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Outside the Box: Alternative Housing Models for Remote Aboriginal communities

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Abstract
Over the past six years, a design and construction project has been unfolding in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands of northern South Australia. Through working with a remote Aboriginal community at Mimili, the APY Council, and the South Australian Department for Families and Communities, a *tawara watiku*, camp for single men, is being constructed by design students and architectural staff from the University of South Australia. Based upon extensive consultation and development over time, the design and siting of the *tawara watiku* is a response to the cultural requirements of the local people, Anangu.

This paper reports upon initial consultation and research that led to the development of alternative housing and spatial planning models aimed at responding to the cultural traditions and natural environments of Aboriginal communities. It tracks the design outcomes, workshop prefabrication and on-site construction of the buildings that constitute the *tawara*'s architectural program. Community consultation throughout this project led to suggestions for a *tjilpi* house for elder men and an *alukuru* or camp for single women. The paper reports on the design work in progress toward these alternative models particularly the siting relationships to other family households and the design of outdoor living spaces which address issues of Aboriginal housing which are 'outside the box'.

Outside the box: a cultural approach to the design of alternative housing, planning and landscape models in arid remote Aboriginal communities

This paper is an account of the work undertaken by researchers, designers, students and builders from the University of South Australia over ten or more years, charting the gradual design development of alternative housing, landscaping and planning models for Aboriginal communities in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands of central Australia. Over the course of many conversations held in 2003 with the people who live and work in the APY Lands of northern South Australia there was a clear message that the standardised design of houses being installed over the Lands provided little in the way of culturally appropriate living spaces for Anangu. Drawing upon this advice and informed by ongoing consultation and negotiation with the Mimili Community, ideas for buildings have developed into designs that respond to a range of identified cultural needs including the traditional spatial separation of single men and women. These cultural needs coupled with the customary requirements of Anangu elders to spend instructional time with young people, away from the community, have become the initial focus for the design of a *tawara watiku*, a camp for single men as an alternative housing model.

The University's involvement with the Mimili Community investigating alternative housing models was first reported during the genesis of the project in an AHURI funded report that proposed a design framework for indigenous housing across remote areas of Australia (Fien, Charlesworth, Lee, Morris, Baker & Grice, 2008: 49-63). This first case study located the Mimili Community and its context in the APY Lands and sought to document the range of physical, cultural, environmental, economic and governance conditions that gave rise to the *tawara watiku* project and which influenced the form and materiality of the resulting buildings in their setting. While the case study looked generally at housing and community planning from an architectural and construction perspective, the need for culturally driven solutions for well-designed planning, housing and landscape outcomes was paramount to developing the brief for the facility. This paper traces the extended consultation and ongoing visits to the community to enable effective planning and on-site implementation of the two recently completed wings of these quarters for single men. It also introduces the subsequent stages of the current, as yet unfinished, project which has evolved through better understanding the cultural purpose of the *tawara* and the need for supplementary accommodation for senior men or *tjilpi* house. Finally, the paper reports on preliminary ideas to develop an *alukuru,* a house or camp for single women.

The origins of the University of South Australia's design and construction projects with remote Aboriginal communities

The realisation of the *tawara watiku* is a result of research, design, building and community engagement involving many University students and staff. In 1999, the Schools of Architecture at the Universities of South Australia and New South Wales were invited to involve students in numerous design projects in and around the Aboriginal community of Warburton in Western Australia. This was the first experience for most of the staff and students to be engaged with a remote Aboriginal community and to experience an arid desert environment. Of the many projects which groups of students addressed, including housing and community planning proposals, was a Visitors Centre for the small isolated community at Patjarr in the Gibson Desert, 230km north of Warburton. This project was intended to facilitate the sale of art and artefacts to visitors travelling by air en route across Western Australia. The project design was initiated on site and later developed and prefabricated by students at their respective Universities as part of their architectural and other design related undergraduate programs. The Patjarr Visitors Centre was opened in 2003, and the community's appreciation acknowledged with traditional dancing and singing.

Figure 1: Patjarr Visitors Centre, 2003

The Patjarr project provided an opportunity to see the ramifications of the contemporary impact of mainstream culture upon a remote Aboriginal people. Only as recently as the 1960s the Pintubi people of the Patjarr region were living traditionally as nomadic hunter-gatherers. 'The policy of the government at that time was to encourage those that remained in the desert to settle in the mission stations or reserves on the fringes of settlements…to be 'civilised'' (Peasley, 1983: 20). Warburton, like other mission stations in remote Australia, became a concentration of numerous disparate nomadic groups, as it remains today. However changes in government policy influenced by the Land Rights Movements in the 1970s and 1980s permitted the establishment of small communities on traditional homelands of which Patjarr was a typical example.

