

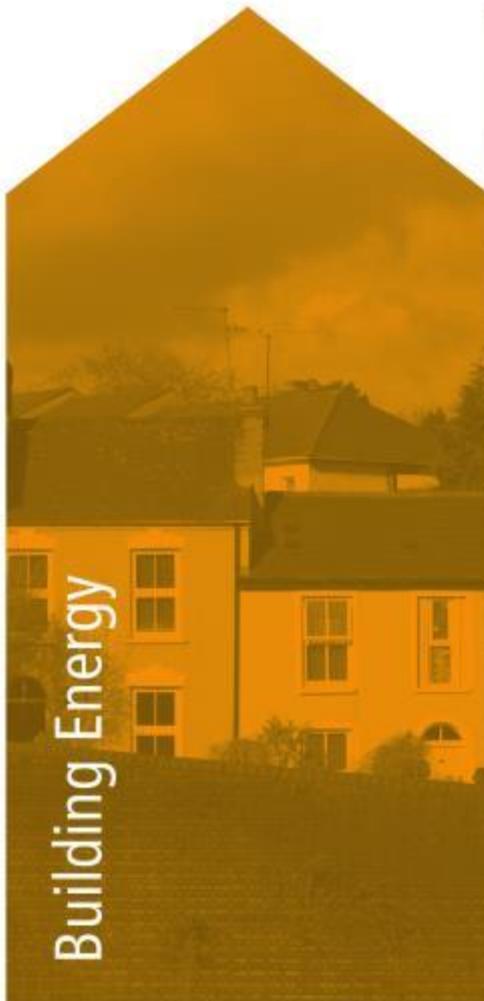


Community Opportunities Report

Prepared for:
Neuadd Aberdyfi

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Final
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Project Background

The purpose of the Client Manager is to help service users identify opportunities for action, and take that action. This will principally be delivered by providing general support, identifying the need for specific technical expertise and working with Resource Efficient Wales staff to source this, in order to support service users to the point of successful installation and benefit realisation, and onward to additional resource efficiency actions. Opportunity studies such as this are one of the principal tools utilised to achieve these objectives.

DISCLAIMER

While reasonable steps have been made to ensure that the information in this report is accurate and complete, the author cannot be held liable for any direct, indirect or consequential loss or damage that results from work undertaken on the basis of the recommendations. Nothing in this report is intended to be or should be interpreted as an endorsement of, or recommendation for, any supplier, service or product. Any person making use of this report does so at their own risk.

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Executive Summary

Neuadd Aberdyfi is a community owned hall, situated on the western edge of Aberdyfi. The building dates back to the 1920's and underwent extensive refurbishment a decade ago, followed more recently by an Annexe extension, with its own lobby and entrance, housing a studio and a committee room. The linked main building consists of the large hall, a large stage, toilets and a kitchen. The building is typically used for 30 hours per week.

An energy survey of the site was completed in February 2015, along with an analysis of recent billing data. It is calculated that the organisation spends almost £2,500 per annum on electricity and gas (excluding standing charges and VAT). The total energy consumption results in a carbon footprint of almost 11 tCO₂ (tonnes of carbon dioxide) per annum. An initial target to reduce this by 5% is suggested.

The scope of this opportunities report includes the following key areas:

Building energy survey of the community hall

The key recommendations for the community include:

Install ventilation for the Studio

Install improved ventilation for the Hall in conjunction with a Ground Source Heat Pump

Improve lighting efficiency

Improve recycling facilities

Survey Findings

1. Introduction

The client was referred to the REW service seeking advice on improving ventilation in an energy-efficient manner, and secondarily on making energy improvements to their building and to explore options for waste reduction.

Neuadd Aberdyfi is a community owned hall, situated on the western edge of Aberdyfi. The building dates back to the 1920's, underwent extensive refurbishment a decade ago, followed by an extension that houses an Annexe with its own lobby and entrance. The linked main building consists of the large hall, a large stage, toilets and a kitchen. The building is typically used for 30 hours per week.



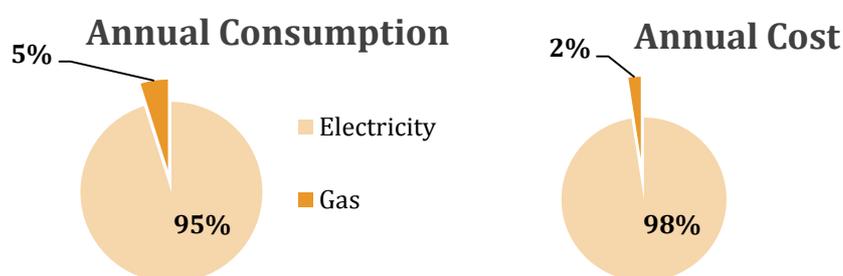
Picture 1: Northern aspect of the hall

2. Energy Data Analysis

The table below shows the calculated total annual energy consumption of the organisation.

	Annual Consumption		Annual Cost (ex VAT)	
Utility	kWh	%	£	%
Electricity	21,229	95	2,416	98
Gas	1,084	5	60	2
Totals	22,312	100	2,476	100

Table 1: Annual consumption and cost



The information above demonstrates the distinction between consumption and cost. The data shows that while 95% of the energy consumed is electricity; it accounts for 98% of the energy costs. This highlights that electricity is an expensive fuel to use. Electricity savings will have a significant impact on reducing the annual expenditure of the organisation.

Table 2 illustrates energy consumption at the organisation, converted into carbon dioxide emissions (CO₂). This is for the purpose of understanding the environmental impact of energy use.

