

PUBLISHED VERSION

David Kroll, David Morris and Joti Weijers-Coghlan, Arianna Brambilla
**Architectural Education in Unfamiliar Territory: The Fish River Aboriginal Ranger
Accommodation Project**
Charrette, 2022; 8(1):59-77

© Article copyright remains with the publisher, society or author(s) as specified within the article. Charrette is the open access peer reviewed journal of the association of architectural educators (aae). Charrette publishes under a CC BY Creative Commons License. This entails that, provided that the work's first publication is appropriately credited, authors retain the copyright in their work and other users are allowed to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator and original source. For more details please visit <https://creativecommons.org/licenses/by/4.0/>.

Published version

<https://www.ingentaconnect.com/contentone/arched/char/2022/00000008/00000001/art00004;jsessionid=ep5uvwwq1j49.x-ic-live-01>

PERMISSIONS

<http://creativecommons.org/licenses/by/4.0/>



Attribution 4.0 International (CC BY 4.0)

This is a human-readable summary of (and not a substitute for) the [license](#). [Disclaimer](#).

You are free to:

- Share** — copy and redistribute the material in any medium or format
- Adapt** — remix, transform, and build upon the material for any purpose, even commercially.

The licensor cannot revoke these freedoms as long as you follow the license terms.



Under the following terms:



Attribution — You must give [appropriate credit](#), provide a link to the license, and [indicate if changes were made](#). You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

No additional restrictions — You may not apply legal terms or [technological measures](#) that legally restrict others from doing anything the license permits.

25 October 2023

<https://hdl.handle.net/2440/139746>

Architectural Education in Unfamiliar Territory: The Fish River Aboriginal ranger accommodation project

David Kroll

The University of Adelaide

David Morris & Joti Weijers-Coghlan

University of South Australia

Arianna Brambilla

The University of Sydney

ABSTRACT

The Fish River Aboriginal Ranger Accommodation project presents a case study of an experiential learning approach where design and construction are undertaken in unfamiliar environmental and cultural conditions to expand the learning experience beyond the traditional boundaries of architectural education.

The project offers an example of an integrated pedagogy, entwining traditional design studio with technical, social and cultural experiences. The teaching and learning journey of this project required students and staff to expand their professional and personal skills beyond the drawings of the design studios and into the cultural and climatic context of a remote area of northern Australia.

KEYWORDS

architectural design education, collaborative design, design-build studio, sustainable design, remote housing, consultation



Figure 1:
Fish River Aboriginal Ranger
Accommodation, designed and
built with students by the Design
Construct programme
(Joti Weijers-Coghlan 2017).

I n t r o d u c t i o n

The design studio in tertiary architectural education is a pivotal moment in the student's learning journey, equipping them with object-oriented design skills and theoretical knowledge.¹ The design studio typically takes place in the classroom and can fail to bridge the gap between academic education and professional practice, overlooking social, technical and spatial activities that take place before, during and after construction.² Grounded in hands-on learning and building upon the realities of professional design and construction design-build programmes aim to bridge this gap by working closely with communities, site contexts, clients, building materials and practical construction experiences.³ Design-build pedagogy changes the parameters of the learning experience, expanding the context, objectives and professional responsibility of student projects.⁴ In the case of the Fish River Aboriginal ranger accommodation project, these parameters are particularly unfamiliar - culturally, technically, and climatically. The ranger accommodation is an example of a design-build project that expands the learning experiences of architectural students beyond the conceptual design stages and introduces aspects of experiential learning that they would not usually be exposed to at university (Fig. 1).⁵

Within an Australian context, the project presented here is distinctive in terms of its remote setting, level of prefabrication and student engagement in the construction. Opportunities to integrate live projects and design-build experiences into Australian architectural education remain scarce.⁶ The University of South Australia (UniSA) is one of only two schools with an established design-build model currently offering such opportunities among the 22 Schools of Architecture in Australia today. The design-build programme at UniSA was established in 1993 to augment a predominantly theoretical approach to architectural education at UniSA, offering complementary elective courses in design and construction based on live projects. The programme is now the longest-running and largest practice-based teaching programme of its type in Australasia, based on the number, scale and complexity of architectural projects that have been designed and constructed by students.⁷



Figure 2:
One of the existing tent structures
(bala balas) before the upgrade
(UniSA 2015).

UniSA's design-build program helps to prepare graduates for professional practice through practical, hands-on building experience. However, each project also provides opportunities for unique collateral benefits. In the case of the Fish River Aboriginal Ranger Accommodation, the project presented an additional cultural and social dimension in the meeting of cultures between the architectural students and staff based in Adelaide and the Aboriginal rangers working at the Fish River Station in the Northern Territory, whom the project was built for through the Indigenous Land Corporation (ILC) now the Indigenous Land and Sea Corporation (ILSC). Specific educational aspects of the project included stakeholders' consultations, teamwork, technical skills, cost estimations, learning through building praxis, as well as post-occupancy thermal performance testing. The project introduced students to unfamiliar environmental and cultural contexts, transgressing expectations and breaking the dominant homogeneity of voices that can characterise architectural production.⁸ This paper reflects on how these aspects played a role in the recently built Fish River Aboriginal Ranger Accommodation. Since its completion, the project has received several architectural awards, among these the '2019 National Architecture Award: National Commendation for Small Architecture', as well as the '2019 Australian Institute of Architects' NT Architecture Awards: Yali-McNamara Award for Small Project Architecture', and the '2019 Australian Institute of Architects' NT Architecture Awards: The Indigenous Community Architecture Award'.