In 1999, Patjarr was a community of approximately 50 people housed in what are termed 'transition' houses (houses intended to provide a transition from nomadic to mainstream culture) comprising two corrugated steel clad rooms either side of a concrete breezeway containing a rudimentary kitchen sink. The houses were orientated to the road on contiguous approximately 1000m^2 (1/4 acre) blocks delineated by low cyclone fencing. There was a long-drop toilet at the back of the house linked to a shower heated by a chip heater. Most people lived in the yards outside the houses. They gathered around small fires and sheltered by rudimentary windbreaks and shade structures made from whatever was at hand including fence pickets, reinforcing mesh, cardboard boxes and blankets.

Perhaps because of our then unfamiliarity with Aboriginal communities, the vision of streets and houses, setbacks and fences in such an isolated and ancient landscape appeared starkly incongruous. This apparent contradiction begged the question: how were these patterns of suburban planning suited to such a harsh, exposed and arid landscape and, additionally, how do they suit a people who are so closely and culturally bound to that landscape?

From an architectural viewpoint it was evident that the houses were deficient in a number of ways including that they were not designed nor oriented in response to sun, wind or landscape context, nor were they designed or sited to prevent the inundation of stormwater. Additionally, they provided little or no shade to external walls exposed to sun. Such design deficiencies indicated that the housing was not informed by any fundamental architectural consideration of the natural and physical context of the place and, quite possibly, not cognisant of the cultural traditions, knowledge or preferences of the people.

Settlement planning and housing design issues

Inspired the Patjarr project the issue of appropriate housing design led to research documented in a Lee and Morris AHURI funded project which investigated existing practices for consultation and engagement within the context of built environment and housing design and delivery to remote Aboriginal communities (Lee & Morris, 2005). Findings confirmed many similarities between Patjarr and other Aboriginal communities in central Australia. These places evolved from the gathering of disparate kinship groups and often from different language groups into pastoral settlements or missions. The notion that these communities were socially and culturally homogenous is a cultural simplification based on assumptions that within Aboriginal communities there was a strong ethic of sharing (Hirst, 2004:15). The fact that this ethic of sharing is amongst kin means that existing communities are usually a group of families bound by a bore or a store but in other circumstances would not be living together (Tregenza, 2002). Mainstream notions of 'community' therefore continue to be misleading particularly in justifying the adoption of conventional spatial patterns in planning for Aboriginal communities.

This research also established valuable consultation principles to inform future design projects for the University design group. It found that 'Best practice consultation is process that is ongoing and cyclical and that facilitates the evaluation and documentation of built environment projects over the life projects, from inception to completion and continuing through to maintenance programs and post occupancy review' (Lee & Morris, 2005: v). In summary the universal principles of consultation include engagement to gain negotiated and mutual understanding, communication to develop appropriate local protocols, reciprocation towards relationship building, feedback including post occupancy evaluation with Indigenous involvement and finally continuity to build both cross-cultural and cross-disciplinary knowledge.

The cultural structures which divide Pitjantjatjara and Yankunytjatjara societies into kinship groups and generational divisions apply to all facets of community and family living environments. They inform cultural and spatial relationships that traditionally structure all dwelling, ceremonial, community, and camp arrangements. These structures determine avoidance laws, which are culturally prescribed rules governing behavioural relations among kin which when broken can create stress and conflict. In current housing design these important divisions are not facilitated by existing planning arrangements with their closely sited houses and internal layouts, which consequentially contribute to family disruption. (Tregenza, Day, Pholeros, 2005, Fien et al, 2008: 59)

During the course of fieldwork undertaken throughout the APY Lands and including Alice Springs, Lee and Morris were able to observe a number of conditions that were reinforced through consultations with local architects, planners, service providers and builders. Up until the 1970s early settlement patterns usually evolved organically according to cultural, landscape and environmental conditions. Today services reticulation and town planning regimes suited to suburban contexts have become the siting determinants for small remote communities. Such planning rationale often results in the inappropriate siting of houses and facilities contrary to Aboriginal cultural preferences, contributing to social problems and resulting housing dysfunction. Street layouts in Aboriginal communities adopt familiar variations on grids, crescents and cul-de-sacs. Houses are usually sited centrally on contiguous blocks or yards and face the street conforming to planning guidelines specifying required setbacks, seemingly oblivious to local environmental conditions or social customs. The most recent community structure plans for communities in the APY Lands enshrine a range of standardised planning conventions. From infilling new houses on areas of vacant land between existing subdivisions down to the prosaic requirements for housing setbacks, the status quo remains (Taylor Burrell Barnett, 2007). Normative suburban planning is adopted over cultural considerations or taking note of community consultation to enable variance in spatial planning patterns.

