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Rachel Carley

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Reimagining the tiny house typology in Aotearoa

Rachel Carley

Ko te whare e hanga te tangata,
ko te tangata e hangaia e te whare.

The whare (whare tangata) builds the people, and the people build the whare.

This Māori whakataukī refers to the whare (whare tangata), meaning 'house of humanity or womb.' Emerging from this first house we begin building connections to people, the whenua (land) and the houses we live in. A whare brings a group of people together with a common purpose: this collective action supports well-being and can uplift communities through the provision of good housing. This whakataukī guided students as they designed a kāinga tuaiti (tiny home) to contribute to a pressing design problem: the provision of low-cost accommodation in Aotearoa. Rationing

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

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strategies were used to limit building size, materials, weight, and cost. Concomitantly, an emphasis on delight was placed on the judicious design of a domestic interior in relation to its contents. This paper examines 'makeshift' and peripatetic architectures that offer recreational, transitional or permanent accommodation including whare raupō, caravans, transitional housing for homeless communities, and relocatable houses on coastal sites. These precedents are examined alongside the directives of the brief and a discussion of student work. In addition to designing individual tiny houses, students were afforded the opportunity to mahi tahi (work together as one) in small groups to create a shared amenity building that supported their tiny co-housing community.

KEYWORDS: tiny house; peripatetic architectures; pedagogy; co-housing; group work; mātauranga Māori

Introduction

> Ko te whare e hanga te tangata,
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>
> The whare (whare tangata) builds the people, and the people build the whare.

This Māori whakataukī references the whare (whare tangata), meaning "house of humanity or womb" (Moorfield n.d). Emerging from this first house, we begin building connections to people, the whenua (land) and the whare (house) we live in. The term 'hanga' used in this saying has multiple meanings depending on its context: it can mean "make, build, fashion or create" or refer to a "group of people" (Moorfield, n.d.). Creating a whare brings a group of people together with a common purpose: this collective action supports well-being and can uplift communities through the provision of good housing. This whakataukī was used as a touchstone to guide a community of learners participating in a 12-week-long second-year spatial design studio at AUT University in Tāmaki Makaurau, Aotearoa (New Zealand). The following research question framed the enquiry: How can rationing strategies be employed to direct the design of a low-cost, sustainable kāinga tuaiti (tiny home) that provides utility and delight for its occupant?

Learning was scaffolded to emphasise experimental form-making, sustainable materials research, and investigations into historic and contemporary design precedents. Iterative planning and sectioning throughout the paper required students to think laterally about making lively design propositions with less physical space and material to question and reimagine the ubiquitous tiny house forms currently available. In addition to designing individual tiny houses, students were afforded the opportunity to mahi tahi (work together as one) in small groups to create a community amenity structure that supported their tiny co-housing community.

Positioning statement

The approach to the studio was informed by the author's journey to better understand how mātauranga Māori principles could inform curriculum

design and delivery methods. This motivation was also personal. There are kāinga tuaiti clustered together on communally owned ancestral Māori land: many are identical commercial tiny house units. These observations made the author reflect upon how investigations into historical and contemporary small houses might assist in reimagining the kāinga tuaiti typology as a unique individual dwelling and as part of a co-housing community, replete with shared amenities. As I acquire further knowledge about my whānau (family) history the intention is to engage with my hapū to learn about their housing needs and how, in my position as an interior design educator, I may be able to contribute, in some way to the mahi (work) required to be undertaken in this space.

Whare raupō: an early exemplar of housing in Aotearoa

One of the earliest examples of 'makeshift' accommodation in Aotearoa was the whare raupō, designed and built by Māori. These indigenous structures had a compact footprint and were low in height, with small doorways, windows, and a dirt floor. Raupō, or Typha orientalis, is an indigenous plant that grows in wetlands. Until the latter decades of the nineteenth century, Māori and new colonists used raupō extensively as a building material due to its water-repellent and insulating properties. The material was also used for soft furnishings and woven mats within the interior. Early settlers contracted Māori to construct whare raupō or, as an alternative, used canvas tents. Enough raupō for a house could be harvested and processed in a few days, making them low-cost for recent settlers (Harman 2014, 39). While prone to conflagration, whare raupō could last for many decades until they began to disintegrate (Harman 2014, 40). The building form was hybridised with the arrival of settlers. Additions and alterations to the original whare included extending the modest footprint of the dwelling and creating internal partitioning using textile panels for privacy such as blankets, adding glass windows, verandahs and entry doors.

Figure 1.
Raupō whare, Taranaki. Parihaka album 1. Ref: PA1-q-183-25-2. Alexander Turnbull Library, Wellington, New Zealand./records/22876402.

Kristyn Harman argues that the decline of the whare raupō was used as a barometer against which to measure progressive change from the colonist's perspective (Harman 2014, 47). Harman states: "Pākehā identity was seen as being forged through the shared experiences of moving from an economy of makeshifts (symbolised by the use of colonial raupō houses) and its associated hardships, to one of civilisation wrought through progress effected through sustained effort" (Harman 2014, 51). Material prosperity and change were signalled by the transition from raupō houses to European typologies made from timber, stone or brick, completed by the 1930s. By this time, most Māori had left their kāinga (homes) on ancestral whenua (land) to move to urban centres and, in the process, had taken on European housing and ways of living.

When Sir Haare Williams (Ngāi Tuhoe, Te Aitanga-a-Māhaki) reflects upon his time living in whare raupō, he recalls stories of tribal achievement that were shared, connecting him to his ancestors. Rather than associations primarily with hardship, for Williams:

> "Our whare was a narrative of another time, a story past, present and future; no neo-classical detail hung off its highest, ridged peak. Are we still able to tap into the rhythms of those stories now they are under a suburban landscape?
>
> I was always conscious that the simplicity of our whare carried the power of emotion and spirituality, as well as being part of the land, streams and harbour that sustained us … .And yet the cruel and unrelenting state took the lands so many whare were built on, inflicting a further carnival of horrors, which resulted in homelessness that persists even today" (Williams 2023, 18-19).

Williams's reflections highlight colonisation's continued impacts on tangata whenua and connections to tribal lands and shared histories, creating literal and metaphorical homelessness.

While the whare raupō fell out of favour, it serves as an important touchstone in this paper as an indigenous building typology redolent with meaning that utilised novel construction methods, locally sourced, sustainable building materials and a capacity to be adapted and transformed in response to its users: these are some of the attributes the design studio sought to foreground.

Housing in Tāmakai Makaurau

The "Quarter-Acre dream" was a phrase that was used from the mid-nineteenth century onwards to describe the ideal colonial conditions for living a very particular life in Aotearoa: one that allowed provision for a large, privately owned freehold section containing a house, large garden and often a private car. As urban intensification continues, quarter-acre sections are scarce commodities, with most having been neatly julienned into smaller, separate titles. As sections have shrunk, so too have some house sizes. Yet real estate prices have escalated, making the housing and rental markets increasingly

unaffordable. In 2024 the median house price was 7.7 times the median household income, making Aotearoa one of the least affordable housing markets in the world (Dass 2024).

