



designguide

RURAL

INTRODUCTION

The Rural Design Guide is to be used as a guide for highlighting principles and processes that are unique to a rural situation.

Unlike a town or city, housing provision in rural situations will often involve:

- *A community rather than an individual. (More often than not there is need for consultation with these communities, and for this reason community consultation has been highlighted in this guide as well)*
- *Issues such as land ownership, access and infrastructure which provide frequent obstacles to project planning*
- *Property values that are low*
- *Communities involved in construction.*

These factors influence the challenge to design for sustainability, energy efficiency, and robustness of construction, without significantly increasing the costs of construction.

The Rural Design Guide is split into four sections:

- **Land Ownership**
- **Infrastructure Feasibility**
- **Rural Planning**
- **Construction.**

These sections contain references to topics that are:



Essential

These items are required by HNZC.



Highly Desirable

These items should be included.



Desirable

HNZC considers these items advantageous.

OVERVIEW OF THIS GUIDE

IN THIS GUIDE...

SECTION 1 LAND OWNERSHIP

The Land Ownership section focuses on determining the type of land holding, and then on the HNZN requirements. The section looks at general land and Maori land. The Maori land section aims to introduce the reader to some of the complexities of the process and the Maori Land Court/HNZN requirements where multiple ownership or Maori land is involved.

3-6



SECTION 2 INFRASTRUCTURE

Availability of infrastructure in rural areas is important, as the costs of taking advantage of central supplies or utilities are often prohibitive. In many locations an alternative energy source or infrastructure provision is required. The purpose of this section is to consider the feasibility of providing infrastructure to a proposed rural community.

7-11



SECTION 3 RURAL PLANNING

Where a community is planned in a rural area, unique planning issues arise. Consultation is also needed, not only with the proposed occupants but often the greater community. This section investigates community issues, briefing and site planning for rural projects.

13-18



SECTION 4 CONSTRUCTION

In a rural environment land values are often low, and 'sweat equity' can be used to create equity in a completed project. This section goes through the unique construction issues facing housing provision in rural areas. Skilled tradespeople are less available in rural areas, and the lifestyle tends to accommodate large fluctuations in occupancy. Therefore robust materials and construction methods are desirable.

19-22

SECTION 1 LAND OWNERSHIP

Before HNZN can become involved in a project, the ownership of the land must be determined, and any issues around that ownership must be resolved. The aim of this section is to highlight some critical issues that need to be dealt with prior to any initial project planning and funding commitment.

HNZN recommends that, before coming to HNZN, a person wanting to develop their land should talk to their local authority to understand their requirements. In the case of Maori land, the person should also talk to the registrar of their local Maori Land Court.

Typically in New Zealand there are three main categories of land: Crown land (held under the Land Act); general land (held under the Land Transfer Act); and Maori land (held under Te Ture Whenua - the Maori Land Act). This guide will only address general land and Maori land.

The Land Ownership section is broken into the following areas:

General land (fee simple title)

A general introduction with HNZN requirements.

Maori land

A general introduction, types of ownership structure and HNZN requirements.

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GENERAL LAND (FEE SIMPLE TITLE)

Most land in New Zealand held by private individuals, companies or trusts is general land. The most common estate in general land is the fee simple estate. The owner of a fee simple estate in general land has all of the rights commonly associated with ownership, including the ability to grant rights in that land to others eg. the grant of a lease or licence, or the grant of a mortgage over the land as security for a loan or other finance. The owner of a fee simple estate in land will be recorded on the Certificate of Title for that land in the Land Transfer Office. Any transfer, lease, or mortgage of the land will also be recorded on the Certificate of Title.

!! Before HNZC can provide assistance for the development of general land, HNZC requires the following:

- A clear written agreement to the proposal signed by the owner or owners of the land - HNZC can provide an agreement relevant to the project being proposed
- A current search copy of the Certificate of Title for the property, and
- A copy of the legal document or documents that set out that entity's powers in relation to that land eg. a Trust Deed or Constitution where the land is owned by an entity such as a trust or an incorporated or unincorporated entity.