The similarity of housing types across the APY Lands has been identified where most housing plans

for Anangu come from a stock of standardised 'designs' developed as variations of a typical nuclear family layout usually ranging from 2 to 4 bedrooms. (Lee & Morris, 2005, Fien, et al, 2008). In recent years however, new design responses to climatic considerations have provided verandas around houses. Recommendations contained in the National Indigenous Housing Guide have resulted in changes to wet area layouts and their relationship to the overall house plan alongside other improvements to the function and amenity of houses, aimed at improving health standards (FaHCSIA, 2008).

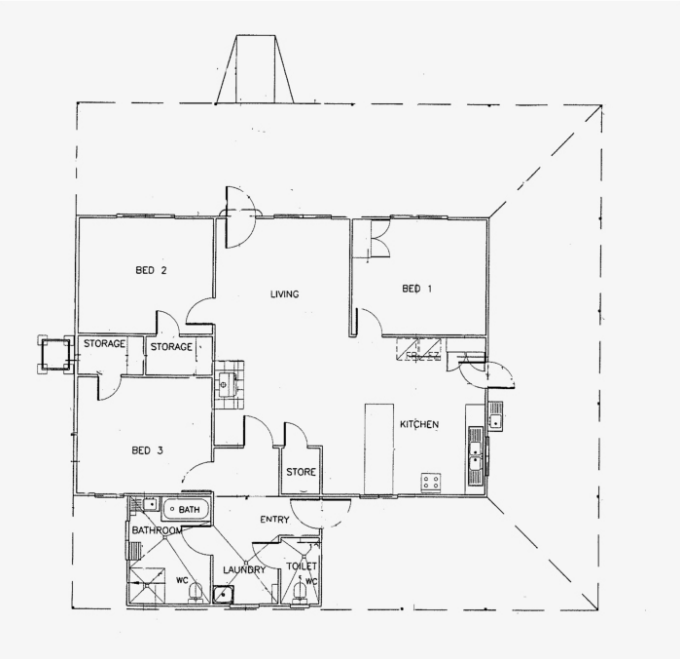

Figure 2: Standard 3 bedroom house plan built in Mimili in early 2005

Currently, standardised house design and documentation projects have been custom-built by local contractors who are awarded a tender for a package of houses based on cyclical State Government tender processes. Because of cost constraints, alternative design options in response to remote area and arid requirements are regarded as extra cost and precluded from tender, with the result that the houses are becoming less robust and susceptible to higher ongoing maintenance costs. Currently houses are modular, prefabricated, steel-framed construction on concrete slab, with a combination of plywood and fibre cement sheet interior walls.

In response to overcrowding issues where extended families live in houses intended for nuclear families, recent trends are towards larger bedrooms at the expense of corridor space. The apparent economy of larger bedrooms offset against space for corridors or hallways compromises the usability of the living area that serves as the circulation thoroughfare for accessing all external and internal doorways. Perhaps more significantly bedrooms opening directly to the living space compromise the privacy of those in bedrooms and do little to accommodate complex cultural sensitivities.

The other aspect of standardised housing and planning is the disregard for the climatic and topographical context in which houses are sited. Houses are generally oriented to the street so that the potential to maximise the benefits of the winter sun or to moderate the effects of the summer sun are not exploited. Many houses do not provide sufficient shading and insulation. While these patterns are no different from the norms in non-Indigenous communities, the climatic extremes of desert environments and the costs to households for energy heating and cooling in such remote locations have compounding consequences.

What is also clear from the AHURI research and feedback received during fieldwork is that Anangu have little direct involvement in current (and past) consultation. Planning processes and housing

agencies have had difficulty in ascertaining the desires and needs of housing recipients due to limited, underfunded and poorly focused consultation over the years.

The evolution of alternative housing design models

Ongoing discussions with community members and housing providers working on the ground in the APY Lands confirmed their consistent support to develop alternative design models for culturally and environmentally responsive housing and outdoor living environments. It was also evident that research and negotiated understanding into family groupings, social structures and modes of living that affect how people use dwelling spaces was largely absent in influencing recent development in the APY Lands resulting in more three bedroom houses on domestic scaled blocks in a gridded town plan. This is despite Mimili's original settlement layout emerging from the separation of the Everard Park station house to the southeast adjacent the main road and Anangu transitional housing nestling at some distance within the valleys of the rocky hills to the north.

In response to the findings of the AHURI research, and with design and implementation funding from the then Aboriginal Housing Authority, the University of South Australia commenced investigations into alternative housing models focusing initially on the development of the *tawara watiku* or single men's quarters at Mimili. This was the beginning of more than five years of visits to Mimili and the APY Lands to put these findings into practice through working locally with Anangu particularly with those who had most to benefit from an alternative model. Given the opportunity to contribute to developing plans the single men (*wati*) and the elders (*tjilpi*) enthusiastically offered ideas for the *tawara*. Engagement with the broader community and the mothers and women whose lives would also be altered when the single men left their childhood homes to lead a more independent life enabled many points of view to influence the design process.