The project

The Design Construct programme of the University of South Australia was approached in 2016 by the ILC to assist with the provision of improved accommodation for Aboriginal rangers on a remote station in the Northern Territory, Australia. Fish River station employs four to eight rangers from the nearby community of Daly River and encourages Aboriginal rangers and family groups to work and spend time on their traditional land. The previous rangers' station accommodation was composed of rudimentary tent structures which would become uncomfortably hot when exposed to direct sun because of scorching radiant heat (Fig. 2). Furthermore, they lacked insect screening

and basic amenities for the rangers, such as shelves, lighting, ceiling fans, beds, and privacy. The ILC secured philanthropic funding (AUD 100,000) for the construction of upgraded rangers' accommodation to address these shortcomings. The project was then designed and built with students across a variety of design and construction disciplines over a period of two years.

Site analysis & consultation

The remote location of this project and field experience exposed students to challenges seldom encountered in traditional classroom-based design studios. The Fish River station is located fifty kilometres south of Daly River and two hundred and fifty kilometres south of Darwin. The station comprises 178,116 hectares of largely uninhabited land which is part of the National Reserve System that guarantees the national protection of native animals and lands. The ILSC manages the station with the traditional owners of these lands, the Wagiman, Labarganyan, Malak Malak and Kamu peoples.⁹ The Aboriginal rangers employed by the ILSC are often seasonal and not exclusively traditional owners. The users of the ranger accommodation are thus transient and of diverse peoples, and making references to specific nations or language groups was not considered beneficial to the consultation and design process. The consultation process focused on the direct input from those rangers present in the early discussions and their needs, as future users of the new accommodation.

The station is accessible by road which takes over three hours to drive from Darwin. Sections of the road require an off-road vehicle and are often not accessible during the wet season due to flooding. Fish River is characterised by a tropical climate, with an annual average day time temperature of 34°C and an annual average night-time temperature of 19°C. It is very dry from May to September (winter in the Southern hemisphere), while the mean monthly rainfall from December to March is above 100mm.¹⁰ This location represented a significant design challenge for the students, as it required them to work in and account for conditions that are uncommon in urban environments.

The design process required students to respond to the unfamiliar environmental, technical, social and cultural context of the project. This process began in late 2016 when two staff and seven master's students of the Design Construct specialisation travelled 3,000km with a hired bus to undertake an initial site visit to Fish River station and to meet the Aboriginal rangers that would use the accommodation. The journey itself took students through the desert centre of Australia and relative cultural extremes, stopping in towns where Aboriginal people made up as much as 50% of the population, compared to 1.5% in their home city of Adelaide.¹¹ Adelaide-based ILC staff facilitated this site visit and were also present during the stay in Fish River. The consultation process with the rangers was key to achieving a suitable building and was based on an approach of 'sitting down and talking it through'



Figure 3:
Design workshop with students and rangers on the Fish River station in late 2015 (UniSA 2015).

with an extensive on-site presence that has evolved from over twenty years of experience working with a variety of Aboriginal clients in remote Australian locations.¹² This methodology focuses on extended communication and time spent with the users during the pre-design, design and construction phases, building trust and understanding of the specific local Aboriginal context of each project, which varies greatly within Australia. Over five hundred different Aboriginal nation groups represent diverse language and cultural distinctions, which challenge conceptions of cultural homogeneity and generalisations about Australian Aboriginals.¹³ The multiculturalism of design-build projects in this context is further concentrated with international perspectives from the diverse Australian student population.

The design and consultation approach for this project included the following strategies:¹⁴

- Allowing time to build confidence and trust, e.g. by camping out on the ranger station;
- Informal conversations to allow space for questions to develop;
- Asking questions about cooking, sleeping, living preferences and use patterns;
- Incorporating various visual means of presenting ideas in the conversations.

The approach was deliberately informal and collaborative (Fig. 3). Ideas that came out of those conversations during the stay were incorporated into the

briefing and design development.

During the Fish River station stay, there were no formal presentations of designs to the rangers or the ILC staff. The Master's students and staff camped at the station for four days to spend time with the rangers. During that time, students and staff learned about the existing accommodation arrangements, explored potential places for new accommodation, and spent time with rangers to learn how they lived, worked and managed the land when they were based there. Students and staff also joined the rangers for lunch and dinner, which was often meat from wild animals that live in Fish River such as kangaroo, buffalo and tortoise. These joint meals were memorable occasions and created opportunities for conversations. For one of those dinners, the rangers created an oven in the ground by digging a big hole and then lighting a wood fire in it. When the wood was reduced to coal, they put kangaroo tails on it and more hot coal on top. After leaving it for one or two hours, the rangers ate the kangaroo tails with staff and students.

The Master's students and staff experienced being invited to Fish River as very special and the rangers were very hospitable. They set up a campsite for the students and staff, including shade structures, water tanks, showers, and toilets, which were simple outdoor enclosures. One of the most memorable moments for the students was when they were officially welcomed to the land by a local female Aboriginal elder, who performed a traditional welcome ceremony in the water. She stood with the students and staff in a running creek and splashed water on their heads and belly buttons. She blessed and welcomed them so they could pass through and swim in the water.

Initially, the master's students and staff were asked by the ILC staff to consider creating a new accommodation building on higher ground that provides year-round access. The current camp is not accessible during the wet season because of flooding. However, after exploring potential locations, new buildings on these sites turned out to be too costly for the limited budget available. The rangers were also keen to be provided with airconditioned transportable buildings, but the ILC wanted to avoid the high running costs and maintenance to keep these airconditioned in the hot weather and the existing solar system installed on-site did not have the capacity to cope with the energy demands of constant air conditioning.

