

Te Hiku Water Study

Understanding the Aupouri aquifer

21 & 22 July, 2021

Mihi and
welcome

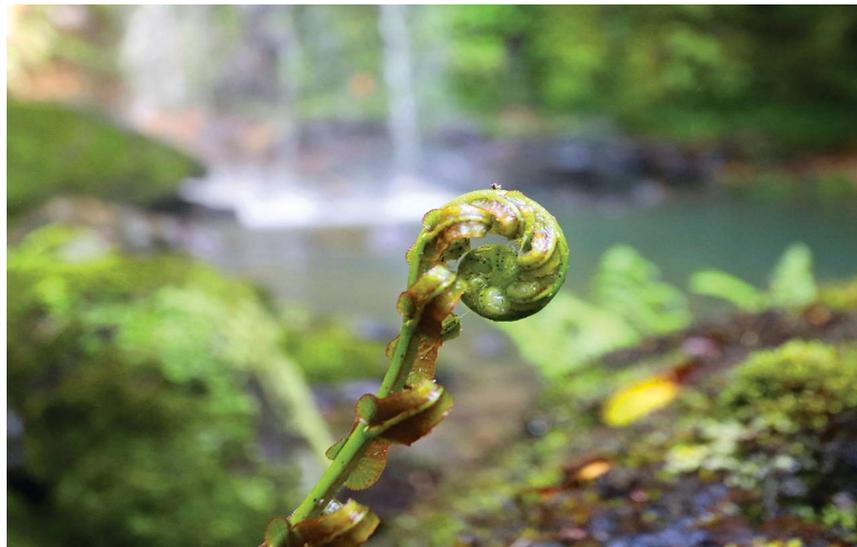


Photo: Northland Regional Council

What will we kōrero about tonight?

Section

Speaker

- | | |
|--|---|
| • Te Hiku Water Study introduction | Wallace Rivers,
NgaiTakoto |
| • Hydrology | Susie Osbaldiston, NRC |
| • Project details <ul style="list-style-type: none"> • Timeline (2021–2023) • Location of the early trial • Technology | Eric Wagener,
Ratepayers Association |
| • Information <ul style="list-style-type: none"> • Other relevant projects in Te Hiku • More information • Questions and comments | Penetaui Kleskovic,
Te Aupōuri |

What is the Te Hiku Water Study?

A scientific investigation to improve our understanding of the Aupouri aquifer.

The key aims are to get more information about:

- what the aquifer looks like (e.g. depth, extent, geology)
- how the aquifer connects to wetlands, lakes and streams
- the meeting point between groundwater and sea water (risk areas for salt-water intrusion)
- how groundwater recharges.

Why are we doing the Te Hiku Water Study?

To improve our understanding of the Aupouri aquifer.

- E.g. location, extent, depth, and recharge pathways.

This information is required to guide:

- environmental protection
- sustainable economic growth and development
- Northland Regional Council's resource consents for groundwater and water management
- water supply availability for the local community.

What prompted the study?



Photo: Northland Regional Council

The project has come from the Te Hiku community, and their strong desire to understand their water better.

After a PGF-funded feasibility study, the local community wanted improved data on the aquifer, in response to increased demand and recent droughts. This became part of Aqua Intel Aotearoa's water studies in Northland.

A local project team is overseeing this aquifer study.

Who is funding the study?

Project cost: \$3.3 million

Primary funding is from Aqua Intel Aotearoa, a collaboration between the Provincial Growth Fund (through its delivery arm, Kānoa) and GNS Science.



Other co-funding organisations:

- Northland Regional Council
- Far North District Council
- Te Aupouri
- NgaiTakoto.



Who is involved with the Te Hiku Water Study?