Consequently, indigenous papakāinga and co-housing are increasing in popularity (Pihama 2022, p 26). Before colonisation, alternative forms of land occupation to private ownership existed. Māori communal housing, known as papakāinga, was built on tribal lands and included communal facilities. Designers such as Jade Kake (Ngāpuhi, Te Whakatōhea, Te Arawa) are co-designing contemporary papakāinga and outlining the significance of this form of housing in books such as "Rebuilding the Kāinga: Lessons from Te Ao Hurihuri" (Kake 2019). These spatial environments foreground the social, cultural and economic well-being of tangata whenua and, in terms of their design, are underpinned by responsibilities of social and environmental stewardship (kaitiakitanga). Kake's research offers pathways for Māori to access quality housing, offering an alternative to private homeownership. Different co-housing models are also thriving in urban centres (Sharpe 2023).

Aotearoa faces a housing crisis exacerbated by supply chain issues incurred during the global pandemic: we still cannot build houses fast enough for those in need. This gap between supply and demand is not new: during World War Two, the building of social housing stock stopped as labour and material resources were redirected towards the war effort.

Figure 2.
Camp Hale relocation. Removal of United States Army huts from Camp Hale (sited in front of the Auckland War Memorial Museum) to the Auckland City Council housing scheme known as Titoki Street Transit Camp (situated on the southeast side of the Museum). Auckland Libraries Heritage Collections 7-A16395 (Sparrow Industrial Pictures Limited). https://digitalnz.org/records/36449596/camp-hale-relocation.

In the late 1940s, Military camps for the United States Army were established across Tāmaki Makaurau and further afield to house tens of thousands of soldiers who could assist with the potential threat of a Japanese invasion (Truttman, 2020). These large settlements consisted of army huts fused together to make lodgings. When decommissioned, the buildings were used as transit accommodations in the post-war housing crisis: they were allocated to returning servicepeople to use while waiting to access state housing stock (Schrader, n.d.) However, many Māori families remained in these camps due to racial inequities that denied them access to this housing, experiencing poorer, overcrowded housing and detrimental health outcomes as a consequence (See Taylor [1986] and Cram et al. [2022, 4] on the quality of Māori housing).

An interest emerged when thinking about historical responses to the housing crisis (in this instance, the adaptive reuse of army huts) and the role contemporary forms of spatial design could play in addressing this issue. There was also an interest in critically evaluating a design typology that had the potential to be responsive to changing situations, such as extreme weather events. The need to investigate the potential of these peregrine shelters is also a timely one: properties on the coastline of Aotearoa are becoming uninsurable due to more frequent and devastating adverse climate events, and relocatable houses may become a necessity in these vast coastal settlements (2023. "Billion dollars for cyclone and flood recovery in New Zealand budget." The Guardian, 14 May).

Building on whenua Māori

It is more difficult to acquire a loan to build on whenua Māori (Māori land) than it is to acquire an individual mortgage because Māori land is in communal ownership and cannot be readily sold due to Te Ture Whenua Māori Act (The Māori Land Act) of 1993. Because of this, the land cannot be used as security on a mortgage. Currently, the Kāinga Whenua loan scheme provides finance to build on whenua Māori of up to $200,000 NZ dollars without the need for a deposit, using the house as security. A five percent deposit is required per dollar borrowed above this amount. To be eligible for this loan houses must be no smaller than 50 square metres, have a water tank that meets local body requirements, be no more than one storey high (so the house can fit on the back of a truck and under power lines), must be built on removable piles, and have reasonable road access so that in the event of a loan default the house can be removed by the bank (Kāinga Ora 2024).

Many whānau (families) are not in financial positions to service loans for houses of this size so look to alternatives such as the tiny house typology, which are more cost-effective, costing anything between approximately NZ $50,000 to $200,000 (Dass 2024). However, because the term tiny house is not defined in the Building Act, and the typology "could be considered as a building or a vehicle,

or both" (Dale 2024) banks will often not lend on them unless borrowers use an existing home loan as security.

Enthusiasm for the tiny housing typology has grown exponentially in the last five years, with recent attendance at the Tiny House expo held in Auckland going from 350 to 10,000 over this period (Dass 2024).

Tiny homes have offered a cheaper alternative to the housing shortage but their legal status as houses or vehicles is complex and local council bylaws are not consistent across the country (Dale 2024).

At present, tiny houses offer the most affordable option for Māori to build on whenua Māori if they are able to secure a loan to purchase one. They are a popular typology because they enable people to more easily live on their whenua but they do have significant drawbacks, including their narrow footprint and physical size which makes housing more than two individuals comfortably very challenging.

While larger-sized dwellings would better suit the needs of extended whānau, in the current context, where financial and bureaucratic obstacles are many, it is proposed that this typology could be adaptively reimaged as single, customisable housing modules that could be gathered together and used in concert with additional amenity modules, to facilitate the sharing of communal activities like the eating of kai (food) together.

Another challenge to building on whenua Māori is when the land is landlocked and there is no road access on site so there is a requirement for permissions and legal access from neighbours that may incur an additional fee. Additionally, much whenua Māori is located in rural settings without infrastructure (water, sewage, electricity). While landowners can apply to get financial assistance to get this infrastructure established on-site, the process is as onerous as it is to get permission to build on whenua Māori in the first place (Stewart 2022). Off-grid living can be an attractive alternative where land is remote from infrastructure connections. In these cases, provision needs to be made for a chemical toilet, tanked water, and solar panels.

These issues are discussed by Pio Terei (Ngāpuhi, Te Rarawa), a presenter on the television series *Kāinga Whenua* (2024) and *Off the Grid with Pio* (2019) for Māori Television, who showcases his journey to build a tiny house on his own whenua Māori in Mitimiti and his conversations with others who are living in tiny homes, off-grid, or working within existing regulations to build papakāinga on their land.

Presently, most tiny houses are commercially produced by using standardised construction methods which have generally led to the development of ubiquitous formal features and interior layouts. Many of these commercial models maximise usable floor area by having two stories to exploit the maximum height allowance and this can lead to commercial models resembling two story extruded 'containers.'

The kāinga tuaiti (tiny home) typology

The studio sought to reimagine the kāinga tuaiti (tiny home) typology, which is used as transitional, recreational, and permanent housing. It was chosen because it currently looms large in the popular imagination and provides a context for discussing rationing principles. These principles can direct creative practice in a way that considers the judicious use of limited space and materials.

A fleet of international television shows such as Tiny House World, Tiny House Hunters, Tiny Luxury, Tiny House Big Living, Tiny Paradise, and Terrific Tiny Homes has buoyed interest in this housing typology (Mitchell 2021). However, this building form has its critics. In the article "The Tiny House Fantasy," Arielle Milkman suggests, "The tiny house movement embraces individualistic visions of property while ignoring the real causes of housing insecurity," seeing Tiny homes as "another superficial fix, brandishing clever design and appeals to nostalgia while ignoring the underlying social relations which cause homelessness, housing insecurity and environmental degradation" (Milkman 2016). The studio did not seek to romanticise the tiny home or house on the move. Instead, it sought to contextualise why and how people from very different backgrounds might choose to occupy these spaces, providing students with choices about what demographic they could design for.

