

SUSTAINABLE HOUSING FOR INDIGENOUS POPULATIONS IN REMOTE REGIONS: A CASE STUDY FROM NGUIU, NORTHERN AUSTRALIA

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Summary

Indigenous people living in remote regions of Australia have very low home ownership rates compared with other subpopulations, due to social and economic disadvantages and the constraints of community-title tenure of land. Increasing the level of home ownership is viewed as beneficial for improving both the standard of living and independence of Indigenous people, and is starting to be achieved through tenure reform and government housing initiatives such as the Home Ownership on Indigenous Land (HOIL) programme. In the remote community of Nguiu on Bathurst Island, Northern Territory, the HOIL programme has allowed several households to obtain loans to purchase their own new homes. The homes have been designed and constructed with environmental sustainability in mind and have been produced in a cost-effective manner. The building of homes under the HOIL programme at Nguiu shows that environmentally sustainable buildings can be constructed cost-efficiently and can meet the social and cultural needs of Indigenous people.

Keywords: remote communities, Nguiu, Australia, Indigenous people, homes, sustainable building, environmental sustainability, social and economic development

1 Introduction

1.1 The Circumstances of Indigenous People With Respect to Home Ownership

The 2006 Australian census [1] shows that although Indigenous home ownership has increased from 19% in 1991 to 36% in 2006, Indigenous households are only half as likely to own their own home as are non-Indigenous Australians (2006 home ownership rates of 36% and 71%, respectively). Although this contrast in home ownership rate is due partly to the younger age structure of the indigenous population, it is also because of a variety of disadvantages experienced by Indigenous people. These disparities [2] relate to income, educational attainment, labour force participation, entrenched inter-generational welfare dependence, financial literacy, health [3], and social cohesion. Indigenous people in remote areas fare particularly poorly in indicators of socio-economic condition.

According to housing surveys, home ownership is the preferred form of tenure for the vast majority of Australians. The motivation for home ownership is high amongst the Indigenous population, and its importance stems from several reasons. These include social benefits such as being able to pass the house on to future generations, a sense of security and control over their lives, and the opportunity to live on Indigenous land [4].

1.2 The Difficulties of Home Ownership in Remote Communities

Geographic location (remoteness) is a factor in home ownership levels, as shown by ownership rates for Indigenous people of 39% in urban/regional centres but just 18% in remote regions [1]. This statistic mirrors other socio-economic indicators that reveal geographical disparities disfavouring people who live in remote communities (e.g., [5]). About a quarter of the 453,000 indigenous people in Australia live in remote locations. Many of those residing in such remote communities live on community-title land, where title to the land is held by an Indigenous trust or corporation on behalf of its traditional owners. Home ownership by individuals is not possible on community-title land because of restrictions concerning land disposal and transfer, which has prevented the ability of individuals to establish security in order to obtain mortgage loans [2]. In short, the low socio-economic status of indigenous people, isolated geographic locations, and the community-title land tenure system present a particular combination of challenges for individual home ownership by indigenous people living in remote regions. Additional impediments to home ownership in remote communities include the lack of town planning in such localities, an inter-generational culture of renting accommodation through Indigenous housing organisations, the higher cost of construction in remote areas, and an inter-generational Indigenous expectation of dependency that government will provide and maintain houses [2].

Given the problems of Indigenous people living in remote areas, the Australian Government has led a number of reforms aimed at providing better opportunities for home ownership, often in conjunction with initiatives regarding welfare arrangements and economic development. Various state and territory level governments have reformed legislation regarding Indigenous land, including the provision of long-term leases, in order to promote home ownership and economic advancement. Initiatives at the national level include the Home Ownership on Indigenous Land programme (HOIL), run by the Indigenous Business Agency (IBA) and the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA), which aims to increase home ownership rates by providing assistance in the form of loans and financial advice. Loans can be used to buy an existing house, renovate an existing house, or build a new one. The remainder of this paper discusses the HOIL programme and presents an example of new home construction under the programme in the remote Indigenous community of Nguiu, on Bathurst Island in the Northern Territory of Australia.

2 The Home Ownership on Indigenous Land Programme

The HOIL Programme is a key Government initiative aimed at closing the gap between Indigenous and non-Indigenous home ownership levels. As a result of legislative changes, State and Territory governments are progressively implementing land tenure reform that is enabling Indigenous community members to negotiate individual long-term leases (from 40 to 99 years) on community-title land to facilitate commercial and residential use of the land. The change in tenure to long-term town leases has allowed financial institutions and government agencies (e.g., the IBA) to lend people money for home purchase through being able to have the land as security for the loans. Individual leasehold arrangements are now in place for some communities in the Northern Territory, Queensland, and New South Wales.

