### PROJECT ABSTRACT

Radiocarbon (14C) dates provide the temporal control to many past events, and temporal precision is necessary to explore critical questions about Māori settlement and cultural development in response to changes in the temperate climate over time. Thousands of radiocarbon dates from archaeological contexts have been measured since the early 1950s and the Waikato Radiocarbon Dating Unit is responsible for producing more than 3700 of these, including ~2180 shell dates. These dates, and associated stored material, represent a valuable resource, currently underutilized, that can tell us much about ocean environmental change and the impact on marine 14C during the initial Māori settlement of Aotearoa. This project will use shell isotopes (18O and 13C) from samples held in storage at Waikato to produce a regional and temporal map of the change in water temperature and the carbon source to complement ongoing research into marine 14C reservoir change. The project will have three phases:

1. NZ archaeological data from the Waikato 14C database will be collated and checked
2. A literature search will be undertaken to correlate 14C data with archaeological context.
3. Spare shell material from the 14C stores will be prepared for isotopic analysis

The collated 14C and archaeological data will contribute to an online 14C archaeological database that will be merged with the national database of archaeological sites managed by the NZ Archaeological Association, Heritage NZ Pouhere Taonga, and the Department of Conservation (Archsite; https://archsite.eaglegis.co.nz/NZAAPublic). The addition of 14C data to the Archsite platform will make a significant contribution to radiocarbon research, archaeological heritage management, and iwi cultural mapping.

### STUDENT SKILLS:

- Basic laboratory skills
- Care and attention to detail
- Ability to work regular hours
- Ability to communicate clearly and work both individually and as part of a team.
- Good writing skills
- An interest in archaeology, chemistry or ocean sciences
- Experience with Microsoft Excel

### PROJECT TASKS:

- Collate extant 14C data from the Radiocarbon database.
- Undertake a literature search to correlate 14C data with archaeological context.
- Development of a radiocarbon/archaeological template for upload into Archsite.
- Sort and prepare shells for isotopic analysis using standard wet chemistry techniques
- Learn how to run the CCIA-46 EP Isotope Analyser and evaluate results
- Prepare final report including poster for Summer Research Scholarship event

As part of this work, the student is expected to become familiar with the processes undertaken during radiocarbon dating of shell, including interpretation of radiocarbon dates. Training will be given as required.

### EXPECTED OUTCOMES:

- Student’s Research Poster (as per clause 6 of the Scholarship regulations)
- This work will provide data to support a Marsden application 2021
- Shell isotope distribution map for archaeological sites
- Archaeological radiocarbon database to be merged with Archsite
- Contribution to a peer reviewed paper