Complex questions about how one might end up leading a peripatetic life were introduced. These included the need to move due to threats to life caused by war, persecution, extreme weather events, or the need to travel to seek out work in times of economic crises. Films such as Nomadland (director Chloé Zhao, 2020) highlight the precarious existence of seasonal workers in the United States who live in mobile homes on the road, scraping together a meagre livelihood: a precariat class who have grown in number and who endure inhospitable living conditions that exacerbate poor health outcomes. These conditions of financial hardship are in stark contrast to descriptions of "The New Nomads" by Shonquis Moreno, in a preface to a book of the same name, which showcases a range of peripatetic structures by designers and artists. For Moreno, new nomads have a different mindset, one that seeks out new adventures, even while located in one fixed abode:

> "Even in our railroad flats, studio apartments, and English basements, we are (re)turning to the life of the hunter-gatherer. We are merchants on the Silk Road trading in ideas, herders grazing the higher slopes in midsummer. And to be mobile, we slough the burden of our stuff, our places, our habits . . . .We are not following the seasons, or the food sources, or the exotic spaces, or the straight path. We are following serendipity." (Moreno 2015, 3)

This perspective identifies the new nomads as people steeped in privilege: people with choices (and more stuff than they require)

and for whom travel and mobility are associated with a quest for self-discovery. To labour the point, Moreno continues: "Moving from being locked into a job to being constantly on the move is no longer creepy or criminal - it's cool" (Moreno 2015, 5). This 'rebranding' of nomadism seeks to uncouple it from the precariat class and the pathological behaviours that, Moreno insinuates, are its hallmarks.

The studio aimed to highlight the forces at work in promoting, critiquing and activating this form of housing. It afforded students the agency to choose to design transitional housing for people experiencing homelessness, as well as recreational or permanent forms of accommodation. While given multiple options, in most instances, students elected to create spaces for themselves.

Rationing constraints

The reimagining of the typology was scaffolded by the imposition of a series of rationing constraints, to encourage students to think laterally about how to make do with limited resources. Resources are rationed during economic hardship and when social, political and climatic upheavals occur.

During times of scarcity due to war, natural disasters, or global pandemics, everyday items are often rationed to mitigate hoarding behaviours and ensure a fair share for all. During these periods, design innovations frequently emerge by necessity: adapting making methods to suit altered conditions, repurposing materials or substituting known and familiar materials with others at hand, repairing a product to extend its life, and creating bespoke solutions to new challenges.

The aim was to encourage students to think laterally about how to make engaging interior environments with less physical space and material, working together to respond to the current environmental conditions to reduce our ecological footprint. Throughout the paper students were invited to consider how their cultural knowledge could inform the ethical and sustainable dimensions of their creative practice.

The tiny house was promoted as a space primed for conceptual refurbishment, where more might be made with less. Living in a small space may require shedding possessions and actively engaging with the pleasures and perils of streamlining an interior and its contents. It allows for thinking of elements within the interior that can perform 'double duties': for example, tables that can expand and contract when the need arises, beds that can fold into ceiling cavities to allow room for lounging or working during the day. To do this, fabrication methods including locking, slotting, folding, taping, pivoting, laminating and hinging, were introduced in technical workshops to demonstrate how to make more with less physical space and material.

The global pandemic led to material shortages in the building industry. We could no longer take unhindered access to unlimited

raw materials for granted. It became essential to consider what resources should be used and in what quantities. Constraints were placed on the size, weight, materials and cost. The size was prescribed by the limits set by New Zealand Transport Agency road transport codes for light, simple trailer dimensions. This meant the structures were a maximum 8 metres long x 2.4 metres wide and 4.3 metres tall (MBIE 2021, 17, NZ Transport Agency 2024, webpage). The weight could not exceed 3.5 tonnes (trailer included), and the materials needed to be low-cost, lightweight and sustainable.

Design precedents

A diverse range of local design precedents were introduced to situate the research, acknowledging Aotearoa's rich tradition of nomadic architecture. Antecedents to the tiny house can be found in the Caravan, a form of mobile accommodation associated with summertime migrations to beaches, rivers or lakes pepper potting the country. Many early iterations of caravans were built by owner-occupiers, following instructions found in magazines such as Popular Mechanics.

Figure 3.
Caravan, 1937, New Zealand, by Richard Reichenbach. Gift of the Reichenbach family, 2002. Te Papa (GH009952).

One of the oldest caravans in Aotearoa, now in the collection of Te Papa Museum, was designed by Richard Reichenbach in 1937 for his honeymoon and adapted over time to accommodate his growing family and a cat. The caravan, made from Rimu, Kauri and Oregon Pine timbers, has a modest portico and uses a canvas employed in constructing Air Force planes painted many times over

many years to ensure its water tightness. The interior was meticulously planned and crafted to include a set of bunks, a drop-down table, patterned linoleum flooring and benches and gas-powered cooking and refrigeration, all cannily contained in a meagre footprint (Museum of New Zealand Te Papa Tongarewa 2024).

Caravan interiors are condensations of home: fitted out with all the creature comforts and finishes found within a domestic interior, including showers, fridges, built-in cabinetry and televisions. In the 1940s, Eric (Tek) Rushlee Jessen established Liteweight Caravans in Waikato. Business boomed, peaking in the 1970s. Douglas Lloyd-Jenkins, in his paper Glue and Gumption, cites the decline in popularity of the caravan in Aotearoa to two events: Robert Muldoon's government decision to tax new caravan production and the rise in oil prices in the late 1970s (Lloyd-Jenkins 2024, 47).

Liteweight Caravans was the first company to advertise on television, creating an ad in collaboration with the agency BGH, with one of their mobile homes appearing to traverse a moonscape: no topography, even extra-terrestrial ones, appeared to be off limits. (Jessen 2015, p 66). Another form of portable architecture was trialled in 1980 when they designed the Packaway Cabin, a solid-wall folding cabin akin to a solid tent, along with a range of camp furniture, including bunk stretchers, a dining set and a portable bed, all made to pack down into a purpose-built trailer (Jessen 2015, p 99).

Figure 4.
Katy Wallace, KW Caravan (2003) with floor furniture assembled. Photo: Eimi Tamua.

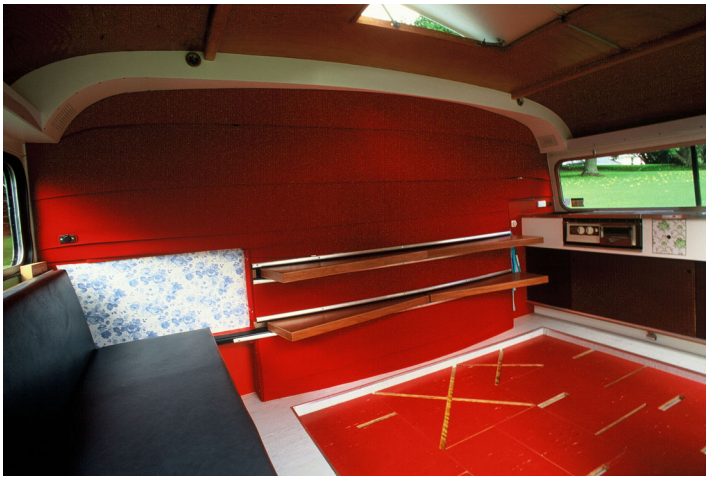

Figure 5.
Katy Wallace, KW Caravan (2003) interior view. Photo: Eimi Tamua.