Key features of the programme include [6]: assistance with loan establishment costs; low interest rate loans (linked to borrowers' income) that gradually increase up to one per cent below market variable interest rates for owner-occupied homes; low deposit requirement (\$2,000); loan co-payment assistance during the first ten years for eligible borrowers; complementary assistance available from FaHCSIA; up to 20% of the purchase price as a grant towards the purchase price (\$50,000 limit) for borrowers who have a good rental history; matched savings grant (\$1,000 limit); money management education, and ongoing home ownership education. Therefore, the HOIL loan package is targeted at helping low income earners with initial purchase and repayment affordability.

To date, 15 HOIL loans have been issued for home purchase, of which 14 are in Nguiu, secured by the township lease. Some of these have been used for the purchase and renovation of existing social housing dwellings, and some have been used for the construction of new homes. Aspects of the design and construction of the new homes are described below.

3 The Sustainable Housing Project in Nguiu Community

The community of Nguiu, with a population of 1450 inhabitants, is located on the south-eastern coast of Bathurst Island, one of the Tiwi Island group, 80 km north of Darwin in the far north of Australia (Fig. 1). A housing project is being run in the community under the government-funded programme 'Home Ownership on Indigenous Lands' (HOIL). The scope of the project run by IBA is tied to the government's commitment of 'closing the gap' as the government's flagship Indigenous policy framework.

As a consultant under contract to the IBA, I have been involved in various aspects of the design of the homes and construction project management in Nguiu. The goal has been to construct homes environmentally sustainable homes of good quality that can be built with indigenous labour through training and skills development. After consultation with the community, aspects of design and construction that were considered included the building life cycle, embodied energy, the climatic conditions, social impacts, and green energy and star rating of the buildings. Overall, in Nguiu, the homes thus far constructed have been cost-efficient and of good quality, designed according to environmental principles, and have met the needs of local Indigenous buyers as well as attracting a high level of interest from the indigenous community in other parts of Northern Territory.



Location map of Nguiu, Bathurst Island, Australia.

The homes themselves (Fig. 2) are constructed using modern materials including timber sourced from sustainable forests, and have designs tailored to the conditions of the local tropical climate. Homes with four bedrooms are being delivered for \$380,000 and with two bedrooms for \$280,000, with a 25 year guarantee on the homes. These homes are less than half the cost of equivalent homes provided by other programmes such as the Strategic Indigenous Housing and Infrastructure Programme (SIHIP), on account of the methods and materials used, and are more environmentally sustainable in terms of the building embodied energy and life cycle taken into consideration.

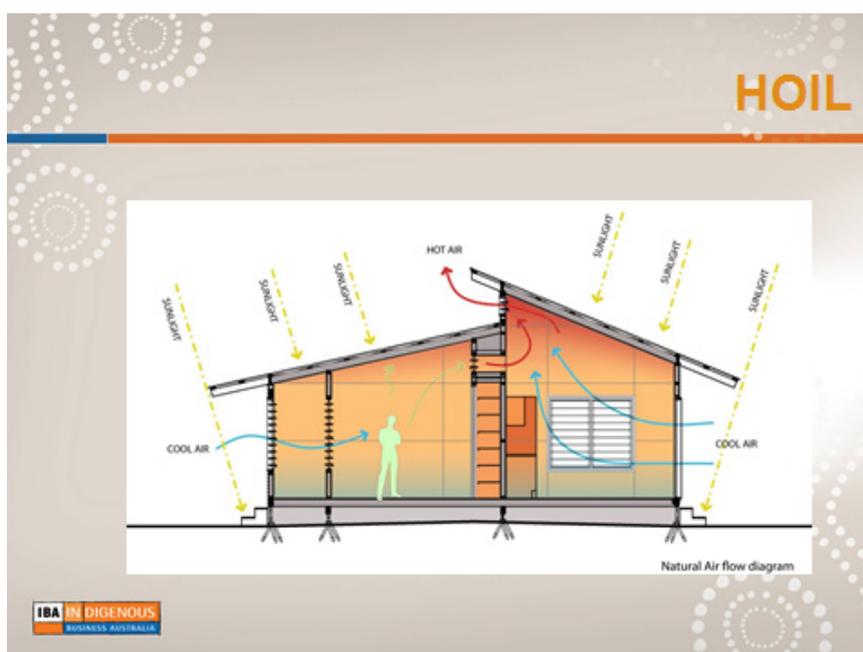


Floor plans and elevation views of Nguuu homes.

3.1 Sustainable House Design and Environmental Efficiency

The initial design constraints included the following: the desired floor plan; occupant comfort in terms of heat and ventilation; a remote site with limited utility connections; minimization of energy costs (thermal and electrical); minimization of environmental impact at all stages of life cycle; reduce operational and maintenance requirements; impart training and self-help housing concepts; and ease of construction. The houses use low embodied energy building materials. Preference was given to materials and fixtures that require little or no maintenance. Preference was also given to healthy building materials and finishes, reducing volatile organic compounds and contributing to a healthier indoor environment. Timber is a sustainable resource and a carbon sink, with each home constructed at Nguuu storing about 3.5 tons of carbon.

The houses constructed in Nguuu are simplified versions of, and follow the environmental principles used in, a demonstration home constructed on the island. The demonstration home integrates energy conservation measures and a renewable energy supply. Features of the home include: a long east-west building axis; a compact thermal envelope (low surface to volume ratio); passive solar heating (both direct gain and high-mass thermal storage walls), natural cooling and ventilation; solar hot water; and a photovoltaic electric power system. The heating/cooling capacity of the home is enclosed entirely within the thermal envelope (the insulation), which enables effective heating and cooling and the stabilization of indoor temperatures. The overall building time constant is 36 hours, allowing the storage of heating/cooling capacity from one day to the next. Glazing has a low-emissivity coating, and most of the window area is on the north side. North-facing windows are sized for winter heating, with roof overhangs to reduce solar radiation in summer. The natural ventilation (in the form of operable windows) is designed to be the primary cooling system (Fig. 3). The windows are sized and located for cross-flows and stack effect, with upper windows along the high spine of the house releasing warm air while cooler air enters from lower windows.



Nguiu home elevation view showing ventilation and thermal control.

Empirical performance monitoring and computer simulations have been combined for the best possible analysis of energy performance. Energy savings compared with a conventional dwelling are estimated as 85% for heating and cooling, 90% for electrical power, and 95-100% for domestic water heating. Further research and monitoring will enable environmental and energy performance evaluations to be made with respect to weather variations and occupant behaviour.

Prior to construction, a detailed assessment of specific environmental risks and potential impacts was undertaken, including the particular issues/impacts, the management objectives and target for each issue, the control measures to be taken, and the method and implementation of monitoring for the control. This project was committed to the reduce, reuse, and recycle principles of waste management, with an approved off site Waste Management Programme (WMP) being developed and implemented. The objective of this off-site WMP was to achieve a minimum waste diversion target of 60% from landfill. Australian Standard and recognised construction methods and management measures were employed during the construction of the project, including the Building Code of Australia, and standards and regulations pertaining to soil erosion, dangerous goods, and combustible materials.

The homes are constructed of timber, treated to resist termites and mould. The timber is sourced from sustainable pine forests in Australia. The use of wood in construction in remote locations can not only save on building costs and reduce building lead times, but because wood is lightweight and easy to work with, wood construction will also create local employment opportunities. Wood also offers a simple way to reduce CO₂ emissions. Its versatility, strength (particularly in cyclone areas such as Nguiu), and ease of use ensures that wood continues to be the predominant structural building material for houses in Australia.

Construction of the homes (Fig. 4) involves affordable housing techniques including: a simplified modular design reducing waste; timber is a cheaper construction product than

competing materials; timber is lighter than competing materials (e.g. steel) and therefore easier and cheaper to transport into remote regions; less equipment is required to assemble the structures in a timber home; and compact and efficient designs are available with a number of alternatives for adaptable design and future extensions depending on housing requirements. Elements of self-help housing and training include the use of a simple construction technique using wood as the predominant material, offering potential for local skills development and training for the community.



Nguiu home under construction.

4 Conclusion

Various factors have contributed to the low home ownership rates of Indigenous people living in remote areas, including socio-economic disadvantages (e.g. low income, inter-generational welfare dependence), the higher cost of home construction in such remote locations, the limited housing markets in remote regions, and the constraints of community-title land ownership. Historically, most of the housing in Indigenous communities has been provided and maintained by government, a situation which is seen as the social norm. However, Indigenous people aspire to home ownership, and land tenure changes and recent housing programmes, which are providing financial assistance and new home construction as seen at Nguiu, are starting to improve home ownership rates. The Australian Government hopes a balance will be struck between facilitating home ownership for Indigenous Australians as an economic opportunity and supporting home ownership as a means to help build individual and social responsibility [2]. The building of homes under the HOIL programme at Nguiu shows that sustainable buildings can be constructed cost-efficiently and can meet the social and cultural needs of Indigenous people.

References

- [1] Australian Bureau of Statistics (ABS) (2006). Data - ABS-47130DO001 Population Characteristics, Aboriginal and Torres Strait Islander Australians.
- [2] Australian Government (2010). Indigenous Home Ownership Issues Paper.
- [3] Andriasyan, K. and Hoy, W.E. (2009) Patterns of mortality in Indigenous adults in the Northern Territory, 1998-2003: Are people living in more remote areas worse off? *Medical Journal of Australia*, 190(6): 307-311.
- [4] Memmott, P. et al. (2009). Indigenous Home Ownership on Communal-title Lands. AHURI Final Report No. 139.
- [5] Phillips, A. (2009). Influence of socioeconomic and cultural factors on rural health. *Australian Journal of Rural Health*, 17(1): 2-9.
- [6] Indigenous Business Australia (IBA) (2010). HOIL brochure for Northern Territory.