During joint activities, such as lunches and dinners, 'consultations' about the design naturally emerged in conversations, which were often based around pen and paper. The design ideas and considerations arose from many hours of talking about it, which would have been impossible in a short client briefing. For the duration of the visit, students and staff took part in the lived experience of the daily life of the rangers and experienced it with them. The conversations were ongoing, exploring design options, suitable locations and possible solutions. From these conversations, several key issues emerged that the rangers were concerned about. One of these was the importance of

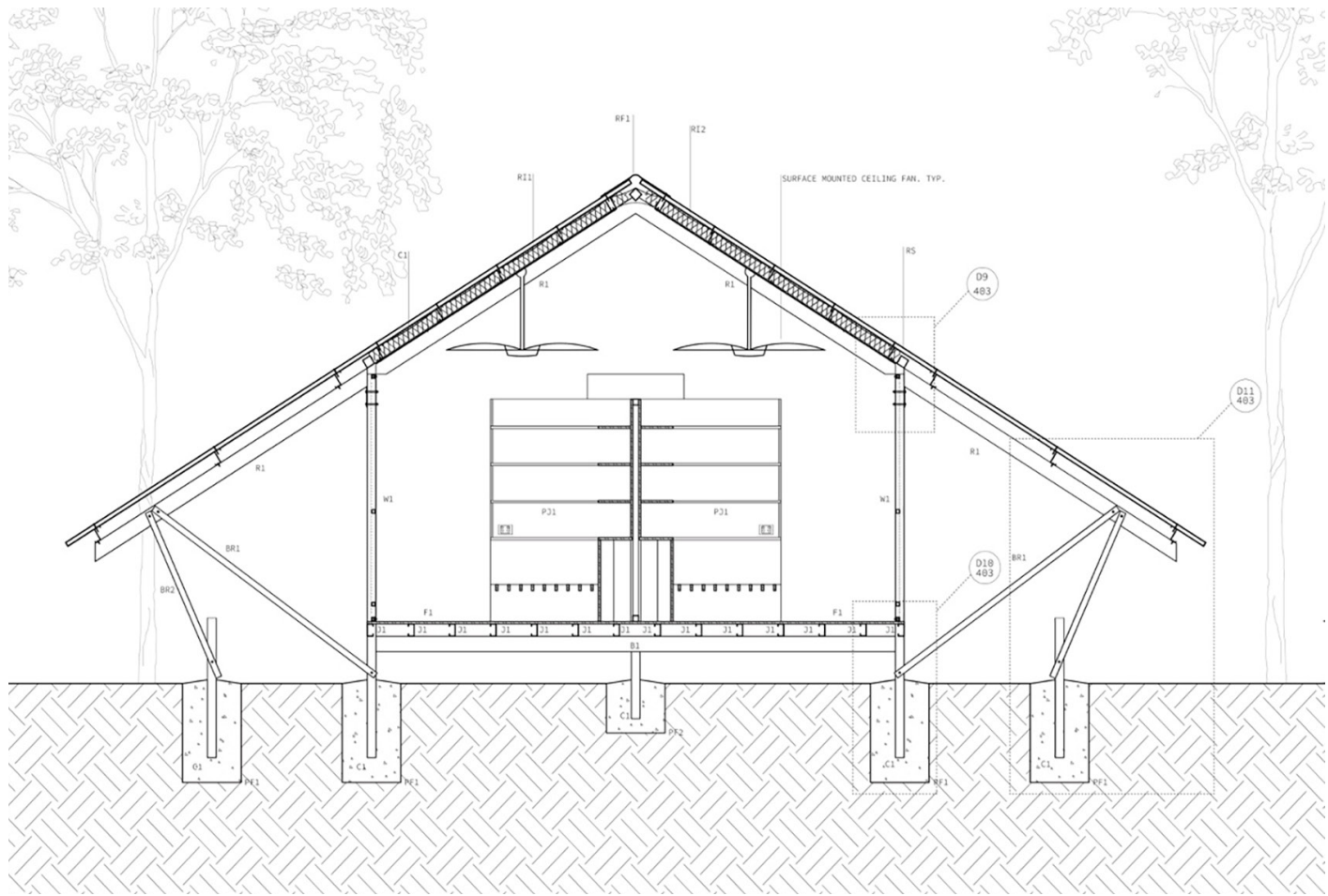
the buildings being raised off the ground to be safe from wild animals such as snakes, spiders and wild pigs. Having good air circulation at night to keep cool was seen as important if air conditioning was not an option. Privacy came up as a concern, both the rangers individually and also between male and female rangers. An important consideration that arose in these conversations was therefore for male and female accommodation to be separated sufficiently to ensure privacy.

After the site visit, the students developed design proposals and provided bed and sleeping layout options. These were then presented to and passed on to the manager and staff of the ILC in Adelaide who discussed them with the rangers. They chose the option of dividing up the accommodation area into four sleeping areas to create a degree of individual privacy. However, this division into four areas did not prove popular with rangers in the long term and was modified after construction.

The consultation process was facilitated and mediated by the Adelaide-based ILC staff. The Aboriginal rangers were also employees of the ILC which may have influenced the communication. Despite the rangers appearing to have a good relationship with their employer they may still have been shy about expressing their opinions honestly when their employer was present during the consultation. Another factor was that the rangers present during the consultation were not necessarily the same as those that later used the accommodation. Upgrading the accommodation was intended to make working on Fish River station more attractive. However, the conditions in this remote location still do not have the kind of amenities and comfort typically available in less remote areas in Australia.