An example of an existing rural settlement (houses shown black) where the general land is subdivided on a fee-simple basis. The project proposal (houses shown red) intensifies the immediate area of housing, so their density is similar to that of a town. The new housing remains subdivided on a fee-simple basis, where common areas are further subdivided and owned in part by each housing unit.



© Common Ground.

MAORI LAND

The main type of Maori land is Maori freehold land. Maori freehold land is land that has always been in Maori ownership. The ownership interests in Maori freehold land are determined and recorded in the Maori Land Court (although a record of the ownership of the land may also be recorded in the Land Transfer Office). Because the main record of ownership of Maori freehold land is held by the Maori Land Court, most transactions involving Maori freehold land need to be confirmed or noted by the Maori Land Court.

Maori freehold land has many different characteristics. Firstly, Maori freehold land often has multiple owners, whose shares in the land are not divided into separate titled lots. Secondly, Te Ture Whenua Maori (the Maori Land Act - which is the Act that governs Maori land) places restrictions on alienation of Maori freehold land eg. Maori freehold land cannot usually be sold or mortgaged in the same way as general land. These restrictions are intended to help to retain Maori land in Maori ownership. Finally, Maori freehold land can be held in three different ways:

1 Trust

Maori freehold land can be vested in a Maori trust created under Te Ture Whenua Maori (Maori Land Act), and the trustees hold the land in trust for the benefit of the multiple owners of the land

2 Incorporation

Maori freehold land can be vested in a Maori incorporation created under Te Ture Whenua Maori (Maori Land Act). The incorporation holds the land in trust for the benefit of the multiple owners of the land, and a committee of management is usually appointed to manage and administer the incorporation. The shares in the incorporation are held by the owners according to their percentage interest in the land and assets held by the incorporation

3 Owners

Where Maori freehold land is not held by a trust or incorporation, then it is simply held by all of the multiple owners of undivided shares in the land, and decisions about use of the land, etc. must be made by those owners.

!! Because of the nature of Maori freehold land, before HNZC can provide assistance for the development of Maori freehold land, HNZC requires the following:

- Proof of ownership of the land (a copy of the Maori Land Court ownership records and the relevant Land Transfer Office records)
- A licence to occupy the land given by the owners of the land, or the trust or incorporation in which the land is vested
- A signed agreement - HNZC can provide the appropriate documentation depending on the proposal, but independent legal advice will be required. The documents will often need to be signed by the person wanting to build or relocate a house on the land, the owners of the land or the relevant trust or incorporation, and HNZC
- The licence to occupy and the agreement (which are often combined in one document), once signed, need to be confirmed or noted by the local Maori Land Court
- *Note: because Te Ture Whenua Maori (Maori Land Act) restricts mortgages over Maori freehold land, HNZC will usually take a mortgage over the house itself where HNZC is facilitating housing rather than providing rental properties. This chattel mortgage will be included in a loan agreement, and will be registered with the Personal Properties Securities Register (which is a register of chattel mortgages and other securities that are not land). **The fact that there is a chattel mortgage over the house may impact on the type of house that can be built.***

!! TLAs will need to be consulted:

- Even where proposed work complies with the local District Plan requirements, most TLAs usually require resource consent to be gained before any work where Maori land is involved
- TLAs may also have their own distinct requirements for determining ownership where Maori land is involved
- *Note: for more specific information on the HNZC requirements where Maori land is involved, refer further to the HNZC Partnerships Team for the publication: 'A step-by-step guide to obtaining a License to Occupy on Maori Freehold/Papakāinga Land'.*

Te Ture Whenua Maori (Maori Land Act) restricts mortgages over Maori freehold land. HNZC will usually take a mortgage over the house, which may impact the type of house that can be built.



SECTION 2 INFRASTRUCTURE FEASIBILITY

Determining the availability of infrastructure in rural areas is important, as the costs of taking advantage of central supplies or utilities are often prohibitive to a project. In many locations an alternative energy source or infrastructure provision is required.

Feasibility for the purposes of this section of the Rural Design Guide is considered to be long term viability, focusing on the running costs being able to be met by the particular rural community in question.