Figure 3: Mimili from above: the site for the *tawara watiku* is southeast from the oval to the north east

The identification of the need for a *tawara watiku* in Mimili builds upon the important research and architectural projects undertaken by Paul Memmott and others since the 1970s into Indigenous design paradigms variously described as cultural, environmental health and housing-as-process. (Go-Sam, C. 2008, Fisher, D. Scally, S. 2008, Keys, C. 2003, Memmott, P. 2003, 2008) These concepts have been

well documented in publications such as the September/October 2008 issue of Architecture Australia and in the Memmott and Chambers edited *Take 2 Housing Design in Indigenous Australia* (2003). It is beyond the scope of this paper to undertake a detailed review of this anthropological and architectural design research. It is acknowledged that despite the wide dissemination in architectural circles of on-the-ground studies with Aboriginal people in remote Australia few recognised traditional spatial and social behaviours have been adopted as the basis for mainstream housing and settlement design.

Recording customary lifestyle arrangements demonstrates how spatial layouts are based upon activity patterns and familial relationships that lead to culturally driven distribution of shelter structures. A key reference to informing our development of the *tawara watiku* and to supplement the knowledge we were gaining as to the aspirations of the people of the APY Lands and the Housing SA providers is Memmott's discussion into the classification of Household groups and their spatial living patterns in central Australia (eds, Memmott, & Chambers, 2003: 27). This 1957 Norman Tindale sketch clearly illustrates the distinction between the living arrangements of the family, the single men's group and the single women's group in traditional life. The principle that single men and unmarried girls and women are spatially separated from the family group is shown in relation to; shelter from wind, spatial adjacency for sleeping in proximity to warming fires, cooking arrangements in each camp, access to views to survey the outside and sufficient spatial separation from the other groups as appropriate to gender requirements. The single men are sheltered by a continuous wind break which allows a linear sleeping arrangement with views outwards past the partially enclosed family and women's camp. Single women are also located at the right distance from the family group and partially screened from the single men's camp. The key aspect of each of the shelters is that they are appropriately scaled to suit the numbers they need to house. There is an inherent flexibility in each of these camps that provides for a range of people according to extended family size.

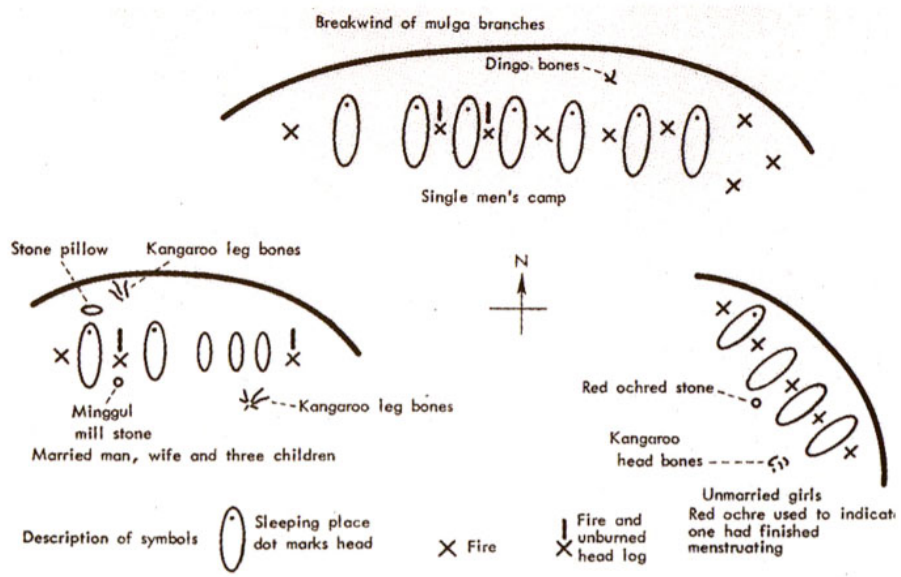

Figure 4: Norman Tindale Western Desert domiciliary group camp diagram (in Memmott, & Chambers, 2003: 27)

The three bedroom nuclear family houses currently assigned to family groups provide little in the way of enough space for separation of married and single people. Additionally the need for people to be able to look outside the house, to inhabit the sheltered zone between inside and outside and to be able to cook and gain warmth while living in the margins of the veranda are not sufficiently fulfilled by inward facing and internally planned mainstream houses.

Research into the traditions of living in camps and self-constructed shelters in often transitional housing or temporary conditions such as bush sorry camps is relevant to the contemporary living

needs of Anangu who now settle in permanently constructed communities. In particular the planning of spatial separation into gender and kinship based housing is seen by the Mimili community as essential to the appropriate schooling of single men in traditional ways by the elder men. Beyond taking single men into the bush for extended periods of time for instruction the community had no appropriate and convenient place to engage in learning traditional ways within contemporary cultural programs.