The time spent on-site to understand the environmental conditions and the rangers' needs was part of the necessary two-way acclimatisation. Staff and students needed to appreciate and understand the unfamiliar territory by living amid the daytime heat and dusty dryness of the station, surrounded by flies, with crocodiles and wild buffalo nearby within Fish River land. In addition to getting acquainted with the extreme environment, students and staff tried to get to know the daily needs, living conditions and cultural sensitivities of Aboriginal rangers who called this their home for a large part of the year. Similarly, it was important to give time to local rangers to get to know the students and build trust. It was this time to acclimatise to the unfamiliar and develop soft communication skills that the project was founded on and that exemplified the value of authentic pre-design investigation, which traditional educational models rarely afford the time for.

The first-hand experiences through camping on-site and the collaborative consultation process with end-users helped clarify project requirements and develop design strategies that addressed environmental aspects, and the rangers' living preferences. Several insights from this consultation process and staying on the site informed the design. This included the decision to



ensure the accommodation was raised off the ground to safeguard against heavy rainfalls, and wild animals including snakes, and termites. Furthermore, the remote location of the station required all electricity to be generated on-site using a photovoltaic system with a backup generator. The buildings, therefore, needed to be designed to minimise energy use and could not be overly reliant on the limited capacity of the existing photovoltaic system. Despite the preference of the rangers to have air-conditioned spaces, climatic comfort needed to be addressed by prioritising passive systems with minimal power use. Another key point, discovered during this consultation, was that the station is only used during the dry season (May to October). Road access is limited due to flooding during the wet season. Discussion around sleeping arrangements also revealed that the male rangers preferred cohabitation rather than sleeping in separate rooms. This preference had a significant impact on the design brief while it also had to consider the need for privacy and storage of personal belongings. It was also made clear that female rangers or guests would need accommodation separated from the men's quarters to ensure suitable levels of visual privacy. These accommodation preferences showed the students and teaching staff that preconceptions about living preferences could not be taken for granted, which has also been discussed in the literature on indigenous housing.¹⁵ The requirement for visual privacy extended to include movement to and from bathrooms,

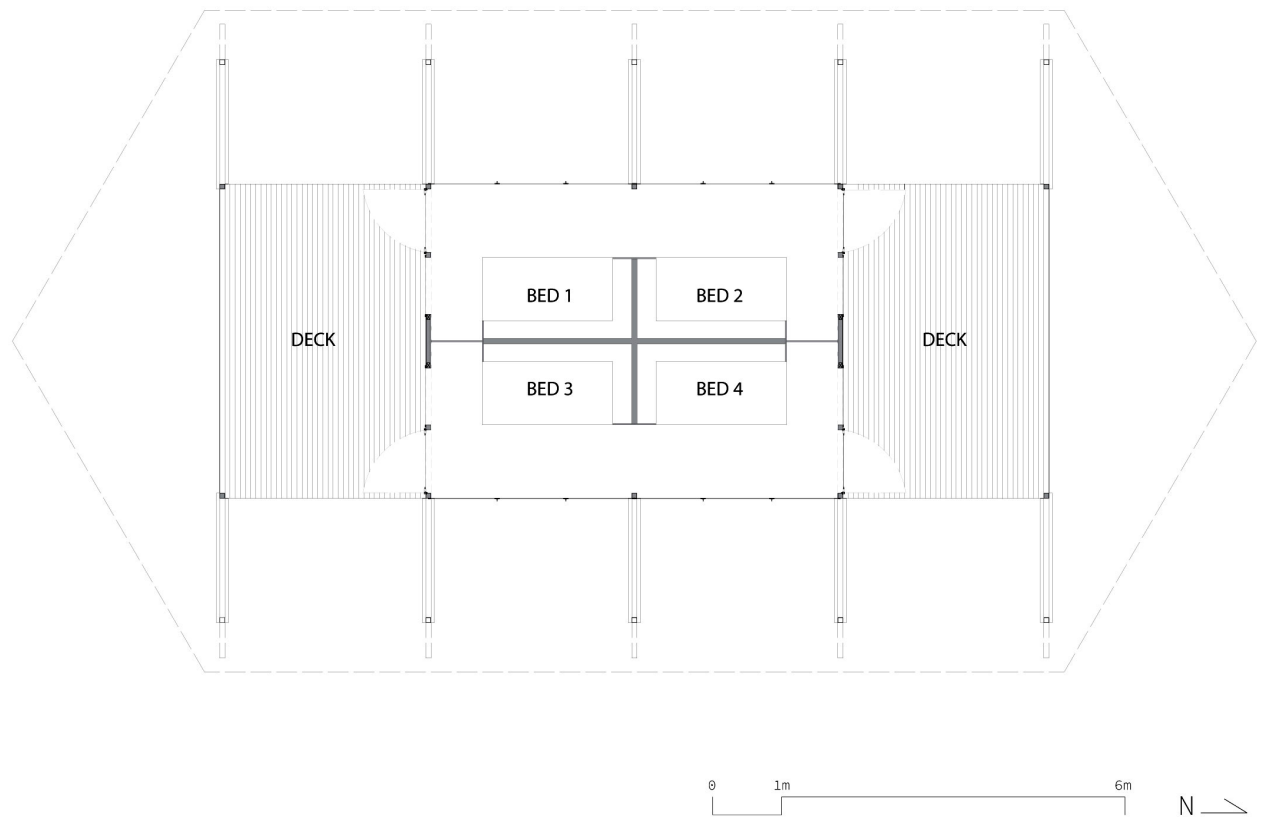
Figure 4: The upgraded accommodation is designed to make best use of its natural environment without the need for artificial cooling or heating (UniSA 2015).

which set up very specific site requirements and patterns of movement relative to amenities. From this initial consultation and briefing process, an overarching design focus was on creating accommodation for the men and women of the Fish River Aboriginal ranger community that is considerate of its environmental context, siting and footprint, as well as social and cultural customs of its inhabitants.