More recently, designer Katy Wallace has tackled redesigns of this typology. The first was a radical retrofit of 1966 Lilliput Caravan designed by Bruce Webster. Wallace took the caravan interior back to a bare shell and reclad it an embossed pale blue power coated aluminium to resemble polka dots. A large window running its length was replaced by a solid "activity wall," that contained slots for wooden planks that were utilised to provide shelving, seating, or a desk. The subfloor space contained additional flat-packed timber components to make outdoor furniture to extend the living space beyond the caravan footprint.

Figure 6.
Katy Wallace, Caravannex (2020) camping setup. Photo: Thomas Teutenberg.

Figure 7.
Katy Wallace, Caravannex (2020) interior view. Photo: Thomas Teutenberg.

Wallace's second foray into caravan design was the Caravannex (2020), a structure built from scratch to function both as a caravan for holidays and as an annexe to Wallace's home in Gisborne. A suite of canny interior fabrication techniques means that the space within the Caravannex is highly flexible and can be transformed to accommodate an office, studio, bedroom or lounge. Beds are hidden in carefully perforated timber ceiling cavities to provide ventilation and visual appeal. Bespoke tables and stools fold out from the plywood-lined walls of the interior. A platform outside the backdoor can serve as a bridge to another structure, act as a back porch or become a pop-up bathroom complete with a composting toilet while away on vacation. Both projects demonstrate a rigorous integration of transformable furniture within the interior, offering the provision not only of utility but also of delight. This delight manifests in the considered use of material, colour and surface treatments found both within and outside each of the projects, in addition to accommodations made for everyday objects placed within the caravan, ensuring their safe passage while in transit.

Figure 8.
Crosson Architects, Hut on Sleds (2012). Whangapoua, Coromandel. Photo: Jackie Meiring. Pending Copyright permission.

Some recreational projects introduced to students highlighted the importance of considering site conditions and constraints. The Hut on Sleds (2012) by Crosson Architects is a small holiday home (40sqm) situated on Whangapoua beach in Coromandel. The structure is located within the coastal erosion zone, where all buildings must be removable. For this project, the structure is placed on two wooden sledges to enable movement inland or toward the beach and onto a barge. The double-height front shutter winches open to create an awning that offers shade in high summer and sun during winter. While not a low-budget design, this project demonstrates how site constraints can shape the conceptual ideas that underpin a project.

Figure 9.
Whare Tahi Interior, 2021. SGA Ltd for Vision West Waka Whakakitenga. Photograph Ross Keane - SGA Ltd.

Figure 10.
Whare Tahi Exterior, 2021. SGA Ltd for Vision West Waka Whakakitenga. Photograph Ross Keane - SGA Ltd.

Another example of transitional accommodation was a prototype by SGA Architects called Whare Tahi (2020), commissioned by Vision West Community Trust, which offers a programme to youth transitioning out of care or homelessness. The studios are placed on residential sites of a host family who will support the young person during this transition. The design can be easily transported and readily connected to water and power supplies in residential sections. The design was also constrained by the requirements of scale and weight for light trailers (like a tiny house), so materials were chosen for their lightweight properties, strength and durability. The ply-lined interior and window seat offer a sense of warmth and comfort to occupants managing what might be difficult circumstances.

Figure 11.
Gerard Dombroski, Picolo (Dombroski 2021) Interior View. Driving Creek, Coromandel. Photo: Samuel Hartnett.

Figure 12.
Gerard Dombroski, Picolo (Dombroski 2021). Exterior View. Driving Creek, Coromandel. Photo: Samuel Hartnett.

Each project introduced demonstrated novel ways to work with constraints to produce engaging small spaces that, in all but one instance, had the potential to move from place to place. In 2021, architect Gerard Dombroski was invited to the Driving Creek Railway and Pottery in Coromandel for a one-month residency to build something. This community, a popular tourist attraction, was established by the late potter Barry Brickell and contains several buildings made from gleaned second-hand materials, a railway system, and pottery studios. The constraints for Dombroski's project were that the structure had to be made using materials foraged from the site, and there was no budget. The architect used an existing steel frame from a zipline platform as the building footprint. Located on a ridge beside a grove of well-established Kanuka, the structure was conceived as a space for viewing the trees. The roofline was informed by the ubiquitous form of a skate ramp (Dombroski had spent the summer touring the country with a 5-metre-long spoon and photographing it in skate bowls to view "skatebowls and pools as domestic ware" (Dombroski 2021, webpage). The structure consists of a single room

with a bed at the high end of the steeply climbing volume and a desk at the other. Underneath the desk is a 'trap door'/hatch that can be opened to allow the desk to be used while the occupant sits on the floor, their legs dangling outside to catch the cooling breeze on a hot day. Dombroski's project is engaging because of its dramatic and inventive interior detailing and adaptive reuse of found materials, making do with what was at hand. In addition to the above exemplars, a vast array of design precedents were shared with students *via* a class Are.na channel (Carley, Rachel, "The Tiny House.").

The studio brief

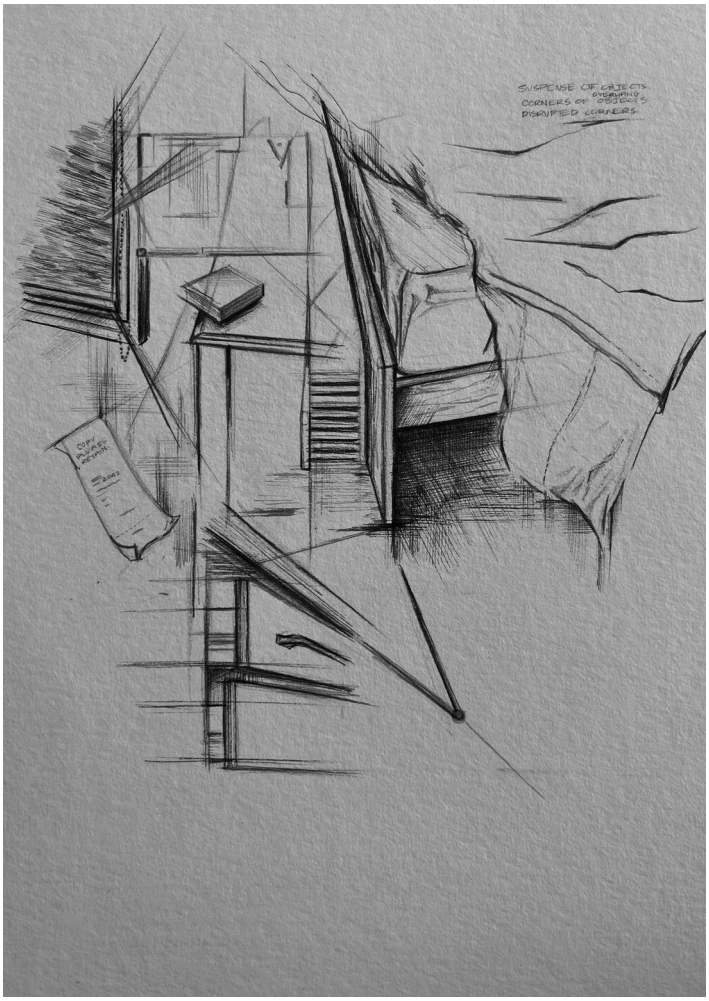

Figure 13.
Grace Fraser, Harvested Clusters, Perennial object analysis, Momentary clustering of everyday objects (2023).