What is also lacking in both the anthropological-architectural research and in mainstream housing provision is sufficient understanding of the contextual and spatial requirements of people to live in Country (on their lands) and in relation to vegetation for shade and shelter from wind and rain. Beyond the provision of the yard fence settlement planning often pays scant attention to the topography and existing landscape conditions in relation to water management, orientation to important sites and to climatic and seasonal circumstances. This results in a shortcoming in housing provision to think beyond technically sustainable building design to encompass the surrounding environment as an important contributor to the social health of Aboriginal communities.

Consultation takes time: on-site design review

At the earliest meetings with the community we met with the single men who were keen to be involved with the project. Talking and drawing options established the two areas for negotiation as the basis for how the men saw their spatial living arrangements. At the same time the question of the site location, the scale of the project and its distance and proximity to the community became paramount. These discussions were the foundation of the entire development and despite many later iterations to fine tune site location and spatial layout, remain fairly true to the resulting built outcomes. Senior people in the community also mooted the idea of a house for single women for design development alongside the *tawara watiku* project to be prioritised after the single men had been accommodated.

The following sketch was developed by the men and identifies a very particular spatial layout commencing with a semi-circular series of spaces symmetrically arranged around a central meeting and living space. The encircling structure contains bedrooms for two men in each room, separated by a central bathroom and laundry arrangement that allow for physical separation and also visual surveillance (according to cultural requirements for proximity and avoidance in relation to kinship relationships). Most importantly symmetrically planned outdoor living spaces including verandas, a number of external fire pits and gathering spaces sheltered from sun, wind and dust, confirm the *tawara*'s cultural intent.

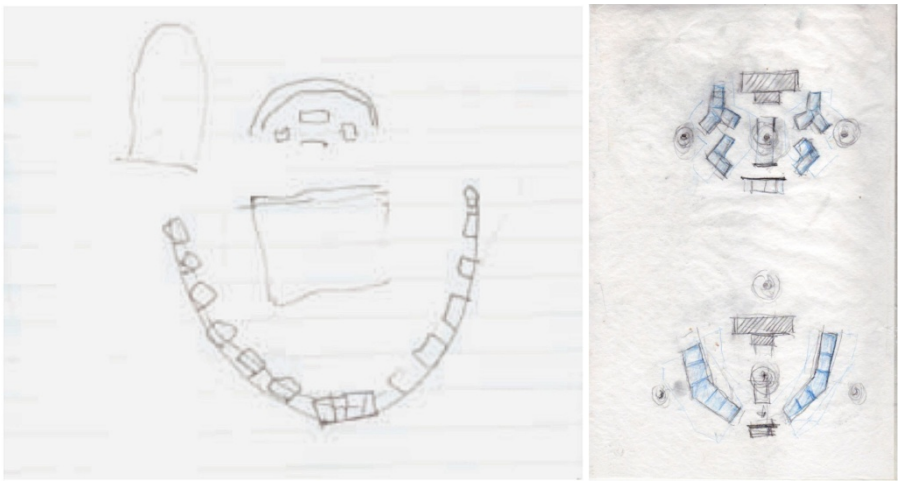

Figure 5: John Campbell's first diagram for the *tawara watiku* and student design options drawn from discussions with single men at Mimili

Following group discussions in the Mimili community meeting room it became clear that further ideas about the layout and scale of this potentially quite large facility could only meaningfully occur on site. Potential sites were identified through the preferences of the single men and by the elders who located available ground in two areas adjacent the community's perimeter – far enough away to be apart from the community yet close enough for effective community surveillance. These locations also avoided culturally sensitive sites and provided views out into the landscape to the important totemic hills. The elders and the single men walked us over the preferred site to the southeast of the football oval and the place where sorry camp was often held. It was agreed that we should site the buildings within the existing landscape however in a place quite distant from the perimeter road and far enough away to be workable. Despite the physical distance from town the cultural imperative of finding the right place was a primary influence. Key aspects were identified to show the way towards the need for a compound or cluster development approach for the *tawara watiku*:

- The landscape setting and the old acacias as primary spatial drivers for the site layout.
- Environmental considerations including protection from summer conditions, shade provision and landscape treatments to assist the separation of houses.
- Landscape considerations including fencing to the perimeter of the site and site works to include space for fixing cars and associated landscape works including tree planting.
- Cultural considerations including provisions for elders to live in and provide education, guidance in living skills and behaviour management. (Fien, et al., 2008: 68)

Informed by community consultation, the initial schemes investigated separate sleeping wings with ablutions for twenty with a central living kitchen space and external living and cooking spaces under verandas planned to enable cultural separations between groups. Upon review by government service providers and various management agencies involved in housing provision for the APY Lands, the original design was considered too expansive in relation to housing large numbers of single men in safety and the inevitable visitors which could swell to more than double the numbers at certain times. In addition the proposed costs exceeded the negotiated budget, resulting in the evolution of the final design into two wings containing three shared bedrooms, associated wet areas and a large central breezeway. Outside sleeping spaces with an indoor kitchen/living facility form adjacent areas for outside living and cooking. The relative siting of the two wings enables both visual connectivity and spatial separation while a centrally located outdoor shelter and fire pit space provides the desired-for centre for communal living.

More problematic to negotiate was the final location of the *tawara watiku* in relation to services, surveillance, operational and community management needs and the somewhat justifiable fears of service providers for things to go wrong with housing groups of single men in their own place far from town and close to the main road. Facilitated by lengthy community and council debates about where the facility was to be finally located the senior men were adamant in their desire for the *tawara* to be sufficiently distant to and not simply on the edge of town. The final spatial and visual separation from family and town was consistent with the original wishes of the single men and was confirmed by the elders. The determining place for the *tawara* was not in the end driven by service provider needs for efficient water and power reticulation or the needs for policing by others. This resolution arose from the confirmation that the community would manage the facility. For this it was suggested that a new facility for the elder men to live with the single men was required to provide both cultural guidance and supervision. So the idea for the *tjilpi* house (*tjilpi* meaning 'old man father') emerged about halfway in the process of design development of the *tawara* and was developed over numerous discussions with senior men until the final design was agreed upon.

Figure 6: The agreed site on the perimeter of town with the *tawara watiku* laid out in lime

Architectural design strategies for the *tawara watiku*

The long process of design investigation and community consultation led to a combination of culturally responsive spatial planning initiatives overlaid with numerous architectural and functional details all intended to address identified shortcomings with standardised housing design. These strategies are framed by important cultural initiatives: separation of the *tawara* from the community boundary to reinforce its autonomy in terms of gender, generational grouping and independent living and the planning of two distinct wings to accommodate avoidance relationships amongst kin.

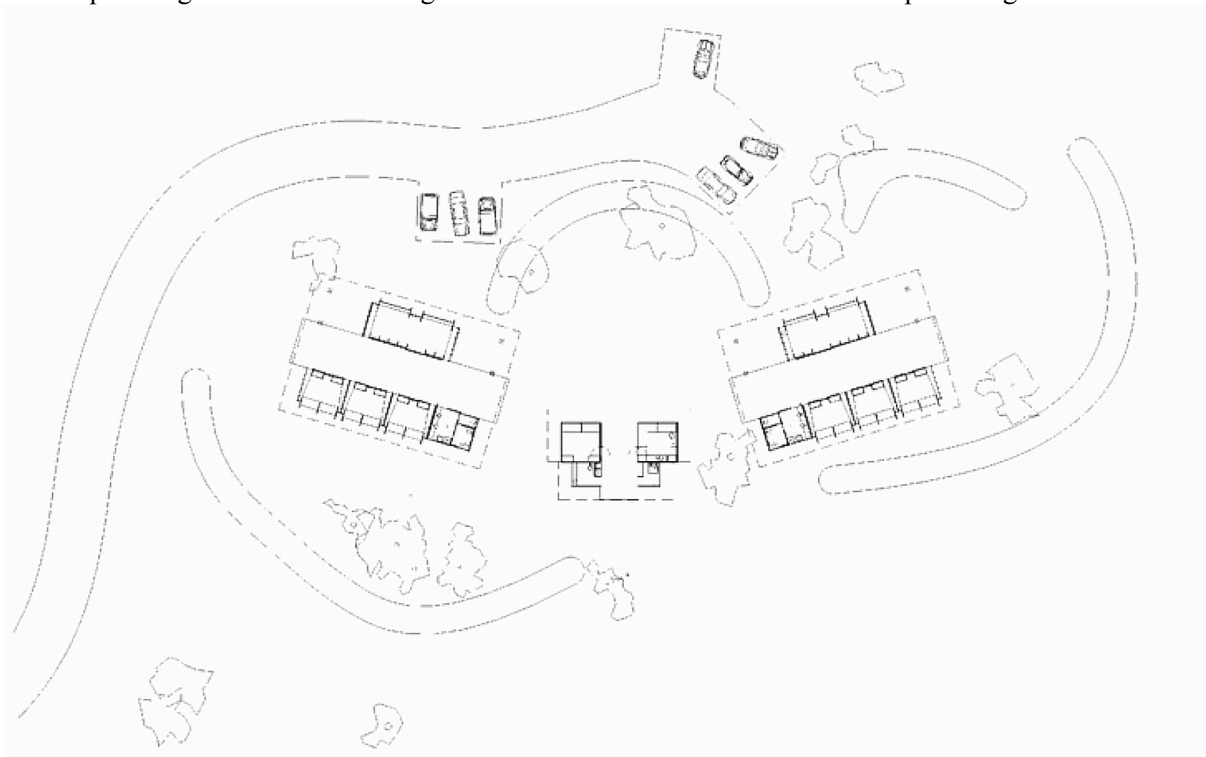

Figure 7: Final consolidated plan located among trees and mounds with views to the oval and hills.

More generally the *tawara* is designed to provide substantially more shaded areas than typical housing to facilitate outdoor living preferences including siting the buildings between existing shade trees. It provides large breezeways for sheltered sleeping in swags and four separate areas for fire pits for cooking and warmth. Raising the breezeways 300mm above the ground facilitates the use of these fire pits and enables informal seating as well as dust control. The breezeways provide circulation areas between living and bedroom areas to overcome the problem identified in current housing where living spaces are compromised by being used as thoroughfares for circulation between bedrooms and outside areas.

Environmentally the *tawara* is oriented to maximise the benefits of the winter sun and to moderate the effects of the summer sun by incorporating 1.5m eaves throughout to achieve shading to walls. The walls have a higher than usual level of thermal insulation by combining battens as thermal breaks to create ventilated wall cavities. This is particularly important given the climatic extremes of desert environments and the costs to households for energy heating and cooling in such a remote locations. The siting of each *tawara* wing is designed to maximize protection from the cold southerly winds but to facilitate the flow of the more favorable east/west winds through the breezeway. Used to great success elsewhere in Mimili the use of mounding to the perimeter of the site provides for management of stormwater flows, establishment of new trees and facilitates the spatial arrangement of social areas around communal cooking and meeting areas. The mounds are very functional places to gather and sit raised above the sandy ground also simultaneously providing a very good growing medium for new trees through concentrating water flows.

Internally the *tawara* is designed to incorporate a high level of built-in furniture including lockable wardrobes and under-bed storage, bed bases which also serve as seats, desks, open shelving, pantries, benches and bench seats. This level of incorporated furniture acknowledges the lack of furniture owned by Anangu (particularly young men), which is not addressed in standardised housing provision. More generally the internal spaces are designed to humanise living environments in contrast to the usually bare, monochromatic and utilitarian spaces provided in standardised housing. The spaces are highly articulated and accentuated by application of vibrant colours to painted plywood. Numerous windows in each room provide a higher than usual level of natural light, cross ventilation and views to the outside.

Functionally, the *tawara* design incorporates numerous features beyond typical building standards including: Acoustically designed party walls to attenuate sound transmission between bedrooms, 12mm minimum plywood lining throughout for customised hanging and shelving, disability access to bathroom/toilet including an access ramp for each house, one extra toilet for each house to accommodate extra men for ceremonial and sporting events, double GPO's, satellite coaxial cable and phone/internet provided for each person and robust fittings throughout designed to take hard wear. All spatial design considerations and attention to materials selection and detailing throughout the facility are focused on design for desert conditions, the issues of access to services and maintenance in remote areas, and flexible adaptation to dynamic cultural conditions.

Designs for two other projects that arose during building the *tawara watiku*

The emergence of the idea for a *tjilpi* house for senior men to live within the *tawara* with the single men has been a generator of new housing design options. The *tjilpi* house is designed for two men providing basic kitchen and ablution facilities, a wide veranda and outside space for cooking. Most importantly it is sited between the wings of the *tawara* to enable supervision and visual surveillance. The design includes a shared bedroom and living/kitchen space separated by a breezeway that can be closed off from prevailing winter winds by sliding doors. The ablution areas are also separated by the breezeway to allow for both privacy and multiple users. A review of the many iterations of plan and section that contributed to the final design again reinforces the cultural underpinnings of the design:

symmetry enabling separation; ability to sleep and cook both inside and outside; and shaded places for visual connection to the goings-on of the *tawara* and the community beyond. The *tjilpi* house's final design is currently being prefabricated in the University of South Australia workshops and scheduled for completion on site in 2011.

During planning conversations the locals have revealed that this small house would be useful for older people to live adjacent to existing houses to enable the elderly to live outside the competing demands of the extended family house and yet close enough to care for grandchildren as is the custom in Anangu society. An expanded use for the *tjilpi* house encourages rethinking of planning of yard fences and to provide a more flexible use of spaces between existing houses. Most families live in close proximity; Mimili is socially and spatially divided into three family groups who occupy different sides of the town. Therefore expanded housing consisting of 3 or 4 bedroom houses supplemented with various design options developed for the *tjilpi* house to incorporate outdoor living and gardens planned around clusters of houses rather than individual houses has some merit for further research and on the ground prototyping.

Figure 8: Options for the *tjilpi* house to balance indoor and sheltered outdoor living

One other design project arising out of conversations with the women and girls in Mimili and other communities is the need for a single women's house or *alukuru.* Ongoing discussions involving the community now consider how the single women's place might evolve and where it might best be located.