Design process & testing

The challenge for the team of staff and students working on the project was not only to address the complex design criteria uncovered in the pre-design stage, but also to create a technically innovative prefabricated solution that addressed the transport limitations of the remote location. Materials had to be economically packed to reduce weight and volume to minimise the high transport costs (approximately 10% of the project budget), which included long distances by road and rail. Rough dirt roads and slippery creek crossings to access the site required building components to be securely packed to withstand the journey. Several design options with space to accommodate eight rangers (four male and four female) were presented to the ILC in late 2017 and were compared in terms of cost, comfort and buildability. The selected option was to retrofit and update the existing accommodation with a new roof and screening to create insect-proof, naturally ventilated sleeping quarters (Fig. 4). This solution addressed the onsite power limitations, being significantly lower in its operational energy consumption and maintenance than air-conditioned transportable units, which are commonly used in similar remote accommodation scenarios such as mining camps. This passive design strategy was supported by the consideration that the rangers use the accommodation only during the dry season and mainly at night for sleeping, when the outdoor temperature is within more comfortable levels (ranging from 14 to 22°C).¹⁶ Air conditioning was therefore not required at night, provided the accommodation was well ventilated and used lightweight construction. The practical limitations of available power, in this case, led to sustainable passive strategies being the preferred design solution.

Material and transportation costs also encouraged minimising waste on-site and the introduction of new material by re-using as much of the existing structure as possible. The steel frame of the existing tents was re-used and deemed suitable because it was lightweight, long-lasting, and, most importantly withstands termites common in the area. This decision dictated that the extension of the frame and all new structural work be continued in steel. The proposal maintained the raised floor to ensure ventilation and to protect from insects, wildlife and flooding. The roof overhangs were extended considerably, not only to maximise shading, but also to provide additional privacy which was identified as a key consideration in the pre-design process. The four walls of the enclosed sleeping area were designed as perforated screens to allow continuous airflow, and the centre of the roof was insulated to lessen heat gain through the roof.



The beds and storage areas were designed to be integrated into the accommodation as a central joinery unit. This would create a level of privacy for each occupant yet still provide the desired sense of cohabitation, which had been identified in the pre-design stage (Fig. 5). The enclosed sleeping zone was centralised on the existing structure to create a front and rear deck, providing each occupant with private access between their sleeping zone and outdoor deck space, addressing independence and privacy within the limited floor area. All these key design measures were a result of the pre-design work undertaken during extensive client consultation, as well as responding to cost, transport, and environmental considerations that the students and staff engaged with during the design process.

Figure 5: The upgraded accommodation plan provides sleeping space for four rangers (UniSA 2017).

P r e f a b r i c a t i o n a n d c o n s t r u c t i o n

The prefabrication of the project involved fifty students from design, architecture, interior architecture, engineering, product design and construction management degrees over three separate elective courses in six months in 2017 and 2018. The prefabrication was a significant logistical challenge – both in terms of meeting a short timeframe as well as transportation to the remote location which required all materials and tools



Figure 6:
Packing of container in June 2018
(Joti Weijers-Coghlan 2018).

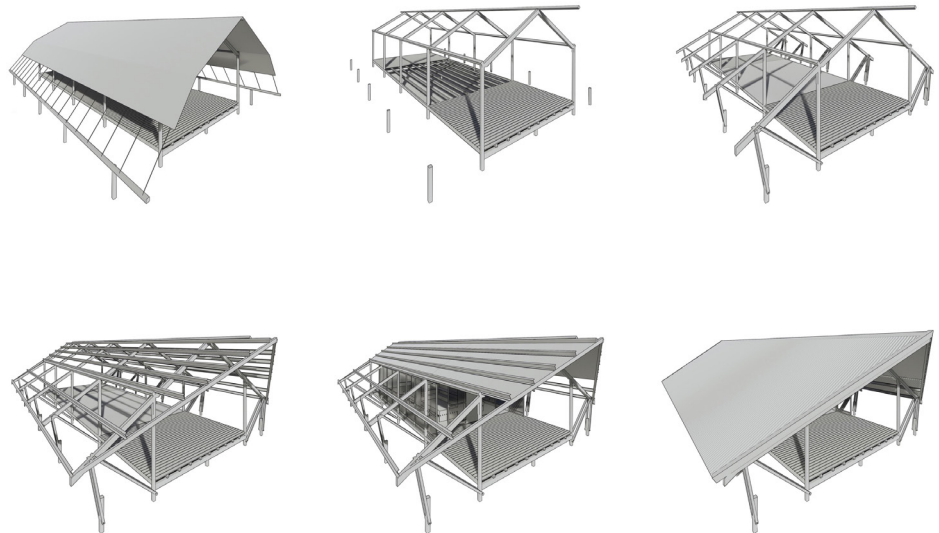


Figure 7:
Construction sequence of
proposed retrofit. First image (top
left) shows the existing tent.
Last image (bottom right) shows the
retrofitted design (UniSA 2017).

to be packed in advance. Students were responsible for coordinating detailed documentation necessary to specify, order and process all building materials, ensuring wherever possible to prefabricate with materials durable enough to survive transportation to the site. A twenty-foot shipping container was purchased, and modified to carry the prefabricated building components and the packing of this was part of the pre-departure preparations for the students involved in the construction on-site (Fig. 6). Most of the components were prefabricated, with only some additional finishing on-site, such as for the ridge capping and edge flashing (Fig. 7).