Collaborators on the project team:

- Ngai Takoto..... Wallace Rivers, Craig Wells
- Ngati Kuri..... Walter Wells
- Te Aupōuri..... Penetaui Kleskovic
- Te Rarawa..... Stewart Otene
- Local landowners..... Wendy Thomas, Ian Broadhurst
- Ratepayers Association..... Eric Wagener
- Kānoa (administers PGF)..... Jane Frances
- GNS Science..... Chris Worts
- Northland Regional Council..... Susie Osbaldiston, Ben Lee
- Far North District Council..... Bill Lee
- Department of Conservation..... Meirene Hardy-Birch

Important groundwater terms

Surface water:

- Any body of water above ground (e.g. lake, river, stream).

Groundwater:

- Water underneath the ground, which moves through different types of rocks and sediment.

Groundwater recharge:

- The process of water moving through the land and soil/rocks into the aquifer (to become groundwater).

Aquifer:

- The rocks and sediment that form a natural storage place for groundwater to move through.

What is happening this year?

- ✓ Gather together all data that is currently available.
- ✓ Review the data to find what the gaps in our knowledge are.
- Assess how we can fill in the information gaps.
 - Testing ground-based electromagnetic surveying in key locations, to see if aerial electromagnetic surveying (AEM) will work.
- Determine whether AEM will give us enough information to answer our key questions.
 1. Preferred method: if AEM surveying is technically feasible, we will use that method.
 2. If AEM is not effective enough, we will focus on ground-based, site-specific investigations of water resources.
- Report back to community with results.

What is happening over the next two years?

2021

- **June:** preliminary site visits from the ground team.
- **Late July/early August:** initial investigation using ground-based methods to see if aerial surveying will provide the required results.
- **August to October:** analyse data and decide on scientific method/whether aerial electromagnetic surveying is viable.
- **November:** notify public about results.

2022

- **Summer/autumn:** prepare for and carry out data collection.
- **Autumn to end of 2022:** scientists interpret and verify data, and create models of the aquifer.

2023

- **Early 2023:** results will be available.

Where will we be doing on-the-ground testing in July/August?



Key areas of interest.



Largest potential area of aquifer mapping.

How does AEM work?



Helicopter flying the AEM aerial electromagnetic system in Hawke's Bay.

What is it like when it flies overhead?

AEM surveying is done by helicopter:

- The loop system will move at 30–60m above ground level during the survey.
- The average flight speed for the Hawke's Bay survey was 86 km/h (roughly 40 knots).
- The noise will be equivalent to a normal helicopter.

There is little exposure to the magnetic field generated by the AEM loop as it flies at high speed.

- It is safer than watching a LCD or plasma TV, or blow-drying your hair.

Initial proposed flight lines of 2022 AEM surveying



Possible flight lines, approximately perpendicular or parallel with the coast.

What happens after the early trial?

In November 2021, we will let you know how the initial testing went and whether we can use AEM surveying for the Aupouri aquifer.

- If we can go ahead with the technique, we will ask you about any times that we should avoid flying the helicopter.
- We will not have much to tell you over 2022 while the scientists are carrying out their work.
- You will still be able to get information on the project during that time, through our website and Facebook page.

Other relevant water projects in Te Hiku

Aqua Intel Aotearoa

- monitoring surface water flows through Northland
- investigating potential for harvesting high (winter) water flows.

Northland Regional Council

- review the State of Environment monitoring network
- undertake recharge source assessment.

Impact of forestry on how rainfall recharges groundwater:

- Scion (Crown Research Institute), NRC, GNS Science and Envirolink, Williamson Water & Land Advisory.

Water tanks and water infrastructure projects

- Te Hiku iwi, Crown infrastructure partners, Department of Internal Affairs.

How can I get information and provide feedback?



Photo: Lloyd Homer, GNS Science

- Aqua Intel Aotearoa website: www.aquaintel.co.nz
- Email: info@aquaintel.co.nz
- Fact sheet available after this presentation, or at:
 - Te Ahu Information Centre
 - iwi rūnanga offices
 - Kaitaia Digital Hub
- Talk to any of the project team members.
- Proposed marae-based hui for iwi in August.

Time for your
questions and
comments



Photo: Northland Regional Council

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