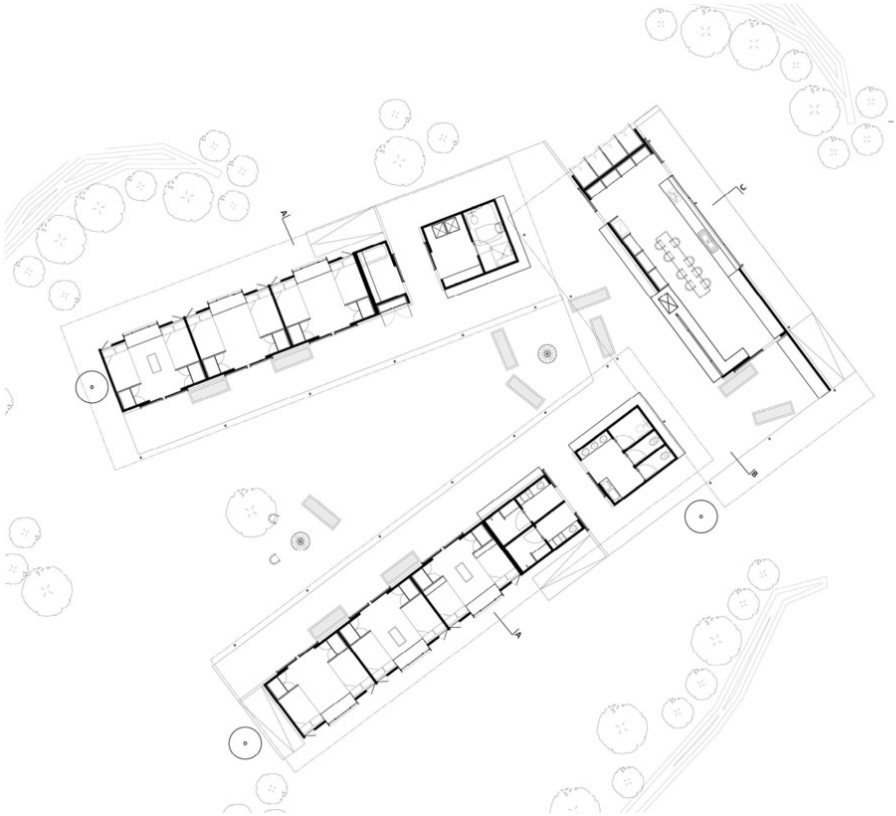

Figure 9: Preliminary ideas for the *alukuru* single women's house including a space for senior women

The spatial layout designed by the women has very similar characteristics to the *tawara* yet with distinct differences. The women's place aspires to engage the collective group of young women and their babies with the senior women to learn and practice house making and raising children in a healthy way. Encompassing the need for traditional knowledge Mimili's women are also vitally interested in how their young women and girls can be supported in contemporary society to face the challenges that remote existence brings to the community of women.

The desire to locate the women's place in a central location conveys the need to protect and nurture single women in the heart of the community. To ensure their connection and visibility to community the plan is to frame communal interior living spaces supplemented by outside spaces that contain gardens and lawn where children can play under the watchful eye of their mothers and grandmothers.

Conclusion – housing outside the box

In conclusion, the observations, research, consultation and engagement with the Mimili Community and communities throughout the APY Lands raise numerous issues and suggest a number of strategies and implications for policy aimed at achieving culturally appropriate housing models for remote Indigenous communities in central Australia. These strategies firstly require effective community consultation to be implemented through broad community engagement across all family, gender and age groups in order to understand and respond to housing issues and preferences. Long term consultation seeks to engage the entire community in an iterative process of development to ensure that ownership of housing developments is held by the local community as has been found with the design-led *tawara watiku* project. Community planning regimes require a more flexible and culturally responsive approach to allow for greater levels of separation between households and extended family groups to ensure that cultural and kin relationships are recognized and provided for. Additionally much greater flexibility in the design of housing for extended families will allow for greater levels of separation between gender and age groups including family groups, children and the elderly to

alleviate tensions arising from overcrowding, noise and culturally prescribed avoidance laws.

The most critical finding is that there is a need for specialised housing for particular social groups consistent with cultural traditions including housing for single men, and single women with children. The opportunity for design and prototyping projects in the development of new housing types that utilise the independent expertise of research and teaching organisations such as at the University of South Australia benefit government-based housing providers the opportunity to work creatively in concert with local Aboriginal organisations beyond normal design/construct programs. These projects are necessarily undertaken over longer time periods which benefit a thoroughly worked through program allowing the community enough time to agree upon appropriate directions for their needs. Although these projects may not easily work within agency time schedules and budgets, the benefits of developing new models through implementing built prototypes to test new designs enables the demonstration of new ideas to other communities through direct experience of new architectures, site planning and landscapes in remote Aboriginal communities.

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