Vision
Water Quality and Catchments

The waters of the Hauraki Gulf are increasingly healthy, resilient and full of life. People are strong kaitiaki, lifting its mauri.
Vision

- Sedimentation is reduced
- Nutrient levels are safe
- Contaminants and pathogens are at safe levels
- Risks/threats are identified and minimised
- People are stewards

World view - Ecosystem
It’s simple?

• Rain
• Geography
• Land Use (Rural, Urban)
  – sediment, nutrients, & nasty’s
• Some ends up in the sea. (Complex eco-system)
  – capacity to process some sediment
  – capacity to process nutrient with unknown limits
  – capacity to disinfect at fresh to salt

World view- Mauri
• Sediment – in places there is too much

Vision

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The Big Moves

• Keep it on the land
• Good practice in all catchments
• One on one
• Trap sediment
• Restore natural systems
• Enforce rules
Nutrients

• Come from ocean upwelling and from land. Promote the growth of phytoplankton which is the basis of the marine food chain.

• Too much nutrient can cause excessive phytoplankton growth - when they die - decompose depleting oxygen and generating carbon dioxide which acidifies the seawater - damaging marine life. (405 known dead zones globally in 2008)

• Some evidence this could be a problem in the Firth of Thames due to the lower level of flushing, and the levels of nutrient from the Hauraki Plains rivers.

• Urgent monitoring and research is needed to establishing the safe nutrient processing capacity of the Firth of Thames.

• Getting this right benefits both the water quality vision and the farming sector.
Nutrient sources and loadings to the Gulf and Firth
- Gulf ocean-driven, Firth catchment-driven.

<table>
<thead>
<tr>
<th>System</th>
<th>Volume (km²)</th>
<th>Catchment inorganic N load (t N y⁻¹)</th>
<th>Catchment organic N load (t N y⁻¹)</th>
<th>Ocean inorganic N load (t N y⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thames</td>
<td>16</td>
<td>3700</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>Hauraki Gulf</td>
<td>62</td>
<td>800</td>
<td>150</td>
<td>8200</td>
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</tbody>
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The Eutrophication Process
- Nitrogen, primarily from agricultural and urban wastewater, is delivered by streamflow, run-off and atmospheric deposition.
- Escape Mobile species sometimes move out of hypoxic areas.
- Mortality Organ is circumcised as organic matter decomposes, killing submerged or attached animals in suffocate.
- Pyroclastic layer blocks oxygen flow to bottom waters.
- Lighter, fresher, warmer surface layer
- Oxygen, nitrification, cooler lower layer
- Wind and waves, organics, surface layer
- Organic matter, fine-mesh silt, crustal stability, flora to the surface and decompose.
**Nutrient – Need to know how much is too much**

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**The Big Moves**

- Urgently need to know what's happening
- Keep nitrogen at or below current levels
• Contaminants and pathogens – some hot spots

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**The Big Moves**

• Upgrade failing systems — Central interceptor, on-site systems.
• Stop contaminants like Zn and Cu and boat effluent at source.
• Education
• Risks/threats – manage in advance

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The Big Moves

• Increased assessment and monitoring
• Risk assessment and mitigation
• Safer shipping routes
• Stewardship – we all can help

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The Big Moves

- Provide leadership and support
- Codes of practice
- Education and recognition of success
**Vision**

**Water Quality and Catchments**

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End of Report

Water Quality and Catchments

In partnership with mana whenua and the following agencies: