

# Kahikatea tū i te uru\*

## Exploring connections between trees, people, culture, biodiversity, and climate change in Ōtaki

This project started with what we thought was a simple question. We wanted to understand better 'How do trees absorb carbon?'. From this seemingly simple prompt a crossdisciplinary (perhaps even transdisciplinary) collaboration grew.

We began by thinking about ways to communicate so that more of us could make a connection between trees that we see and touch and love, and the changing climate. In short, we wanted to find a way to look at a tree, or a group of trees, and understand in a meaningful way how much carbon dioxide they absorb over their lifetime.

The project also grew out of an opportunity, offered by the Friends of the Ōtaki River, to use the tree planting site that they work at as a case study and site location. While appreciative of the invitation, the project leader Rhian Salmon lives in Ōtaki and was aware of the need to talk with local iwi and mātauranga experts before carrying out any such locally-focused project.

We grew the idea with friends and colleagues in Ōtaki and around the motu. Te Pūnaha Matatini agreed to support two Master's students and a cultural advisor, and we put together a team comprising experts in mātauranga māori, tree ecology, citizen science, design and climate change.

And that was the start of a beautiful, bumpy, twisty, sometimes uncomfortable and eye-opening journey towards transdisciplinarity. The project's focus expanded to include climate change communication, biodiversity, and environmental design. And for our cultural advisor, it was always about people. He tangata, he tangata, he tangata.

The questions became broader and the project, initially given a working title of 'Trees + Carbon' quickly became 'Trees + People [+ Carbon]'. The name it finally found, *Kahikatea tū i te uru*\*, reflects how trees interconnect and strengthen so many things: people, culture, air, water, insects and birds to name a few that we studied in this project. While this project was not initially driven by community needs, it evolved to become more community-oriented than we ever anticipated and is so much richer for it.

This poster includes some highlights from the two Master's research projects at the heart of the project. Katerina Armstrong (Ngāi Tahu, Ngāti Kahungunu) completed a Master of Design at Toi Rauwhārangī, College of Creative Arts, Massey University. She explored how spatial design can be used to reveal the importance of conserving and reconnecting ngāhere (the forest) through a Te Ao Māori lens. Vicky Gane completed a Master of Science (Science in Society) from Te Herenga Waka Victoria University of Wellington. Her research focused on better understanding and communicating the biodiversity and carbon held in and around trees near the Ōtaki River.

While these may sound quite different, the two projects interwove like a braided river, or the roots of a kahikatea tree, especially entangled whenever we met with local kuia and kaumātua to better understand the land, people, trees and stories where this work was being carried out.

In 2024, boxes containing a summary of this research and the two theses were gifted to key local individuals, iwi representatives and institutions as a way of ensuring that the knowledge was shared back. We remain in conversation with the local community about the best way to share these ideas further.

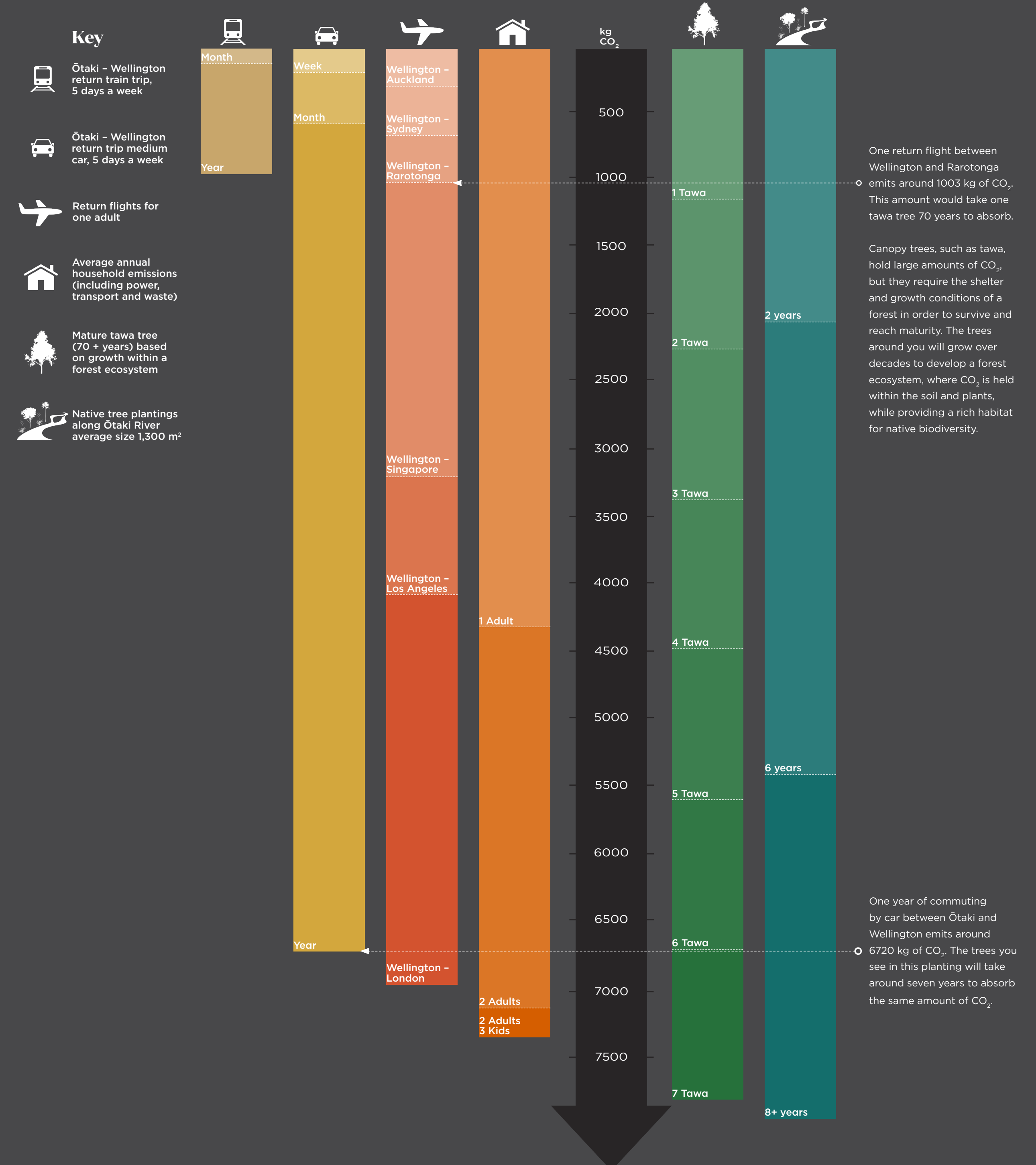
- \* The project name, *Kahikatea tū i te uru*, strength in numbers, anō nei he toa takitini, reflects the strength gained in a gathering in which everyone supports each other, as seen in the root system of a grove of kahikatea. It resonates with the intentions and the outcomes of this research, including insights into:
  - How the tikanga of kaitiakitanga protects Papatūānuku and her cloak of life, working alongside insects and birds;
  - How insects and birds thrive when trees grow together closely;

- How people grow together when reconnected with their whenua, their wai within their taiao, and in the case of this project also through the planting of trees;
  - How carbon dioxide is more likely to be absorbed and to stay out of the atmosphere when trees grow together and in doing so support a new ecosystem;
  - How different disciplinary research methods can intertwine and strengthen each other.
- The name has an additional meaning for us as we regularly greeted a kahikatea each time our core team met at Harūatai Park for a regular hikoī and wānanga.

## Carbon and Trees

Everyday activities release carbon dioxide (CO<sub>2</sub>). As more CO<sub>2</sub> is released into the atmosphere it increases and intensifies global climate change.

Trees take up CO<sub>2</sub> and the carbon becomes their branches, roots and leaves as they grow. By removing CO<sub>2</sub> from the atmosphere, trees help to reduce the effects of climate change.



← Katerina's renders depicting a future site with increased indigenous flora and fauna. These were used in the exhibition at Māoriland in Ōtaki, which included an animated projection that responds to a soundscape acts as a 'visual karakia' while the narrative of place is grounded by a series of banners that visualise three sites: Waimanu Lagoon, Waitohu Awa, and Ōtaki Awa.

↑ A carbon graph from Vicky's thesis detailing a comparison between activities in Ōtaki compared with how much carbon would be absorbed by the surrounding trees.  
→ The graph exists with a concept for a sign at the river site that would also make clear that a forest ecosystem is vital for some species to survive.



### Tima Our team

In alphabetical order, our team included:

**KATERINA ARMSTRONG**  
Ngāi Tahu  
Master of Design Student  
Toi Rauwhārangī College of Creative Arts Massey University

**JO BAILEY**  
Designer & Science Communicator  
Toi Rauwhārangī College of Creative Arts Massey University  
Co-supervisor of Katerina Armstrong

**VICKY GANE**  
Master of Science Student  
School of Biological Sciences  
Te Herenga Waka Victoria  
University of Wellington

**STEPHEN HARTLEY**  
Restoration Ecologist  
School of Biological Sciences  
Te Herenga Waka Victoria  
University of Wellington  
Co-supervisor of Vicky Gane

**WATENE KAIHAU**  
Ngāti Raukawa  
Cultural Advisor  
Kāpiti Coast District Council

**CATE MACINNIS-NG**  
Plant Biologist and Ecologist  
School of Biological Sciences  
University of Auckland  
Co-supervisor of Vicky Gane

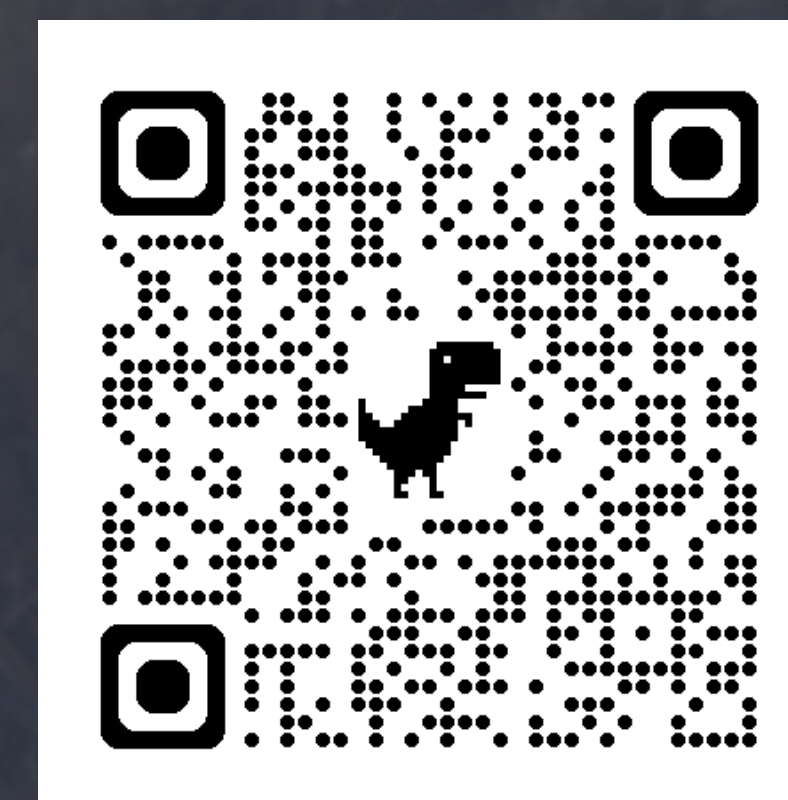
**SARAH-JANE O'CONNOR**  
Ecologist and Science Communicator  
School of Biological Sciences  
Te Herenga Waka Victoria  
University of Wellington  
Co-supervisor of Vicky Gane

**RHIAN SALMON**  
Public Engagement Academic  
School of Science in Society  
Te Herenga Waka—Victoria  
University of Wellington  
Co-supervisor of Vicky Gane

**HUHANA SMITH**  
Ngāti Tukorehe, Ngāti Raukawa  
Artist and Climate Change Advocate  
Whiti o Rehua School of Art  
Massey University  
Co-supervisor of Katerina Armstrong

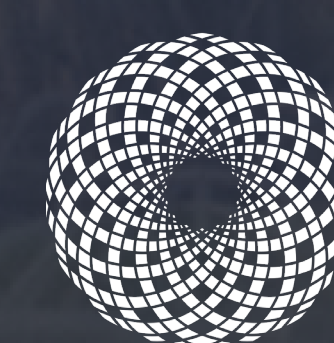
### Panui atu Read more

View the report at [makinggood.design/work/treesclimatepeople/](https://makinggood.design/work/treesclimatepeople/) or via the QR code →



### Kia ora Thank you

Thank you to Te Pūnaha Matatini for supporting this mahi, and to all our collaborators, human and non-human.



**Te Pūnaha Matatini**  
Complexity is at our heart