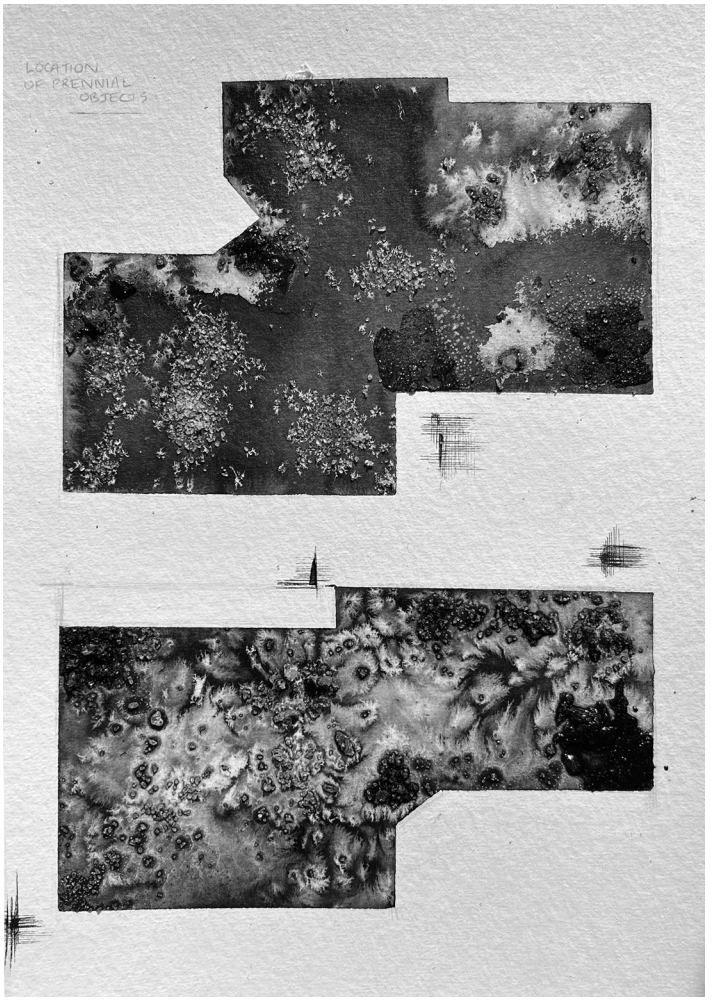

Figure 14.
Grace Fraser, Harvested Clusters, Salt mapping, Location of Perennial objects, (2023).

Grace Fraser's project will serve as an exemplar of the design process. Fraser conducted extensive research for each exercise, utilising various digital and analogue drawing and modelling methods to produce novel surface treatments and considered spatial and material investigations. To begin, students undertook auto-ethnographic research, analysing how they occupied familiar domestic spaces and activated the perennial objects within them. Perennial objects were defined as utilitarian objects used repeatedly that students had some form of attachment to. These may have included but were not limited to items such as tables, chairs, toothbrushes, cups, plates, utensils, books, and phones. They visualised this research, representing the disposition of their quotidian spaces in relation to key objects, who were subject, where possible, to a weigh-in. Students were invited to

consider how to accommodate these actions and objects inside the maximum footprint of a tiny house (2.4 × 8 metres maximum in plan).

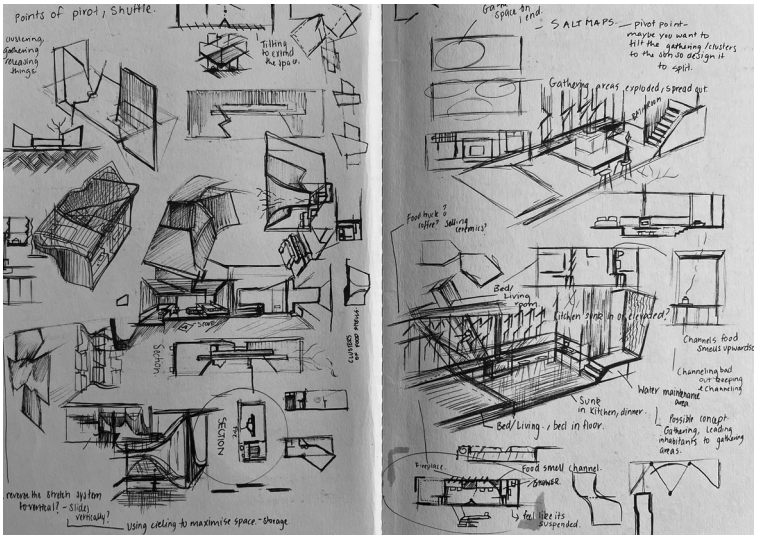

Figure 15.
Grace Fraser, Harvested Clusters, experimental concept sketching (2023).

Initial forays into planning were extended by locating and analysing a range of small house plans, studying their conceptual and formal dimensions and adapting them to accommodate their particular domestic routines and perennial objects. Plans were reviewed and reimagined alongside the composition of sections. Students were encouraged to iterate and consider alternative ways to inhabit their floor plans and those of others. This was prompted by recalibrating wall thicknesses, rethinking the placement of furniture elements, the materiality and porosity of internal partitions and the relationship between floor-fixed and suspended elements within the interior. The introduction of design precedent had been delayed until this point to enable students to better understand their daily domestic routine and the objects enlisted throughout it, establishing a position on the brief based upon what was known and familiar to them first.

'Hatching plans' was the next exercise, creating trial floor plans to scale based on the bare essentials research and an analysis of the work of other designers. The layouts of their chosen houses and the proportional relationships between each zone within them were to be evaluated, as were the size and placement of built-in or freestanding furniture elements. This sequence of tasks was designed to initiate a spatial conversation between established and emerging designers, highlighting how the plans of others tell a thoughtful and particular story of habitual occupation that they could learn from and then adapt or retrofit to accommodate their daily routine and retinue of personal objects. We wanted to know what types of tiny houses

piqued their interest and why, delineating what they found delightful about the houses they chose. This could include the conceptual positioning of the project, its formal resolution, the material palette employed, the use of bespoke furniture, the use of sustainable design principles or all these elements.

"Sectioning Tiny Spaces" involved the generation of multiple cross-sections and longitudinal sections from each floor plan that had been studied and adaptively reused. People and their perennial objects were to be included in these drawings to personalise the interiors. The aim was to assist students in considering alternative ways to draw up the lines inscribed on the plans to create dynamic and lively interior spaces. Consideration was given to the materiality and relative height of each mark made on the floor plan. This questioning extended to thinking about the nature of the material itself- was it heavy, lightweight, perforated, porous, opaque, transparent or translucent? What textile components were included, and how were they detailed? What might the roof line look like within the interior, and how could this add another dimension of delight for the occupant when looking up?

Figure 16.
Grace Fraser, Harvested Clusters, Clustering as Materiality (2023).