The Infrastructure Feasibility section is broken into the following areas:

Access

On a rural site access often first determines the siting of a dwelling

Sustainable Resources

A study of the existing infrastructure and possible alternatives is undertaken

Cost Analysis

A detailed cost analysis for the provision of infrastructure to the site

Utilities Report

Utility findings are incorporated into a summary report.

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ACCESS

Rural site access is often a determining factor in the siting of a dwelling. Access is highly dependant on topography. It can mean a flat area with good sun, shelter and outlook may be rendered unusable by, for example, the need to construct a bridge over a river.

⚠ Access can be one of the most expensive parts of the construction cost of a rural community or dwelling. The following is a requirement to ascertain access:

Engage a surveyor to undertake a site survey, and produce a plan indicating contours (at a recommended minimum of 1-metre intervals) and further spot levels around an area identified by the owner/HNZC as being a potential building platform and driveway access.

⚠ The plan should show:

- Legal boundaries, scale, legend and north point
- Contours at suitable levels
- Entry access points to property
- Routes of potential proposed driveways (showing gradients that are acceptable in the location and within the guidelines of the relevant District Plan), and potential driveway surface treatment or material choice (existing or proposed)
- Any walkways
- Suitable building platforms
- *Note: as the plan will be of use when further design work is undertaken, it should also clearly indicate positions of existing buildings, stands of trees, significant landforms, and any drainage or watercourses through the property. Refer to the relevant **HNZC team** whether or not they will fund this initial research.*

This project located the building platform in an area that was inaccessible, and required an expensive access solution. Such a solution will often render a rural housing project uneconomic because, while land values are low, the initial outlay may be too high.



SUSTAINABLE RESOURCES

Once a possible site has been identified, the availability of utilities on the site needs investigation. Providing funds to supply infrastructure can threaten the feasibility of a project. A study of a site's resources is a first step in determining its viability.

REQUIRED UTILITIES

The following resources must be identified or shown as not available:

- !! - Drinking water supply on site (town supply or available groundwater) or adequate rainfall for roof supply
- Electricity, the proximity to central supply, and reliability of this supply
- Alternative fuels (gas/wood on site)
- Storm-water disposal via a connection to town disposal or an adequate location on site (existing waterway, proposed storage tank for drinking water)
- Sewage disposal - confirm whether existing connection or treatment system exists.

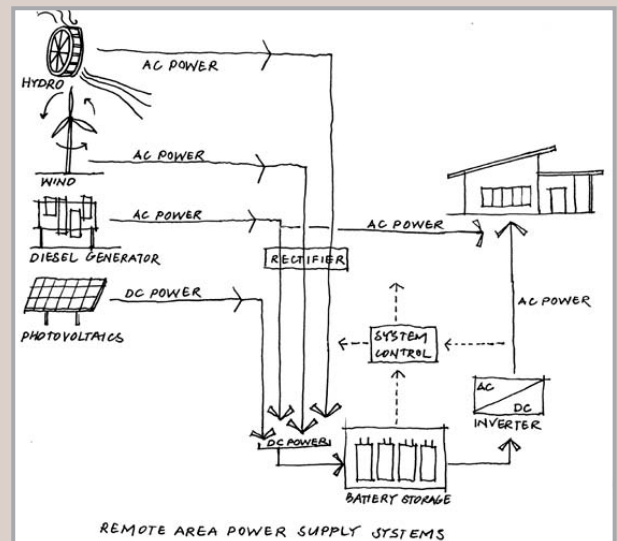
ALTERNATIVE SOLUTIONS

Where infrastructural systems are not available on a central supply, self sufficient alternatives may provide a cost effective solution. These may include:

- Composting toilets
- On site sewerage treatment systems
- Alternative electrical supply eg. wind or solar panels
- Alternative fuels eg. gas or wood
- Water supply management and grey-water systems
- Solar water heating backup to HWC.

When considering the utility supply alternatives, a long-term plan to use sustainable resources should be considered. An assessment of availability, versus environmental sustainability and ongoing costs needs to be undertaken (see [Cost Analysis](#)).

