



ISLE OF LUING  
COMMUNITY TRUST

# Isle of Luing Energy Audit

Written by

**Peter Hooper, Isle of Luing**

Coordinated by:

**Scottish Island Federation**



Consulting Partner

**Community Energy Scotland, Simon McKinney**



Funded by:



# CONTENTS

<b>1. Geographic Description</b>	<b>3</b>
<b>2. Population and Demography</b>	<b>5</b>
<b>3. Local Economy</b>	<b>5</b>
<b>4. Outline Strategy for Energy Audit Consumption</b>	<b>6</b>
<b>5. Inventory of Energy Sources</b>	<b>7</b>
<b>6. Inventory of Energy Users</b>	<b>8</b>
<b>7. Potential for fuel switch</b>	<b>11</b>
<b>8. Appendix 1: maps</b>	<b>12</b>
<b>9. Appendix 2: Photographs</b>	<b>13</b>
<b>10. Appendix 3: Contact database</b>	<b>16</b>

## 1. Island Geography

Luìng is a small island located in the Inner Hebrides. It runs in an approximately north-south line (albeit further east) between Mull and Jura. The northern tip is only a few hundred metres across the Cuan Sound from the southern end of Seil. The eastern side is partly in sight of the mainland opposite the Loch Melfort and Craignish Peninsula area. Luìng is about 4 miles long and 2 miles across at its widest point with a total area of about 15 sq. km. It is a green island, hilly in the north, but with low farmland in the south, mostly used for grazing by sheep and the Luìng cattle, which were first bred here. The sea area to the west of Luìng is designated a marine Special Area of Conservation.

Luìng lies within the Argyll and Bute Council area and is identified by the Postcode sector PA34 4xx. There are 11 unit postcodes TU, TW, TX, TY, TZ, UA, UB, UD, UE, UF, and UG.

The number of premises within the defined postcode sector is recorded as 148 residential and 7 business premises.

The majority of the houses in the two conservation villages are typical quarrier's cottages, one and a half stories with solid stone walls and difficult to insulate roofs.

There is a small estate of social housing in Fladda, built in the 1950/1960's, approximately 50% of which are now privately owned.

The more modern dwellings are mainly found in the smaller settlements at Blackmill Bay, Ardnamir and South Cuan.

An increasingly high proportion of these properties are now second/holiday homes (42 plus 11 holiday lets and 8 caravans, ie approximately 36%).

### Transport Links

Luìng is connected to the mainland by **an Argyll and Bute Council operated ferry service** across the narrows of Cuan Sound. The ferry journey takes approximately 5 minutes. The vehicle ferry runs a half-hourly service six days a week from 7.30am to 6.15pm for most of the year.

An open passenger boat can be booked for evening crossings at 7.30 and 10pm Monday to Thursday, more regularly Friday and Saturday evenings,

and also runs on Sundays from 11.00am to 1.00pm, and between 3 and 6pm. **The passenger boat is replaced by the vehicle ferry for a short 12 week summer period.**

The island is served by a bus service from Oban to the ferry terminal on Seil with 4 buses per day, excluding Sunday when there is no service.

## Amenities

Luing is ranked in the most disadvantaged 10% of communities for geographical access to services.

The island

- lacks basic infrastructure and services; e.g. no premises exist for small business start-up, there is no hotel, pub or café; since July 2014 there has been no public transport at all on the island as the island's post bus has been withdrawn
- lacks employment and business opportunities
- pays more for essential fuel and transport
- needs resources to cope with severe weather disruption.

This adversely affects the quality of life for residents of all ages and backgrounds.

Infrequent public transport and poor roads create barriers for the elderly and disabled who often lack confidence to access services.

Lack of satellite/outreach provision often means that older people are left isolated in their own homes, undermining physical and mental health and wellbeing.

On the positive side, however, there is a small primary school, a fire station manned by volunteers and a church.

Until recently, there was a shop open 7 days a week during the summer months, but week day mornings only through the winter. The shop was stocked with a good basic range of tinned and frozen goods with some

fresh fruit and vegetables plus bread and milk. Access to the full range of Post Office services also required a fast and reliable broadband service.

Islanders with cars are able to do most of their shopping in the Oban supermarkets – the Tesco ‘Click and Collect’ facility being popular. A shopping day trip to Glasgow (nearest large town/city, 90 miles away) can be achieved, but is always a race against time to make the last ferry, especially if there is an unforeseen road closure/lengthy diversion.

An increasing number of islanders are also turning to internet shopping for books, music, clothes, air and train tickets, but this can be an uncertain and stressful process because of erratic internet connections.

There are two Village Halls, one in each Conservation Village, and a major new Community and Tourism hub, The Atlantic Islands Centre which will have a café and heritage displays.

## **2. Population and Demography**

The population is recorded as 195 (Scot. Census 2011), however since then it estimated to have declined to 175.

The majority of the population lives on the western side, in the Conservation Village of Cullipool and associated ribbon development inland along the road towards Fladda.

The second main grouping is at the south-eastern corner of the island, in the Conservation Village of Toberonochy and the nearby farm cottages.

In common with much of rural Scotland, the population is steadily declining and ageing. The population has declined by 15% in the last 5 or 6 years (207 to 175).

About 40% of the population are now of pensionable age, 20% are in full-time education, 30% are employed on and off the island, and the remainder are either unemployed, disabled or full-time parenting.

The most recent survey indicated that 9% of 16-24 year olds receive Job Seekers Allowance, almost twice the Scottish average.

### 3. Local Economy

In centuries past the community was essentially agricultural, with small crofts and some seasonal fishing. From the mid-eighteenth century, slate working increased in importance, bringing in workers from distant places

to swell the population. The industry declined in the twentieth century, and the last quarry on Luing closed in the 1960s.

Argyll & Bute Council note that:

*'The Slate Islands... played a highly significant part in the industrial history of Scotland and are of considerable significance in the history of building construction generally. More importantly they are of universal significance because they represent an early stage in the history of industrialisation. These islands are highly significant in the way they show how small industrial communities developed in a remote rural area. Unlike industrial villages in the Central Belt of Scotland and other industrial hubs elsewhere in the world, these islands have retained their semi-rural character, surviving almost completely intact.'*

Over the last thirty or so years Luing has undergone a number of changes and during this period, the sources of income have diversified from reliance on employment on the island farm, shellfishing boats and small-scale tourism.

Improved road links from Cuan to Oban mean that it is possible (though expensive) to commute to work on the mainland, especially in Oban.

There is also now a marine engineering company on the island. Sadly, island-based employment opportunities are limited and have not been enough to halt the population decline, especially obvious amongst young people who leave the island to find suitable jobs.

The shop and Post Office, which were open all year round until last year, have now closed due to insufficient interest from locals to take it over.

Tourism income remains vital for the future of the island's economy, with the new Atlantic Island Centre completed in 2015, is seen as one of the few growth areas with potential.

## 4. Outline Strategy for Energy Audit Consumption

It is proposed to sample sufficient residential properties to cover the main types of housing eg. stone cottages, post war council houses and houses built in the last 20 years. House occupancy will also be considered eg. single people living on their own and families with young children. It is anticipated that actual figures of energy use can be obtained. It is also proposed to approach the island businesses for energy consumption figures.<sup>1</sup>

We also hope to explore the possibility of obtaining total island energy consumption from the utility companies and local fuel supply companies.

## 5. Inventory of Energy sources

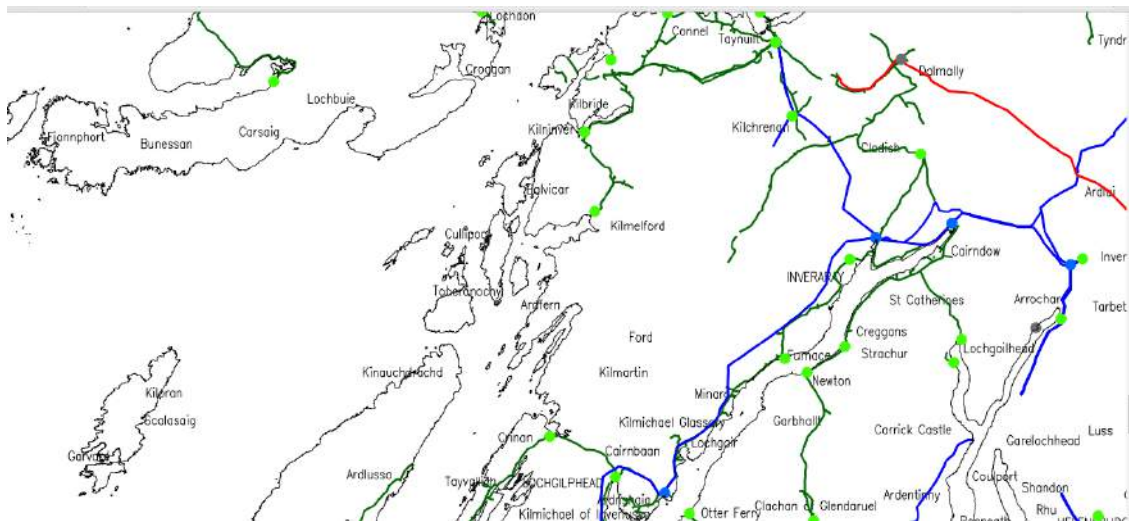
### Main energy sources used on the island