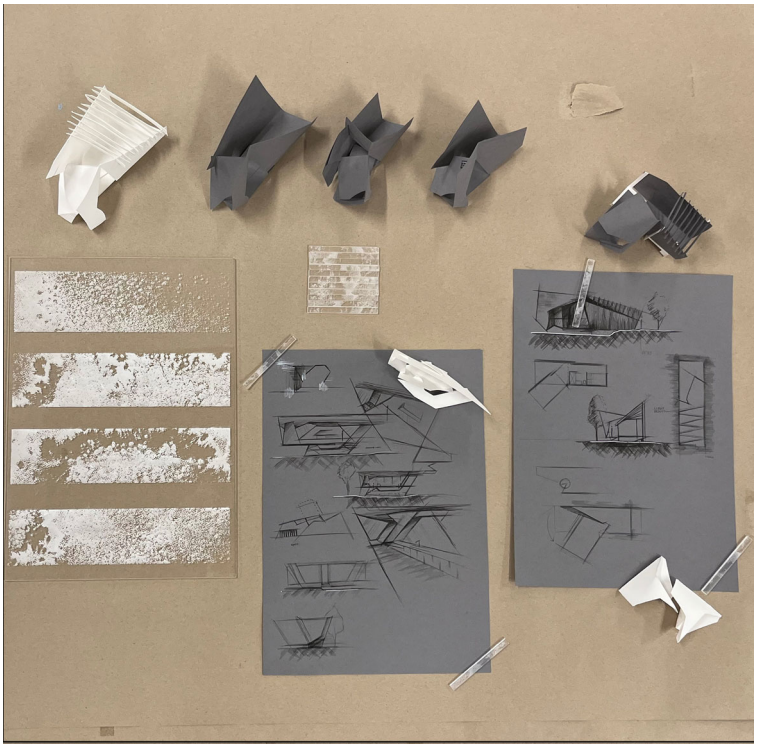

Figure 17.
Grace Fraser, Harvested Clusters, Iterative modelling (2023).

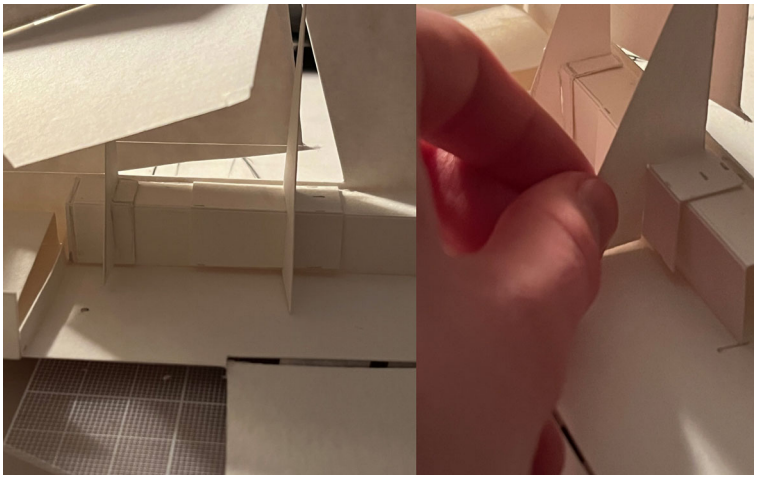

Figure 18.
Grace Fraser, Harvested Clusters, Vertical Blade bench iteration, (2023).

The next step was considering how lightweight materials could be manipulated to provide both amenity and delight. A series of iterative form-building exercises were introduced using paper and various analogue methods, including folding, cutting and moulding, to create

a series of experimental surfaces. The aim was to employ multiple methods to generate faceted and non-standard curvilinear forms, fabricating dynamic interior volumes and questioning the ubiquity of the tiny oblong house form. When the novel forms had been made, cutting methods were used to explore and record the distribution of light within the interior and consider how light, construed as a material, could contribute to making a space delightful by enhancing critical aspects of a daily routine. A suite of experimental surfaces were combined to generate conceptual models for the shell of a tiny house. These surfaces informed the design of cross-sections expressing idiosyncratic volumes and surface treatments.

They were then asked to locate, evaluate, and specify a range of sustainable materials for prototyping a tiny house and crafting a positioning statement delineating key conceptual prompts and contexts that informed their final design. An analysis of each student's daily routine was revisited to consider how bespoke finishes and perennial objects could add 'delightful' dimensions to everyday tasks.

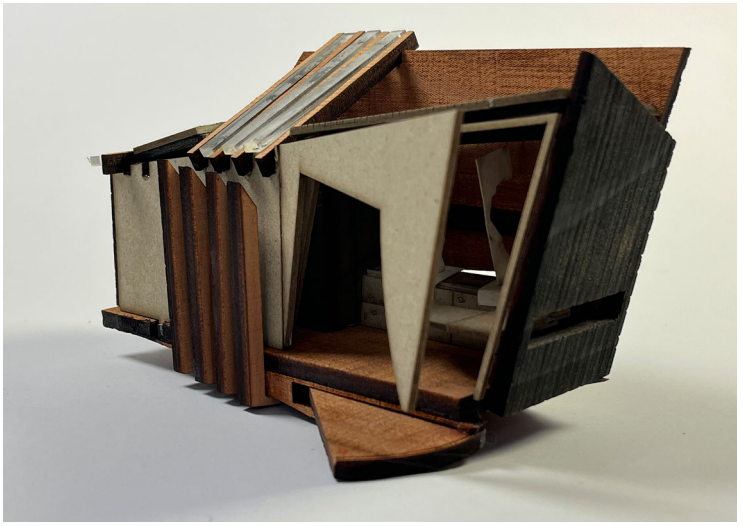

Figure 19.
Grace Fraser, Harvested Clusters, Final Model (2023).

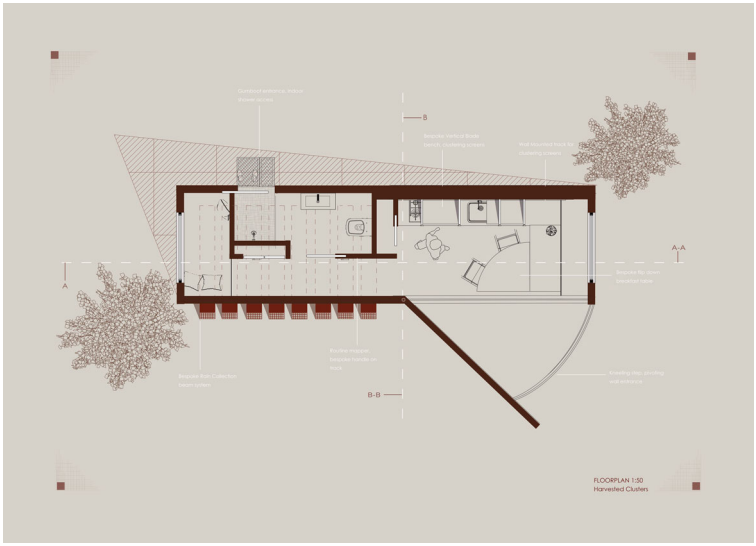

Figure 20.
Grace Fraser, Harvested Clusters floorplan 1:50 (2023).