Process for sustainable remote power generation:



COST ANALYSIS

Once the availability of existing utilities (and possible alternatives) have been established, a thorough cost analysis must be completed in order to ascertain the feasibility of providing the utilities that are not available to the building location.

When considering the utility supply alternatives available to a rural setting, an environmentally sustainable resource is favoured. A cost analysis will highlight the need to balance the desire for the use of a sustainable resource with affordable solutions.

!!! Complete a thorough cost analysis for infrastructure installation to a site. Use the following as a guide.

1 Establishment Costs

- Installation of utility (eg. new lines in for mains supply electricity).
- Set up costs for an alternative (eg. supply and installation windmill for electricity generation).

2 Running costs

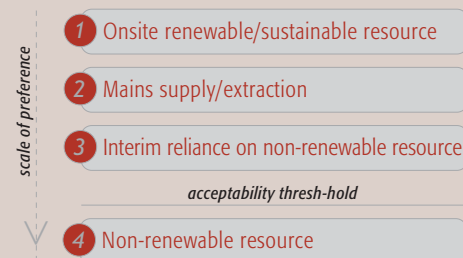
- Average monthly supply costs (eg. mains electricity estimated usage).
- Alternative energy source costs (eg. estimate of maintenance to windmill and batteries/special fittings etc.).
- Other alternative fuels (eg. for water and space heating).

3 Energy-cost saving measures

- Energy-cost saving calculations need to factor in the use of thermal mass/siting for solar gain, insulation benefits and energy saving appliances and fittings.
- This may need specialist advice to perform calculations on energy saving. Often cost-comparison information is available from the supplier of an alternative utility device (eg. electricity/gas running cost comparisons from supplier of gas appliances).

- *Note: it may be too costly to provide a 100% environmentally sustainable solution immediately. If the initial outlay is too costly, a long-term plan to use sustainable resources should be considered. As an example, where the capital outlay of particular system is too costly, (eg. wind powered electricity generation) a diesel generator could be installed in a new dwelling and programmed to become the backup system to the wind-powered generator later.*

Preference for resource reliance is indicated below:



SECTION 2 INFRASTRUCTURE FEASIBILITY

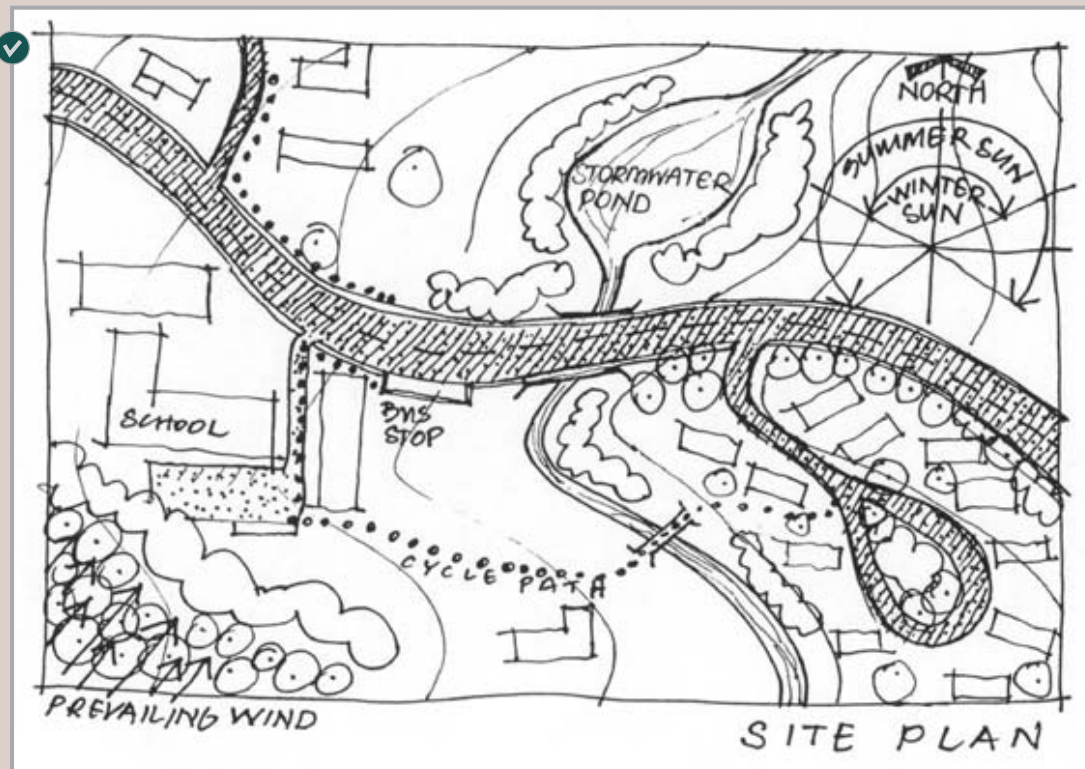
UTILITIES REPORT

The utilities report is a summary of the Infrastructure Feasibility section. The purpose of the utilities report is to establish the feasibility of a particular site.

This is needed because the exact location of the building platform is often informed by the availability of utilities. A building site will need access to fuel/power, water, and waste treatment utilities.

- ⚠ After having followed through the steps covered in this section (access, availability of resources, alternative solutions, cost analysis), summarise the information into a utilities report. This report will be used by the sponsor within HNZA to determine their interest in continuing with the project. One possible result of this process may be that the particular site is not viable, as it is too costly to provide the utility infrastructure for the building.

Another method of summarising the information for the utilities report is to include a sketch as site plan showing the features.



SECTION 3 RURAL PLANNING

Where a development is planned for more than one house in a rural area, unique planning issues arise. Consultation is needed, not only with the proposed occupants but often the greater community.

Rural communities will often have unique planning approaches. They can have high densities, mixed uses and incorporate a community focus.

The planning for a rural community section is broken into the following areas:

Initiating Community Consultation
General principles to be aware of when consulting with a community

Community Facilities
Community support networks and proximity to proposed project location

Consultation Brief
A set of guideline questions for putting together a brief

Site Planning
Unique rural lot, and housing layout planning for a community site.

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COMMUNITY CONSULTATION

Housing provision in rural situations will often involve a community rather than an individual. It is important that if a project is going to involve or affect a community, they should be consulted appropriately. Community consultation should be the first step in these projects. The aim of this section is to establish principles and guidelines for that first step.

Here are four general principles to be aware of when consulting with a community.

1 Papakainga land

- Papakainga lands, broadly defined, are sections of ancestral lands with defined boundaries which have never been alienated, and which have been defined as papakainga lands by the Maori Land Court.
- All projects providing housing on Papakainga land will involve by default other hapu and whanau members. These members are often not the proposed occupiers for the housing project, but will need to be consulted as they are part of that Maori community group.
- Where discussions are being initiated with a Maori community (one or more hapu) for a project proposal on a particular site:
 - It is imperative that the iwi hierarchy is observed where the initial consultation will be directed to the Kai Tiaki (trustee/elder) as the starting point in any discussions
 - This person may not end up coordinating any discussion, and may instead refer the situation on to the relevant person or people.



2 Initial consultation with any community/group should not raise unrealistic expectations.



- Promise only what you can deliver and are happy to put your name behind.

Involving the community in the building process empowers them to have their needs addressed.



COMMUNITY CONSULTATION

3 As houses are designed with a 50 year life in mind, housing provision should address the longer-term needs of a community.



- The following are some questions to address in such a session:
 - What is the housing situation in the area? Include income, lifestyle, current housing situation, etc. in this report
 - What is the longer term view of the owners to housing ownership? Would the owners allow anyone other than their people to live in the proposed housing?
 - What are the community facilities that the housing development will need to support it? Refer for further guidance here to [Community Facilities](#) further on in this section.

4 The purpose for any initial consultation work is to ascertain what assistance is sought, and why it is needed.



- When consulting with communities, it is important that the focus remains on the problems facing the community (eg. housing shortages, or lack of elderly care) so that a successful brief can be developed.
- The solutions should be worked through along with the appropriate technical and professional input as the project progresses.
- *Note: often communities working for housing provision in their areas will not have the resources to provide the professional and technical input required. It is expected that these issues will need to be discussed with the HNZA sponsor early in a project.*

Community consultation should focus on the problems facing the community.



