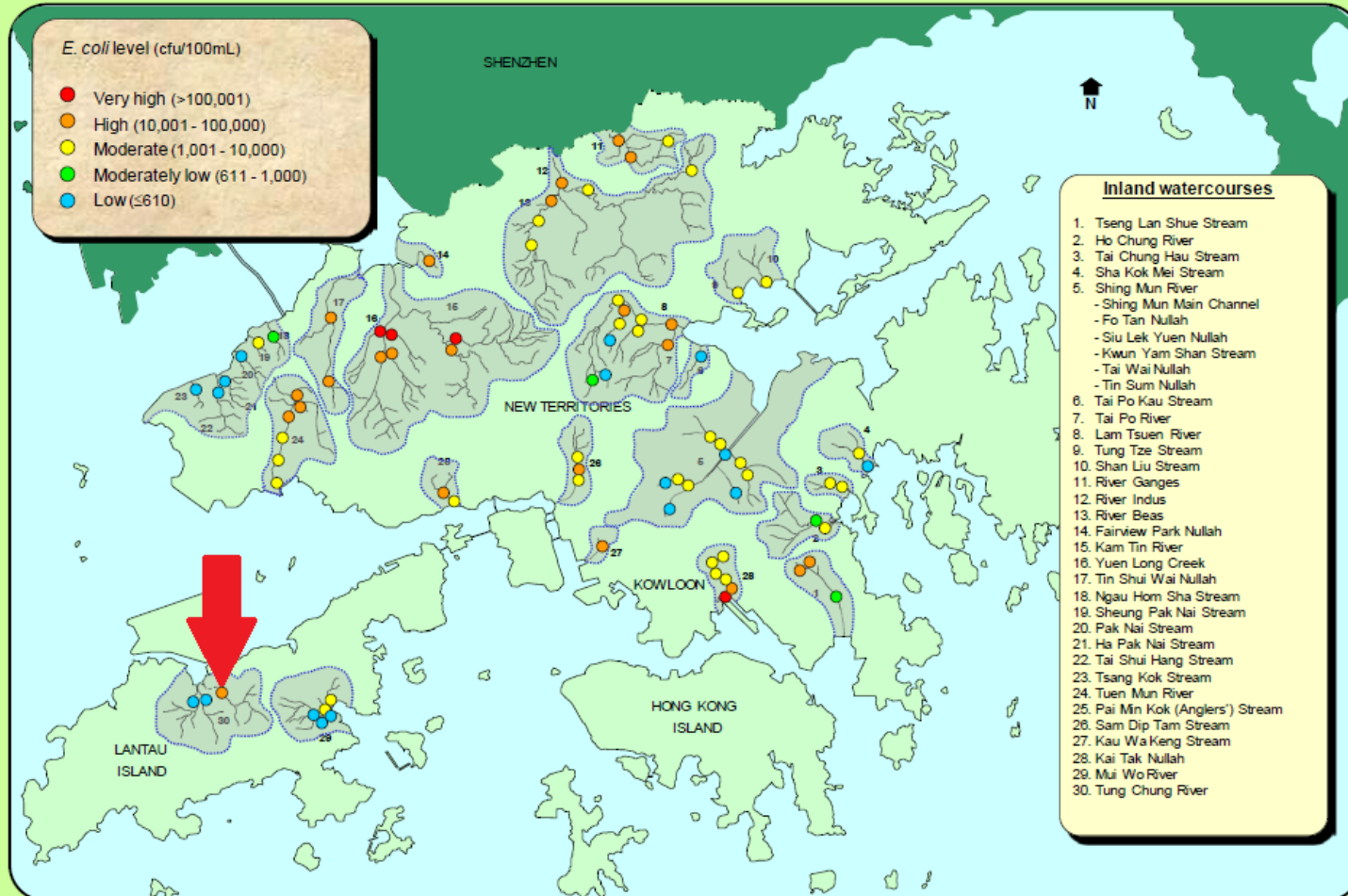


Unusual high mortality of wild frogs



How bad is “High”?

Map of river monitoring stations and levels of *E. coli* in 2012 (Annual geomeans)



How many Small Houses are found at this site?

- Approximately **120** Small Houses in Ma Wan New Village (about 44 suspected to be connected with public sewer; remaining **76** Small Houses suspected using septic tank systems)
- 3 – 4 restaurants
- 2010 – 2013

***E. coli*: 18,000 – 39,000**

Faecal coliforms: 54,000 – 120,000

Ammonia: ~ 1.4 mg/L

- Pollution Status
 - Similar to Tin Shui Wai Channel, Yuen Long Nullah, Tuen Mun River
 - **Worse than Shing Mun River**



ProPECC does **NOT Protect**

- Ma Wan New Village – Built after the ProPECC PN 5/93 was adopted
- It seems that no one follows the ProPECC requirements
- ProPECC is NOT Enforceable in reality
- It is a planning problem!

End