- Electricity supplied by overhead cables on two pylons across Cuan Sound and then distributed on the island by a network of overhead poles. This network can be disrupted by adverse weather or the resident cattle pushing the poles over.
- Bottled Gas supplied by local firms in Oban and brought to the island by lorry.
- Heating oil supplied by local firms in Oban and brought to the island by small tanker lorry.
- Solid fuel supplied by local firms in Oban and brought to the island by lorry.

The Kilninver primary substation – supplies Seil and Luing – min .41mw , contracted .81mw, thermal headroom 2.1mw (2012 SSEPD) with a High Voltage Grid – A&B – 275, 132,33kV lines

---

<sup>1</sup> This has yet to be done.



## Main suppliers

- Corachie Winter Fuels, Taynuilt, 01866 822 149
- West Highland Gas, Oban, 01631 564 050
- J Slater Coal Merchants Oban , PA34 4HA 01631 563 036
- Fergusson Group, The Coal Yard, Fort William 01397 704 856
- Oban & Lochgilphead Coal Co 4 Mill Lane, Oban, PA34 4HA 01631 563 246
- Argyll Woodfuels Oban, 01631 563 271
- Brogan Fuels, Oban, 01631 570670, and Highland Fuels, Connel · 0800 224224

Petrol and Diesel fuel is also available in Oban.

## 6. Inventory of Energy Users

### Residential users

There are 148 residential dwellings, 53 of which are second/holiday homes or self catering holiday lets.

Estimates on consumption and spend on electricity vary: £616 p/a based on 3,800kwh (Scotland, DECC 2011 methodology).

This usage data appears too low. According to the Office of National Statistics Scottish average bills were considerably higher indicating greater consumption. Average bill £112 p/m (Scotland, March 2014. ONS) or £1344 or nearer 8,000 kwh per annum.



However given that the majority of Luing usage electricity is for heating, light and power, the greater figure is more rational, however the low population and occupancy rates would reduce this figure proportionately (potentially by 1/3rd)

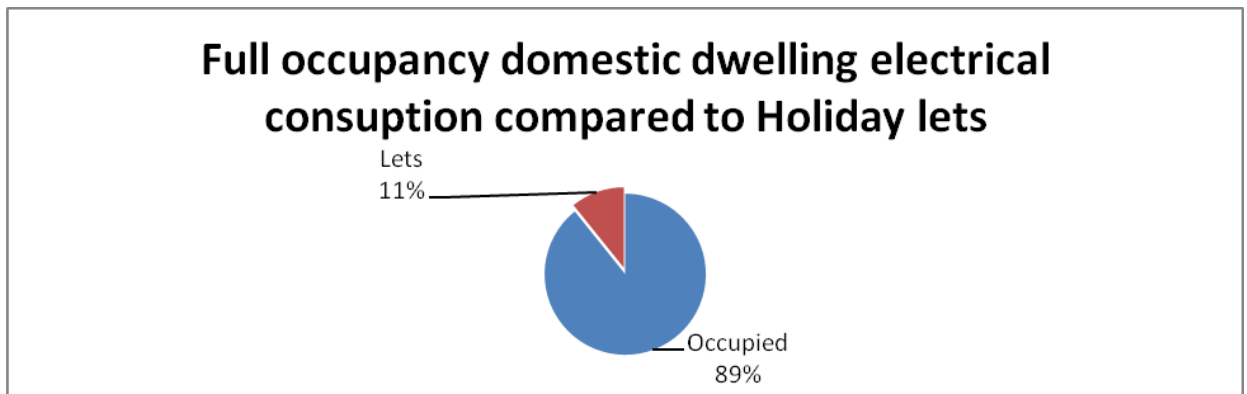
The consumption for the fulltime residential can be estimated at 6,000 kwh p/a or £973 p/a.

