

Tairāwhiti Water Information Project

Aerial mapping of aquifers

We're taking to the sky to understand our water better.



From early February, we're using the latest airborne electromagnetic technology (AEM) to understand more about the region's aquifers (underground natural water storage).

We'll be mapping aquifers in the areas shaded orange on the map, starting in the north. Flights will continue for about six weeks, subject to weather conditions.



You may see a low-flying helicopter towing a large loop hanging from a cable during February and March. It will fly over the areas highlighted on the map and ‘scan’ down to about 300 metres deep underground, where we’ve never seen before. We won’t be flying over towns or built-up areas.

Flight details

The helicopter will fly at 80-120 km/hr in parallel lines generally 175 to 200 m apart and at a height of approximately 100 m. The measurement instruments are suspended under the helicopter and will be about 30 – 50 m above the ground. The noise from the helicopter has been described as equivalent to a truck going past on a motorway and lasts for around two to four minutes. The helicopter flies up and down in lines, so once it flies over, it will then return approximately 15 minutes later but be around 200 m further away.

We will not be gathering data or information on anything above ground. While the helicopter will carry a camera, this is only to guide the crew managing the slung load, and no photos or video are retained or shared.

How does it work?

Transmitters on the loop under the helicopter send electromagnetic signals underground, and sensors measure the behaviour of the returning signals. Think of it as similar to radar, sending out and receiving signals.

The technology has been used commercially since 2004 to map large aquifer systems in countries including Denmark, Netherlands, India, USA, Canada, Australia and New Zealand. In November and December 2022, it was used to survey aquifers in Northland and Southland.

Is it safe?

Yes, very safe. Because the helicopter is moving at high speed, there’s very limited exposure to the electromagnetic signals. It’s safer than watching a LCD or plasma TV or blow-drying your hair!



We want to assure you that these flights are not in any way used for compliance monitoring. We only want to know about water – not what you're doing on your property.

What about my animals?

The technology is safe to use above animals. Experience in other farming areas is that stock generally aren't disturbed much by the technology. In New Zealand the team has observed that horses moved to the other side of the paddock when the system came very near.

What will the information be used for?

The information gathered by the helicopter and loop will take some time to process and analyse. Once available, it will provide a much better picture of the underground resource and reduce uncertainty to help guide decisions for environmental protection, development, resource consents, water management, and water availability for the local community.

Who's involved?

The project is being undertaken by Aqua Intel Aotearoa (a partnership between GNS Science and Kanoa, funded by the Provincial Growth Fund) and Gisborne District Council. The project has been planned in discussion with Te Runanganui o Ngāti Porou, Tāmanuhiri Tūtū Poroporo Trust, Te Aitanga a Māhaki Trust and Rongowhakaata Iwi Trust. All four iwi have indicated they support the objective of gathering scientific information to guide decision making. Iwi are involved in finalising data management and governance arrangements for accessing, storing and using the data for future purposes.

The SkyTEM data collection is being carried out by the international company SkyTEM in collaboration with the New Zealand helicopter company Heli A1.

Check out where we are flying

Aerial mapping of aquifers by helicopter will be carried out in Wharekahika (Hicks Bay), Te Araroa, Waiapu, Tolaga and across Poverty Bay flats (in the areas shaded orange on the map) through February and early March. We will be sharing updates on the Gisborne District Council and AquaIntel Facebook pages and the website www.aquaintel.co.nz/gisborne.

Get in touch

Please contact us if you have any questions or concerns about helicopter flights over your place. Let us know if you have an event you'd like us to avoid (eg a stock sale, wedding, hui) and we'll do our best to plan around it.

Phone Gisborne District Council on **0800 653 800**

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Insights and actions for
sustainable water use



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