In June 2018, 25 students travelled to the site with a two-week timeframe



Figure 8: Rangers' accommodation under construction. The existing steel structure and foundations have been reused and incorporated into the new buildings. The roof has been updated with reflective insulation and a ventilated cavity to provide better protection from the sun (Joti Weijers-Coghlan 2018).

to complete construction. This short period was dictated by the academic calendar in conjunction with seasonal access to the site. For the on-site construction work, small teams of three to four students took on specific roles, depending on preferences and skills available in the teams. Some students had already gained construction experience, for example from previous Design Construct electives. These students often spontaneously took on leadership and coordination roles within their group, particularly if they had been involved in the prefabrication of specific components such as the joinery or roof framing (Fig. 8). This continuity of student involvement to experience sequential stages of a project over multiple elective courses was an opportunity offered to Master of Architecture Students at the University of South Australia through a curriculum model which offers a free elective choice every semester of the two-year degree.

Post-construction evaluation of environmental performance

Following the completion and handover of the accommodation in June 2018, the Design Construct programme received funding to undertake a post-construction thermal performance evaluation, recognising the value of follow-up assessments to determine if the project ambitions were met in terms of environmental performance.¹⁷ Student design-build projects inherently have a number of potentially conflicting ambitions that include pedagogical outcomes, client aspirations and technical performance and methods for holistic assessment of design-build projects are contentious and underdeveloped.¹⁸ The project aimed to provide suitable and environmentally responsive accommodation for the station rangers. However, they also have wider implications for the design of remote, low-energy buildings in hot climates in general and outcomes may pose questions about

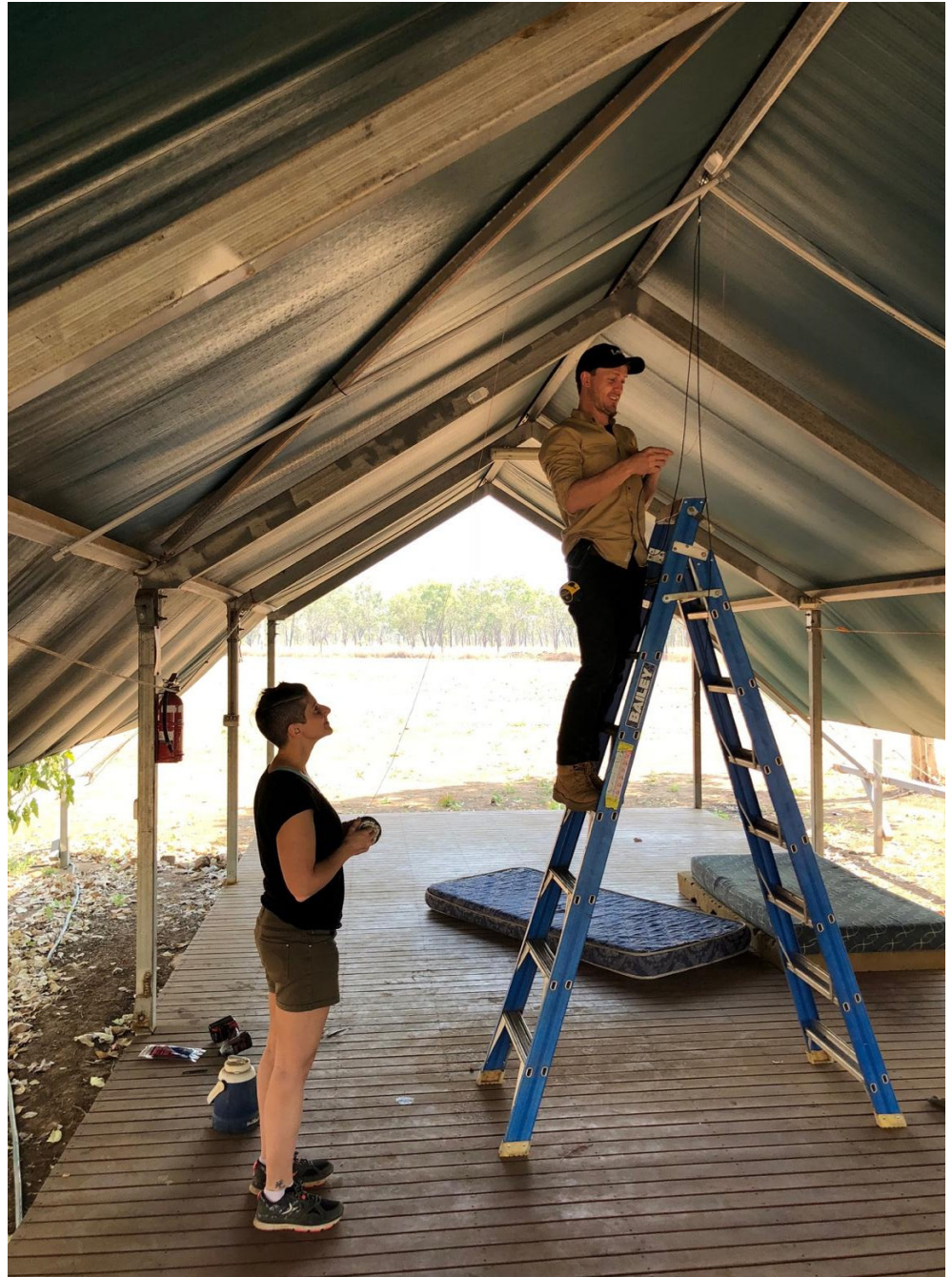


Figure 9:
Installation of a thermal sensor
network in the existing tent
(UniSA 2018).

the wide-ranging use of energy-intensive transportable air-conditioned housing. The authors, therefore, returned to the rangers' station in August 2018 to install temperature, humidity, and radiant heat sensors (Fig. 9). This post-construction evaluation was intended to help determine if this kind of naturally ventilated design solution could serve as a model for accommodation in similar climates and be employed elsewhere (Fig. 10). Analysis of the data is still underway, but preliminary findings indicate that the retrofitted roof structure has reduced the transmission of daytime heat to the inner surface of the roof and that the new accommodation provides better levels of comfort than the old one (Fig. 11).



