



SUSTAINABLEHOUSEDAY

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## Humphrey Street Miners Cottage

(Renovation & Landscaping)

*Renovations to this low set 1908 Queenslander (miner's cottage) on a 400 sqm block have encouraged breezes into the house and also through each room, previously like many miners cottages, the home was a series of small rooms. Foil insulation and light coloured surfaces have been chosen to enable rapid cooling of the home at night and has avoided use of air-conditioning and minimised use of fans.*

*Electricity use is minimal with skylights in living area avoiding daytime electric lighting and a 1kW solar panel generates renewable energy. Cooking is with LPG gas enabling gas to also be used instead of an electric kettle and toaster.*

*The low water use garden features a no dig garden, a native garden to attract native birds and a range of edible and native plants. Plants are also used for screening and shading and help to create a cool microclimate around the home.*

Owner: Chris Kahler

Address: 21 Humphrey Street, West End (Townsville) QLD 4810

Climate Zone: Townsville is located in the Dry Tropics – there are two seasons: a hot and humid (November to April) wet season, and a warm to hot dry season with low humidity for the other half of the year.

Construction type: *Low set Queenslander (1908), timber floor, timber frame, galvanised roof, tin and timber cladding, some sections of skillion roof (ie no roof space). Reflective foil insulation in roof and some walls. Internal walls have been removed and openings created to enable airflow through the house. External openings include extensive use of glass and timber louvres (original) plus the use of casement windows and French doors to maximise breezes coming into the home.*

### Sustainable elements featured at this home

#### Solar Power Generation

A 1kW grid connected solar panel array on the roof. The system creates an average of 3.3kwh per day. The home receives a credit from Ergon of around \$60 a quarter.

#### Tropical Design Features

Extensive louvres – timber and frosted glass.

External openings enlarged or created and fitted with casement windows and French doors intercept and maximise capture and redirection of breezes into the home.

Internal openings created in walls to dramatically improve airflow through the house.



Metal window hoods installed to shade west facing windows and doors.

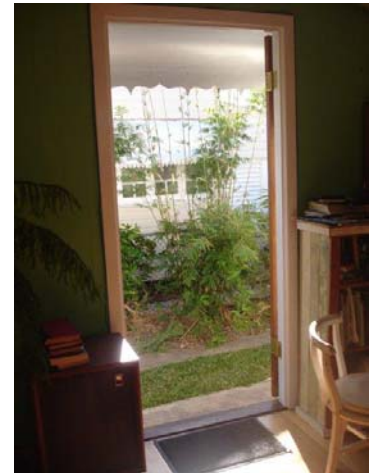
Fast growing clumping bamboo and tropical gingers planted on western boundary to improve privacy and shading both to this house and neighbouring home from east/west sun.

Reflective foil (sarking) has been installed in the roof and some of the west facing walls.

Light colours used for external paintwork.

### **Energy Efficiency**

Household energy use is typically around 5 kilowatt hours per day (kWh/day). Daily electricity use consists of 2kWh on T11 (ie all internal electricity use eg lighting, appliances, electronic equipment, fans) and 3 kWh on T33 (electric hot water heater).



Optimisation of the home's passive tropical design performance including maximising ventilation to all rooms and the use of foil insulation enabling the building to cool off quickly at night avoids the need for air-conditioning and minimises ceiling fan use.

All computer and entertaining equipments are linked to powerboards that are easily able to be turned off completely each night.

Lighting is exclusively fluorescent – compact and linear globes.

Two skylights have been installed in the living areas avoiding the need for electric lighting in the daytime.

LP gas is used for cooking – stove top and oven (approx 32kg of LPG used each year)

No electric kettle or toaster – instead a gas kettle is used and the griller used for toast.

An electric lawn mower (with use effectively offset by the solar panels on the roof) avoids use of petrol.



### **Hot Water Heating**

The hot water system is still electric storage, but energy consumption has been reduced by 40% (5.5kWh/day to 3.3kWh/day) by turning down the thermostat from 75 to 60 degrees Celcius and installing a water efficient shower head which reduces the quantity of hot water used.

### **Water Efficiency**

A water efficient showerhead has been installed.

Grey water from the washing machine is directed to the banana circle in the garden.

Bare soil is avoided and gardens are mulched heavily with hay to improve soil carbon and water retention.

Watering is either with 'leaky hoses' (made from recycled tyres) placed under the mulch or hand-watered.

Total annual water use is 206kL per year (about a 1/3<sup>rd</sup> of the average Townsville household).

## Use of recycled materials

Silky oak French doors were found under a friend's home. Oversized timber casements were recovered from a house demolition.

Sections of wall lining including timber panelling and corrugated tin wall linings removed in creating openings in walls were reused to reline other walls.

An old bath has been relocated down the back garden and is occasionally used with the water emptying to the banana circle.

## Special Garden Features

Edible plants feature throughout and particularly in the 'breakfast garden' which features mainly herbs and also the no dig garden (right) which is the main area of produce. There are also compost bins which have been converted into potato planters and also a banana circle.

Edible plants featured in the garden include passionfruit, galangal (ginger), peas, basil, chives, rocket, coriander, dill, oregano, aloe vera, loofah, sweet potato, lemon grass, cherry tomatoes, chilli, spring onions, mint, radishes, pawpaw, banana, pineapple, potatoes (in compost bins).



The 'no dig garden' was created by chipping out the lawn, loosening and wetting the soil, then applying dynamic lifter. Then in the course of an afternoon, layers of hay (slashed grasses) and dynamic lifter were applied well watered between each layer. After waiting a week the garden was planted out. Sections of the hay are left lower as paths/drainage channels which hold water and provide water back to the beds by capillary action.

In order to improve biodiversity and in particular to provide food and habitat to attract native birds to the garden an area at the rear of the property has been dedicated to native plants (right).

Species planted include: Soap tree, Pongamia, Macaranga, Damson plum, Beach tuckeroo, Sandpaper fig, Peanut tree, Cocky Apple, native hibiscus.

A water pond is stocked with native rainbow fish.

## Transport

Regular bicycle use for shopping, commuting to sport and relaxation.