CONSULTATION BRIEF

The development of a successful brief for forming a community project is a priority. Once initial contact is made with a community, workshops with the community representatives are a good way to help this develop.

! A workshop could be steered by the following set of questions, which can help the group steer discussion towards the establishment of a sustainable community:

- Are workspaces (light industry, office or training facilities) planned for the community? These areas may be multifunctional, with their end-use determined through the input of the community. They should be accessible and prominent within the site
- Do community meeting spaces need to be planned for the community? Community meeting spaces should feature prominently within a site, as they define the public areas of the community
- Does the proposed community cater for a mixed housing type? Mixed communities of kaumatua (elderly) housing, housing for families with children, and other accommodation need thought given to layout
- Parts of a site which have community significance or value should be acknowledged and retained for communal space as appropriate
- Are there other specific community needs affecting design?

A community project where HNZC is working alongside Ngati Awa near Whakatane. Relocated ex-army houses are refurbished with the help of the local unemployed, to house in-need families. The project forms part of a larger training complex planned by the community.



COMMUNITY FACILITIES

For any rural community access to established community support networks and services is needed.

!! It is important that proposed developments have a long-term community housing focus. Using established networks and facilities can be of benefit to the project. To ascertain the level of community facilities provided in the area it is recommended the project team list the existence/proximity of the following:

- Local medical facilities
- Local primary and secondary schools (the level of the local community involvement in their running and whether the development may contribute)
- Local facilities such as rubbish collection; if there is no provision currently, this will need to be addressed
- Local employment in the area (and whether the development will contribute to potential local employment opportunities)
- The local bodies or groups which provide community support (eg. marae, churches)
- Where the local HNZA LDRL scheme operates.

Note: in general HNZA supports the locating of communities in areas with established community support. Once the level of community support and infrastructure has been established by its proximity and involvement in the proposed development, this information can be used to support the case for HNZA involvement in any project.

A marae may form the base for community support networks.



SITE PLANNING

Rural environments have unique planning requirements. The need to provide infrastructure, a community focus and interconnectivity can indicate a mixed-type development would be an appropriate response for a community. Rural communities will often have only one road, also creating unique planning approaches. Planning community lot layouts in a rural setting will often mean the immediate area can be fairly intensely developed, with similar density to town suburban lots. However the placement of the individual houses will link the community, where cluster groupings can represent an improved site planning solution.

The following are three areas that require attention:

- 1 Generally cul-de-sac street layouts should be avoided. A grid-like street plan facilitates easy-access for visiting between any two houses. There is however a place for a cul-de-sac layout in rural papakainga developments. This is usually a situation with relatively few houses that can easily fit into one street, where the street becomes the focus of activity and creates the community heart. Refer to the [Maori Design Guide, Ki te Hau Kainga](#)
- 2 Housing clusters can provide more efficient use of land, through sharing common resources. This is important in a rural setting/greenfield development where infrastructure costs need to be minimised. Housing clusters allow more flexibility in utilising alternative storm-water and sewage treatments. Housing clusters are flexible units. They may range from a 3-bed house and studio/sleepout to four houses of up to 5-beds sharing a large outdoor courtyard. Good consultation is needed to develop a sense of community
- 3 Communal outdoor space defines whole communities and groups within the community:
 - Communal spaces between houses that accommodate different household groupings are fundamental to the success of communities. These spaces show an established relationship (eg. extended whanau groupings or inter-generational households)
 - Community space needs to be planned to create a community heart. As such, the best land in a development should be reserved for such communal areas.

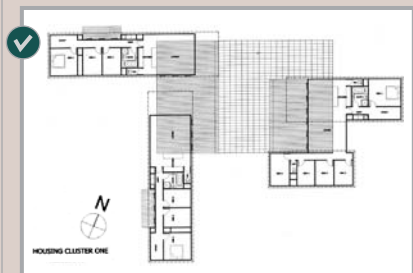
A grid-like plan and carefully planned public spaces can define a community.