Figure 10:
The installed thermal sensor network in the retrofitted accommodation (UniSA 2018).



Figure 11:
Indoor temperature difference between the original and retrofitted accommodation expressed as function of the external temperature. Colours indicate the time of the day, where red is midday and dark blue midnight (Arianna Brambilla 2022).

Reception and conclusions

The Fish River Aboriginal Ranger Accommodation project provided students with an opportunity to transgress the traditional studio boundaries and engage in a live project with a remote Aboriginal community, learning varied soft and hard skills relevant to architectural design and production. The

project was also an inquiry into developing a culturally and environmentally responsive, low-cost and low-energy accommodation upgrade that would be considerate of the local ecosystem and respond to the needs of the rangers at the station. The naturally ventilated, low-impact design approach of the structures has so far been welcomed by its users, who immediately moved into the new structures and have occupied them since. The building has also been recognised in state and national architectural awards, providing a platform for sharing the knowledge embodied in the built project with a broader professional audience. Judges of the Northern Territory Architecture Awards committee of the Australian Institute of Architects visited the Fish River Station in 2018 and spoke to the rangers about their experiences. The judges highlighted their impression of user engagement:

Here the traditional owners have unbridled empathy and pride in the project and are positive about the process which seemed genuinely responsive to cultural protocols and preferences. It was no doubt also a rewarding educational and social experience for the students likely learning more here than in other academic projects.¹⁹

Through this project, staff, students and the rangers entered an unfamiliar territory that demanded diverse personal, professional, cultural and technical skills. This two-way learning experience of working with the Aboriginal rangers to create the new accommodation at Fish River station contributed to the architectural outcome.

In terms of technically dealing with an unfamiliar environmental context, the project has been an improvement over the previous accommodation by stabilising the indoor temperatures and keeping it more comfortable, especially during the day, as thermal performance testing showed. Culturally, however, it is more difficult to tell how well the project has responded to its unfamiliar context and user requirements. The design process, as discussed above, incorporated recommendations on cross-cultural consultation which involved living with the rangers during the station's pre-design, design and construction stage. A full post-occupation study with the users seemed unacceptably intrusive without assurance of improvements to follow from such data collection and would not be aligned with the ethics of 'no survey without service'. However, the Design Construct programme has remained in contact informally with the ILC and the users about their experiences.

While the improved accommodation was generally well-received by the rangers who were first involved in the initial consultation, about a year after construction, newly employed rangers felt differently about the accommodation. They removed the built-in beds and furniture to create their own, more flexible sleeping arrangements. This post-construction 'user feedback' of removing the built-in furniture could be seen as a consultation failure during the design phase. Alternatively, it could be seen as a result of varying user preferences and highlights the difficulty in defining general



Figure 12:
Completed Aboriginal ranger accommodation with construction team and rangers. Labu is the name of the Aboriginal people who are the traditional owners of the land and who work on the Fish River station (Nichola Frayne 2018).

preferences. Fortunately, the built-in furniture was modular and easily removable. Such changes could be seen as part of the ongoing life of the building, being adapted by the users to their own needs and tastes over time (Fig. 12).

The project took place in a cultural context with a long, complex and laden history. The Fish River land itself is an area that has been purchased for its traditional owners to be able to return to the Country. Within this context, the consultation process was conducted with the best intentions, taking good practices into account. This approach allowed for opportunities for interaction and meeting points between, students, staff and rangers. Yet, it also needs to be acknowledged that the rangers were employees, rather than clients or designers themselves, and the reconfiguration of the internal space not long after construction showed that the extended consultation process was not successful in every regard. The consultation process did not foresee the preferences of new groups of rangers, who created and made their own space, rather than accept the provided solution. Perhaps they were simply unhappy with a fixed, inflexible arrangement and a lack of opportunity to create their own arrangements. Equally, removing and altering the provided setup may have been an expression of the rangers exercising their spatial agency. A future approach can and should go beyond design consultation, however well-developed and intentioned, and new ways need to be found to give the traditional owners of the land more agency in the design process itself, either as part of the design team or by adopting a more integrated co-design approach.

In his talk, *Finding Country*, the Aboriginal architect Kevin O'Brien reflects on the meaning of Country. He expresses his understanding of our occupation of space as an ongoing process that exists at that moment and precludes

permanent ownership of space. We 'camp' on this Earth temporarily rather than own it. According to O'Brien:

Country is an Aboriginal Idea. It is an idea that binds groupings of Aboriginal people to the place of their ancestors, past, current and future. It understands that every moment of the land, sea and sky, its particles, its prospects and its prompts, enables life. It is revealed over time by camping in it and guides my way into architecture. There is no disenfranchisement, no censorship and no ownership. Country is a belief and that is mine.²⁰

Architecture viewed in that way suggests spatial arrangements are neither permanently right nor wrong but are instead about how space is used at that time. The design and layout of the Fish River accommodation can also be viewed from that perspective. The changes made by the new group of rangers suited and expressed their needs at that moment. Architecture, even with the best consultation, cannot expect to permanently address all needs of future occupants.

The project presented here is a case study and example of designing and constructing within an unfamiliar environmental and cultural context but does not claim to provide final answers. While a collaborative approach with extensive stakeholder consultation is essential, every project has its own specific competing challenges - culturally, technically and educationally. Projects such as this one, while not without failures and pitfalls, are hopefully part of an ongoing process of positive encounters that are enriching for the students, staff and users.