The holiday season is primarily focused on 12 weeks of the summer, thus consumption will be lower estimated 1,300kwh pa or £224p/a .

The gross estimated consumption for all residential property on the island is 639 MWh p/a.

Average Residential Consumption	Average Holiday Let Consumption
6000 kwh	1,300 kwh
<b>Total Domestic Electrical Consumption p/a : 639MWh</b>	

A typical usage domestic dwelling on the island (Surveyed: Robb) uses 5696kwh p/a suggesting that the estimate is appropriate.



<b>Statistics relating to domestic dwelling central heating systems</b>	
No central heating	7.8%
Gas central heating	
Electric central heating	50.0%
Oil central heating	15.6%
Solid fuel central heating	12.5%
Other central heating	

Two or more types of central heating	14.1%
--------------------------------------	-------

Source: Central Heating (Scot. Census 2011)]

### Social housing and public sector

Social housing on Luing is provided by Argyll Community Housing Association (9 units) – no confirmation on EPC or efficiency measures have been received from ACHA.

Western Highland Housing Association has 4 properties: Equivalent SAP/EPC - EPC rating E x 2 houses, EPC rating F x 1 property, 1 x void property no rating. These are 100 year old stone single floor dwellings, connected to grid mains power for heating and lighting and using open fires for wood/coal burning.

Some level of loft insulation is evident although the thickness cannot be confirmed.

No records are held on energy usage however it is expected to be well above average.

Co2 emissions estimates	
EPC band E (SAP rating 51)	3.5 tons
EPC band F (SAP rating 21-38)	4.5 tons

### Primary Sector

There is one large farm on the island dedicated to rearing the Luing cattle breed as well as sheep. The farm has a wind turbine installation of 3 x 225 kW turbines which are connected to the electricity grid.

There are 2 commercial fishing boats, 1 engaged in scallop dredging and 1 in creeling for prawns, crabs and lobsters.

### Secondary Sector

There is 1 small general engineering company who maintain the island

ferry on a day to day basis and undertake a wide range of marine repair jobs.

## Tertiary Sector

The primary school has 12 children and 2 staff and a nursery class.

The street lighting is confined to the ferry slipway and the 2 conservation villages.

### Fire Station Usage

- Electricity consumption 13/14 – 17713 kWh
- Electricity consumption 14/15 – 19367 kWh

## Transport

The island is served by a 6 vehicle ferry run by Argyll and Bute Council – no energy data was made available by Argyll and Bute Council. There is no public transport on the island.

The island hosts a volunteer manned fire station. Scottish Fire estimate that the appliance travels a maximum of 200 miles per year or 25 gallons per year Diesel – 1222kwh of fuel energy.

Vehicle ownership on Luing	
No car or van	14.1%
1 car or van	48.4%
2 cars or vans	28.1%
3 or more cars or vans	9.4%
Heavy good vehicles	0%

This equates to **124 cars / vans owned and** operated on the island. The survey of businesses and residents concluded at **an average annual mileage of up to 5000 miles** (predominately off island miles).

All surveyed operated diesel vehicles, therefore it is plausible to base the estimate on such fuels.

Thus a maximum estimate, if all vehicles are used off island, for consumption would be: **620,000miles / 35 mpg (fuel efficient and 4x4 averaged) 7,714 gallons or 865,836 kWh energy.**

## **7. Potential for fuel switch**

At present there is one private PV solar installation on the island as well as 3 private wind turbines with a fourth under construction. All are grid connected, which leaves no more capacity for anything else.

Potential for tidal stream generation in Cuan Sound is medium scale, but the investment required is considerable. A working party on the island are looking at a feasibility study for this, but funding is a big problem even for that, and now with the effective end of FiT, the outlook is not good.

The potential for on-island domestic renewables is very limited, due to planning permission issues, as most residential and holiday let properties lie in the two conservation villages.

The one big development is **the water-source heat pump system** providing under-floor heating and hot water now working in the Atlantic Islands Centre. This represents a significant pioneering use of a resource provided by a flooded quarry as a reliable and constant energy resource – provided the heat pumps themselves work reliably!

Extending this system to a small district heating system would be ideal, but since this would require laying under-floor heating in existing stone and concrete floors, the potential is limited and probably too expensive to be economical.