Cluster housing allowing communal storm-water and sewage treatment.



Communal outdoor space defined by three houses belonging to one extended whanau group that clearly demonstrates the relationship between the occupants.



SECTION 4 CONSTRUCTION

In a rural environment land values are often low, and 'sweat equity' can be used to keep costs to an affordable level. There is often less access to maintenance materials and skilled tradespeople than exists in a town.

These factors, coupled with an end-user lifestyle incorporating outdoor living and working, and accommodating visitors, highlights the need for robust construction and material selection.

The Construction section is broken into the following areas:

Self-Build

Briefly describes the ways using 'sweat equity' will affect a project

Maintenance

Highlights the need to select materials that will last and perform.

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SELF-BUILD

In rural communities there is often a need to develop the skills base of the local population, or simply to provide labour to local tradespeople. It has also been proven in many overseas housing studies that participation in the building and site planning of a development is invaluable in developing a sense of community worth.

However when using community 'sweat equity' labour, the project will be affected in a number of ways. This section briefly describes some of the ways using 'sweat equity' will affect a project.

Building and construction techniques are affected in the following ways:

- **Design**
Simple construction methods or techniques are required, coupled with clear drawings (3D sketches) explaining the construction process and sequence
- **Training**
Off-site courses or schools to train individuals in more complex methods of construction (eg. mud brick building, or joinery) is another method of providing the level of completion the houses require
- **Management**
Project management with professional and impartial onsite guidance is required. Finishing and technical work will in most cases require skilled tradespeople for completion
- **Costs**
Once a project has been designed and costed to the satisfaction of HNZC, the onsite management of funding and draw-downs to fund the building process need to be managed by an HNZC representative
- **Contracts**
The form of contract for Self-Build projects is likely to be modified to reflect the particular project. While HNZC prefer NZS 3915 as a base document, there is potential for specific contracts to be prepared where needed.

Training was provided here off-site for this project. Previously unskilled community members attain high levels of trade skills.



MAINTENANCE

Materials used in a rural setting need to be selected based on their ability to demonstrate that they will last and perform.

!! Following is a set of principles for materials selection.

- **Thermal performance**
 - Homes should have a low-energy usage designed into them from the outset. Light building materials coupled with low insulation and poor siting can mean a home requires high energy input to maintain a healthy environment.
- **Interior**
 - A floor on grade will provide an easier link between inside and outside.
 - Floors need to stand up to the wear and tear that a rural situation demands. High pedestrian traffic, especially to service areas, means that flooring that relies solely on a coating system (eg. paint/varnish etc.) will not be suitable.
 - Wet area walls and floors will need to be water resistant.
- **Exterior**
 - Simple building forms with pitched roof and eaves and fewer corners/junctions will by and large perform better over time than buildings that use items such as parapets, roof decks, internal gutters and acute angles.
 - Low maintenance claddings that do not rely solely on external paint systems for water-proofing are generally preferred.
 - Powdercoated aluminium windows are preferred. Note level entry doors must have provision for water drainage to the exterior.

A home in rural setting, displaying unwise choice of materials. Although the building form is simple, the materials and systems are not hard wearing and the cladding requires regular painting. The house will need high-energy input as it is lifted off the ground and sited facing south.



**- Systems**

- Guttering systems must be robust, and have adequate fall.
- Septic tanks and rainwater systems must be designed with minimum maintenance in mind.
- Low energy systems are preferred eg. water heating boosted with solar collector or a wet-back.
 - a For maintenance solar can be located inside the roof space under skylights.
 - b A hot water cylinder on mains power will still be needed.
 - c 'Future proofing' of a building, by allowing for future provision of solar heating is also worth considering.

Notes:

- 1 For information on selecting materials and systems refer to the **Architecture Design Guide**, and **HNZC Housing Specification**
- 2 Heavy materials may sometimes not suit a site, due to the prohibitive cost involved in transporting the material to the site
- 3 Heavy wall cladding materials require a concrete slab. While a concrete slab does provide an excellent building base, HNZC loan security may require the house not to be 'secured' to the land.