REFERENCES

- 1 Ahmed Sarhan and Peter Rutherford, 'Integrating Sustainability in the Architectural Design Education Process-taxonomy of Challenges and Guidelines', in *Fusion - Proceedings of the 32nd eCAADe Conference* (Newcastle upon Tyne, UK, 2014), 323-332.
- 2 Shafik I. Rifaat, 'The Multidisciplinary Approach to Architectural Education: Bridging the Gap between Academic Education and the Complexities of Professional Practice', in *IOP Conference Series: Materials Science and Engineering*, Volume 471 (IOP Publishing, 24 February 2019), 1-15.
- 3 Vincent B. Canizaro, 'Design-build in Architectural Education: Motivations, Practices, Challenges, Successes and Failures', *ArchNet-IJAR: International Journal of Architectural Research*, 6-3 (2012), 20 - 36 <10.26687/archnet-ijar.v6i3.113> [accessed 10 July 2022].
- 4 Louise Wallis, 'Building the Studio Environment', in *Design Studio Pedagogy*, ed. by Ashraf M. Salama and Nicholas Wilkinson (Gateshead: Urban International Press, 2007), pp. 201-202.
- 5 David A. Kolb, *Experiential Learning: Experience as the Source of Learning and Development* (Upper Saddle River: FT press, 2014).
- 6 Melonie Bayl-Smith, 'BuildAbility: the Future of Construction Education', *New South Wales: New South Wales Architects Registration Board*, (2011), 1-71. <<https://www.architects.nsw.gov.au/download/BHTS/Buildability-Melonie%20Bayl-Smith-FINAL-lo-res.pdf>> [accessed 10 July 2022]; Alex Maroya, Gill Matthewson, and Louise Wallis, 'Architectural Education and the Profession in Australia and New Zealand', *Architects Accreditation Council of Australia, NSW, Australia*, (2019), 1-118 <<https://www.aaca.org.au/wp-content/uploads/Architectural-Education-and-The-Profession-in-Australia-and-New-Zealand.pdf>> [accessed 10 July 2022].
- 7 David Morris and Joti Weijers-Coghlan, 'Making Do. Enhanced Architectural Education through Pedagogical, Cultural, and Environmental Contrasts', in *Proceedings of Architecture Connects Association of Architectural Educators, 4th International Conference* (Oxford, Oxford Brookes University, UK, 2017), 211-220.
- 8 Wanda Katja Liebermann, 'Teaching Embodiment: Disability, Subjectivity, and Architectural Education', *The Journal of Architecture*, 24,6 (2019), 803-828 <<https://doi.org/10.1080/13602365.2019.1684974>> [accessed 10 July 2022].
- 9 Wikipedia, Fish River Station, *Wikipedia The Free Encyclopedia*, (2021) <https://en.wikipedia.org/wiki/Fish_River_Station> [accessed 24 March 2022].
- 10 Bureau of Meteorology, 'Daly River Climate History', *Australian Meteorology*, (2022) <<http://www.meteorology.com.au/local-climate-history/nt/daly-river>>

[accessed 8 September 2019].

11 Australian Bureau of Statistics, 'Adelaide 2016 Census All Persons QuickStats', *Australian Bureau of Statistics*, (2016) <<https://www.abs.gov.au/census/find-census-data/quickstats/2016/UCL401001>> [accessed 18 July 2022].

12 Gini Lee and David Morris, 'Sitting Down and Talking it Through: How Consultation Can Lead to Better Designed Environments for Remote Indigenous Communities', in *Proceedings of Building for Diversity National Housing Conference* (Perth, Australia, 26-28 October 2005), 317-335 <https://www.academia.edu/4979310/Sitting_Down_and_Talking_it_Through_How_Consultation_Can_Lead_to_Better_Designed_Environments_for_Remote_Indigenous_Communities> [accessed 10 July 2022].

13 David R Horton, 'Map of Indigenous Australia', *Encyclopaedia of Aboriginal Australia*, (1996) <<https://aiatsis.gov.au/explore/map-indigenous-australia>> [accessed 24 March 2022].

14 Gini Lee and David Morris, 'Best Practice Models for Effective Consultation towards Improving Built Environment Outcomes for Remote Indigenous Communities', *AHURI Final Report No. 76*, (2005), 1 - 56 <<https://www.ahuri.edu.au/research/final-reports/76>> [accessed 10 July 2022].

15 John Fien, Esther Charlesworth, Gini Lee, Douglas Baker, Tammy Grice, and David Morris, 'Life on the Edge: Housing Experiences in Three Remote Australian Indigenous Settlements', *Habitat International*, 35-2 (2011), 343-349 <<https://doi.org/10.1016/j.habitatint.2010.11.007>> [accessed 10 July 2022].

16 Ibid.

17 Stephen Kieran, 'Research in Design: Planning Doing Monitoring Learning', *Journal of Architectural Education*, 61 -1(2007), 27-31 <<https://doi.org/10.1111/j.1531-314X.2007.00125.x>> [accessed 10 July 2022].

Other authors, such as Stephen Kieran, inspired the importance of following up on the design performance after construction.

18 Vera Simone Bader and Andrews Lepik, *Experience in Action! Design Build in Architecture* (München: Detail, 2020).

19 Australian Institute of Architects, 'Final Report: Northern Territory Architecture Awards 2019', *Australian Institute of Architects* (2019), 1-10 (p. 8).

20 Kevin O'Brien, *Finding Country*, online video recording, YouTube, 16 April 2013, <https://www.youtube.com/watch?v=_zM4HmnE9Kk> [accessed 2 August 2022].