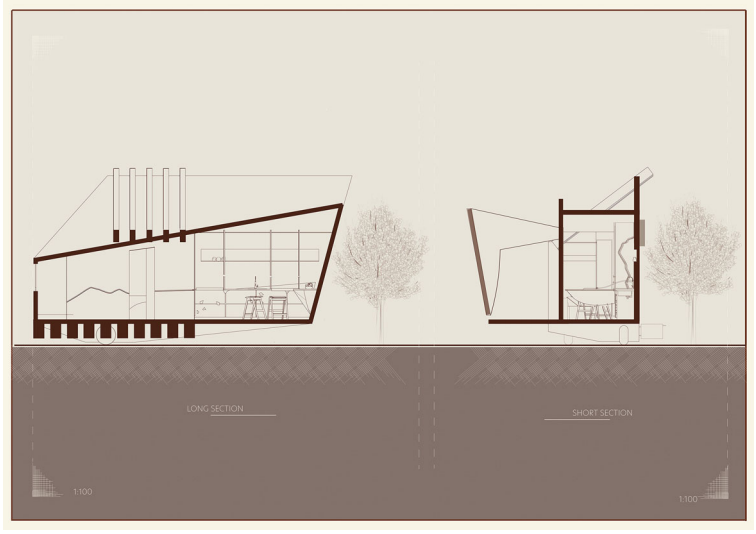

Figure 21.
Grace Fraser, Harvested Clusters, Sections (2023).

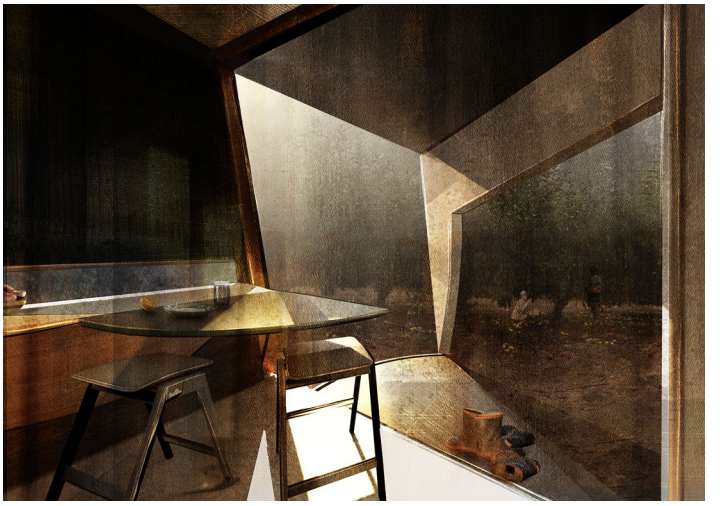

Figure 22.
Grace Fraser, Harvested Clusters, Exterior render, breakfast sitting (2023).

Figure 23.
Grace Fraser, Harvested Clusters, interior perspective, Clustering beams, an instrument for light (2023).

Figure 24.
Grace Fraser, Harvested Clusters, Vertical Blade Bench, a likeness to a ploughing field. (2023).

Figure 25.
Grace Fraser, Harvested Clusters, interior perspective (2023).

Figure 26.
Grace Fraser, Harvested Clusters, interior perspective, Activation of routine, clustered light (2023).

Fraser's final project, entitled *Harvested Clusters*, imagines how the sequential actions of harvesting fruit could inform the design of a daily domestic routine. Fraser writes:

> The design responds to a homegrown orchard as an ideal site, a location that engages with the process of clustering to replenish the next harvest of fruit. There were connections drawn between the daily routine being activated by a clustering of gestural actions awakening dust in settled areas and the shifting of crops around an orchard manipulating the dusty harvesting terrain. In the early hours of the morning, light begins to seep through the first series of etched cluster skylights. Activating the routine, the etched glass casts a shadow on linen bedding, resting beside the awakening occupant. Leaving the sleeping area, the hallway consists of a bespoke handle which runs along a track for storage door and bathroom access, subsequently mapping the routine. The track meets a series of vertical blades in the kitchen, which move along wall-mounted rails, clustering used bench space away, drawing a likeness to a harvest being ploughed.
>
> Stepping out from the confines of the trailer and the routine that occurs within, the front wall pivots away, revealing a hidden step as the orchardist departs for the day. Kneeling to pick up clusters of fruit in the distance, the step leaves the home kneeling close to the ground, accompanying the occupant in routine. Tending to the harvest through the gathering of fruit, the house tends to the harvesting of light through a series of bespoke cluster beams. Etched glass becomes a light instrument, filtering it into the space through clustered shadows. Light reaches between each beam, following the reaching hand gesture of the orchardist picking clusters of fruit. With early afternoon sun intensifying, clustered shadows gather, rendering surfaces as the fruit picked clusters in

quantity throughout the duration of the picking. (Fraser 2023, unpublished design process journal).

Community building

Where the first half of the studio focussed on the design of individual, tiny houses, the second half was devoted to supporting students in undertaking their first foray into group work and literal and metaphorical community building. Working in self-selected groups of five, they designed a shared amenity for a tiny co-housing community. The amenity needed to have a specific programme determined and agreed upon by the group. The site was located at Coyle Park (Rangi-mata-rau) in Pt Chevalier, a residential suburb in Tāmaki Makaurau (Auckland). The peninsula, overlooking the Waitematā Harbour, is close to a beach and is situated in a public park, so the question of how to engage with other communities already vested within the space became essential to consider.

Site analysis was conducted to identify where individual houses and the shared amenity would be located and what garden and hard landscaping elements could be used to connect them. Constraints were imposed on the size of the amenity building: it could be no larger than twice the square meterage of their tiny houses but composed in any formal arrangement.

The interest in establishing a planned community of tiny houses with a shared amenity came from observing settlements of tiny houses on communally owned Māori land blocks. A range of Co-housing models were introduced to students in addition to a tour of Cohaus, a twenty-unit urban cohousing development in Grey Lynn, Tāmaki Makaurau, designed by Thom Gill and Helle Westergaard of Studio Nord Architects.

To tautoko (support) students undertaking group work for the first time, guidelines were established to assist them in creating effective working relationships informed by the values embedded in the te reo Māori terms manaaki (to support, offer hospitality, respect and care), tika (to be correct, appropriate and ethical), pono (to be honest, genuine and sincere) and aroha (to show empathy, care, and compassion) for one another. They reflected on what common ground they shared in the first part of the brief (in terms of design concepts, cultural contexts, formal elements, and shared values) and discussed what skills they hoped to develop moving forward into the group work phase of the project.

Mā pango mā whero ka oti te mahi

By black and red together it is done.

This whakataukī highlights the importance of collaboration in achieving a goal. Traditionally, whero in this context refers to ringa whero (chiefs) and pango (black) references the colour associated with the community/workers. The whakataukī recognises the need to work together to complete the mahi (work). Students were introduced to ways of working together that were culturally inclusive, utilising insights

from Dame Joan Metge's book Kōrero tahi = Talking together, outlining an approach to managing cross-cultural group discussions. We were undertaking our shared kōrero (discussions) in this manner to ensure we could effectively work together as tangata whenua (the first peoples of Aotearoa) and Tangata Tiriti (all non-Māori who have arrived in Aotearoa and are committed to honouring Te Tiriti o Waitangi) treaty partners: this approach was also aligned with the strategic objectives of AUT's Te Aronui Framework (AUT Te Wānanga Aronui o Tāmaki Makaurau 2023). The aim was to establish an environment that was "comfortable and empowering to all participants in a discussion, an environment where none feel disadvantaged or intimidated by rules, words or actions they do not understand, and where all are accorded equal dignity and respect" (Metge 2001, 6). Groups undertook mahi tahi (working together as one) to discuss, deliberate, and eventually agree upon a series of group norms that made their expectations of each other explicit. Collectively, the norms formed a group charter or tikanga matatika (code of ethics) that guided them as they developed their designs.