The main barrier to improving energy use and conservation is the nature of the slate-built cottages forming the conservation villages. The interiors are simply too small to have space further reduced by internal insulation, and the exteriors cannot be altered as they are listed buildings.

## 8. Appendix 1: map





## 9. Appendix 2: photographs



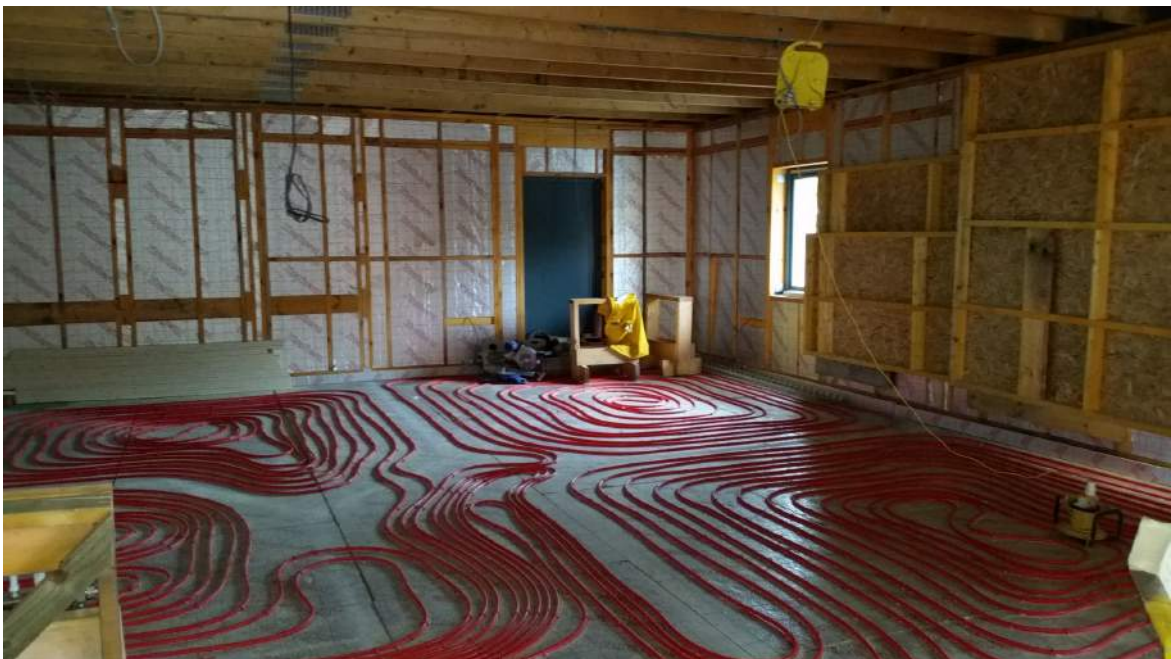
Aerial photograph of Cullipool village showing quarries surrounding the conservation village, taken before construction of the Atlantic Islands Centre on the old engine house site to the right of the large



View of some of the rows of old slateworkers' cottages that form most of both conservation villages on Luing.



Atlantic Islands Centre showing quarry pond alongside used as heat source for the heat pump system. The slate cladding to the walls of the building conceals an insulated double wall construction inside, while the roof is insulated with over 200 mm thickness of insulating panels



The underfloor heating for the Atlantic Centre laid in 2014, also showing the insulated panels in the external wall construction.



## 10. Appendix 3: Contact database

Argyll and Bute Council	Mrs E Robertson Ward Councillor 01546 602127
Isle of Luing Community Council	Convenor Mrs F Rogers 01852 314233
Isle of Luing Community Trust	Chairman Mr J Robertson 01852 314257
Cadzow Brothers	Shane Cadzow 01852 314234
Robb Engineering	Alastair Robb 01852 314217
Gorsten B&B	Richard and Julia Schuff 01852 314213
Luing Stores	Ann Pitchford and Gary Hudson 01852 314243
Sunnybrae Caravan site /Luing Bike Hire	Michael Barlow and Jen Heyduk 01852 314274
MV Rambling Rose	Eoghan MacLachlan 01852 314295
MV My Tara	Neil MacQueen 01852 314223
West Highland Housing Association	Phillip Wilson 01631 566451
Argyll Community Housing Association	Oban Office 01546605930
Scottish Fire Service	Station Rd,Luing, 01852 314117