Figure 27.
Grace Fraser, Jocelyn Glenn, Ruby Robinson, Bella Lin, Mehak Vaidyanathan. Jam House, group project, Tiny House Co-Housing Amenity floorplan & Elevations, (2024).

Figure 28.
Jam House, group project, Tiny House Co-Housing Amenity, Grace Fraser, Jocelyn Glenn, Ruby Robinson, Bella Lin, Mehak Vaidyanathan (2023).

A veritable cornucopia of shared amenity designs emerged from the ten groups. They included a Jam House designed by Grace Fraser, Ruby Robinson, Jocelyn Glenn, Bella Lin and Mehak Vaidyanathan. This group discovered a tiny community library/book exchange resident on site and wanted to create an additional amenity to share with the broader public. Jam House was conceived as a breakfast space for the tiny house residents and for jam-making with the community. Bespoke jam-making stations are placed within large timber-clad silos: one for storing jam in the shade during the preservation period and the other silo used for collecting, washing and storing donated fruit and jars contributed by the wider community. The silos are designed to hold the raw materials for jam and the finished product, which requires setting time and rotation, intended to reflect the shift in occupancy of the tiny house community as not all residents were permanent.

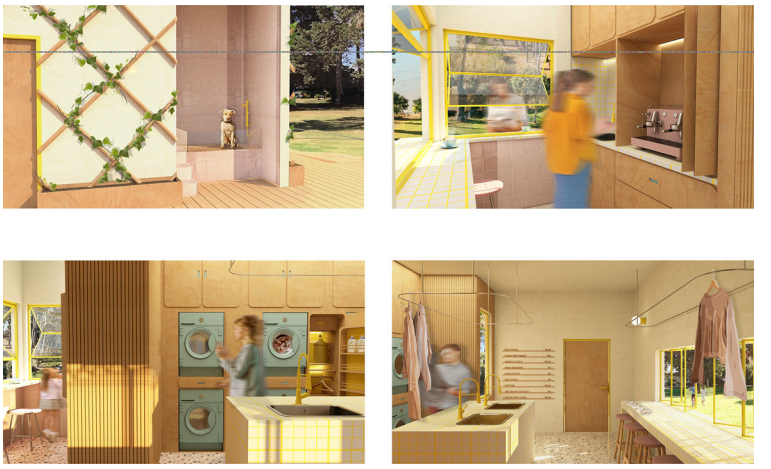

Figure 29.
Hodaya Yarden, Anna Simpson, Katie Graham, Larushka van der Watt, and Zanel Herrewyn. Laundromat (2023).

A shared laundromat and coffee corner with a dog shower for local pet owners to use after beach walks was designed by Hodaya Yarden, Anna Simpson, Katie Graham, Larushka van der Watt, and Zanel Herrewyn. The material selections and colour palette draw upon those found within each tiny house produced by team members. The amenity is located to maximise views across the peninsula and is oriented to capture the morning sun by the coffee corner and the afternoon sun by the washing line.

Figure 30.
Bird Sanctuary. Kaye Pambid, Anya Mayo, Grace Abplanalp, Brodie Harrison, and France Garcia.

Kaye Pambid, Anya Mayo, Grace Abplanalp, Brodie Harrison, and France Garcia considered the importance of designing for Coyle Park's circadian rhythms, seasonal transformations and avian occupations with their Bird Observation and Library structures. The design consists of a garden with native plants whose foliage was selected to highlight seasonal changes, a space for morning coffee and shared discussions or planned activities in the conversation pit. Bird boxes and trellis structures have been integrated into the amenity to allow for many avian species in residence on the site.

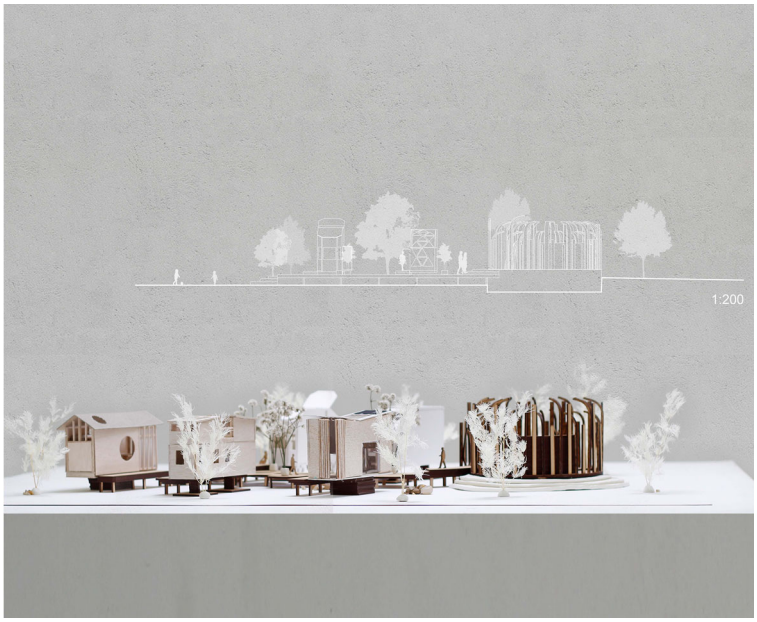

Figure 31.
Tiny House Community (2023) Heather Garside, Sophie Mebius, Riya Patel, Naiki Saito and Coco Zhu.

Sophie Mebius, Heather Garside, Naiki Saito, Riya Patel, and Coco Zhu titled their group design Company of Silence as it brought together a group of self-confessed introverts who enjoy watching films. Their amenity is an outdoor movie theatre at the end of a curvilinear boardwalk (to offset the rectilinear tiny houses branching off it) designed for informal encounters between residents as they move to and from the theatre. The form of the shared amenity takes inspiration from the delicate blades of grass found in the park, building in density as you approach the screen. As the sun sets, the boardwalk is illuminated by warm strip lighting.

Conclusion

This paper has sought to introduce the contexts that informed the design and delivery of a studio and its outcomes to highlight how the

tiny house typology could be reimagined. One of the aims in undertaking this pedagogical direction was to allow students to work within constraints to address issues that interested them, constructing a project outline that was porous enough for them to explore the social, cultural and ethical dimensions of individual and collective living contexts in Aotearoa. Initial personal design enquiry was later used to support a culturally inclusive discussion about community building and pursuing shared interests. In future iterations of this studio, further emphasis will be placed on introducing students to additional papakāinga and co-housing models responsive to fiscal, material, environmental and contextual constraints.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

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Biography

Rachel Carley is of Te Rarawa and Pākehā descent. Her research investigations are located at the intersections between interior design, visual art, ceramic, gastronomic, and pedagogical practices. Recent scholarship has investigated how rationing methodologies and indigenous knowledge systems can inform curriculum design and delivery methods. Email: rachel.carley@aut.ac.nz