Fuel Type	Consumption (kWh)	CO ₂ Emissions (kg)	tCO ₂
Electricity	21,229	10,622	10.6
Gas	1,084	233	0.2
Total	22,312	10,854	10.9

Table 2: Carbon dioxide emissions

This equates to 10.9 metric tonnes of CO₂, and given that the average household emits around six tonnes of CO₂ per annum, the organisation emits the same amount of CO₂ as 1.81 homes.

3. Building Survey

3.1. Building fabric & insulation

3.1.1. Walls

Current situation:	The walls of the main building are uninsulated solid block. In principle they could be insulated internally but the loss of space is felt to be undesirable.
Recommendation:	None
Appendix:	

3.1.2. Roof/Ceiling

Current situation:	The Annexe has an insulated ceiling but the Hall ceiling is profiled steel insulated to approximately 0.4u . Above the stage area there is no suspended ceiling
Recommendation:	Consider insulating the Hall ceiling
Appendix:	2.1.2



Picture 2: Ceiling above the dance floor area

3.1.3. Windows & doors

Current situation:	Windows and doors were in good condition generally.
Recommendation:	Fit new draft strips to the original front door (facing the road).
Appendix:	2.1.3

3.1.4. Floor

Current situation:	The Hall floor is suspended timber throughout. There is approximately 100mm Jablite insulation under the dance floor area but nothing under the Stage or the seated area at present.
Recommendation:	Consider installing insulation between the floor joists under the seating area
Appendix:	2.1.4

3.1.5. Pipe insulation

Current situation:	Heating and hot water pipes are insulated.
Recommendation:	none
Appendix:	

3.2. Heating & Hot Water

3.2.1. Main heating system

Current situation:	The Hall is heated by 12 x 3kW overhead over-head heaters, with two more for the Stage. 42kW is a substantial power requirement, but they are only used when the building is occupied. The complaint is that heads get hot if people are seated/stationery.
Recommendation:	Consider a Ground Source Heat Pump, drawing from land under the adjacent Community Council leased car park. There are two spare ducts in the Hall ceiling that could be used as part of a ground to air system. A ground to water system would be unwelcome because of the wall space required for radiators.
Appendix:	2.2.1

3.2.2. Heating controls

Current situation:	These are adequate
Recommendation:	none
Appendix:	

3.2.3. Hot water system

Current situation:	Water is heated by a LPG boiler in the cavity area above the kitchen
Recommendation:	none
Appendix:	

3.2.4. Supplementary/secondary heating

Current situation:	The Annexe is heated by a Ground Source Heat Pump, which works well.
Recommendation:	none
Appendix:	

3.2.5. De-stratification fans

Current situation:	There are some in the Hall which feel draughty when full on.
Recommendation:	Review the appropriateness of the design as part of the recommended heating and ventilation survey.
Appendix:	2.2.5

3.3. Lighting

3.3.1. Lamps

Current situation:	<p>The stage area, Studio and committee room are fitted with LED lamps tubes, but the Hall has 14 x 150W Halogen lamps and the kitchen/entrance has 8 x GU spotlights. There is a T12 strip in the plant room above the kitchen and an incandescent bulb up the stairs above the original entrance lobby, but these have very low use. The Hall ceiling is very high.</p> <p>There is potential to save around 73% of the lighting electricity consumption by replacing lamps, but the current consumption is estimated to be only 4% of the total for the building, so savings are not large. By far the largest lighting consumption is for the Hall, at 546kWh, costing £6.20 p.a.</p>
Recommendation:	<p>Consider fitting dimmable LED lamps in the Hall ceiling. Replace the T12 tube with a T8 when it fails and the incandescent bulb with a compact fluorescent lamp.</p>
Appendix:	2.3.1

3.3.2. Controls

Current situation:	The toilet lights are 2Ds and T8 strips
Recommendation:	Consider putting PIR (movement) sensors on the toilet lights
Appendix:	2.3.2

3.4. Electrical Appliances

3.4.1. Refrigeration

Current situation:	The fridge/freezer in the kitchen is old but the seals are good. The freezer up the stairs above the lobby was mostly empty.
Recommendation:	Choose an A+++ model on replacement. Keep freezers full for efficient operation, for example with bubble wrap.
Appendix:	

3.4.2. Kitchen appliances

Current situation:	Dishwasher, urn
Recommendation:	none
Appendix:	

3.4.3. Heat recovery ventilation

Current situation:	<p>This was the main reason for the survey, as the studio has inadequate ventilation for high usage situations. There are no windows and the roof has PV on it, with a sound-panel ceiling. The original design for three fans is considered unworkable by the managers, and a standard design of an extractor fan drawing cold air onto people from an inlet in each half of the room is not desirable. They have a design for a system that warms the incoming air by recovering heat from the out-going air, and also uses spare heat from the Ground Source Heat Pump to warm it further. The £37,000 estimated cost is a daunting fund-raising target, and the managers would like either an alternative solution or reassurance that this is the most appropriate design. Fan noise needs to be minimised.</p> <p>Ventilation in the Hall is adequate but does not provide comfort. There are two large extractor fans at the road end, drawing cold air in through two large ducts from the opposite (sea-facing) end.</p>
Recommendation:	A heating and ventilation survey for the whole building; a design for ventilating the studio and consideration of a Ground to Air Heat Pump for the Hall.
Appendix:	2.4.5



Picture 3: Studio



Picture 4: Extractor fan for main Hall

3.5. Behaviour change

3.5.1. Community building

Current situation:	The Chair monitors energy spend and feels that most users are responsible with lighting
Recommendation:	none
Appendix:	

3.6. Building power generation

3.6.1. Biomass

Current situation:	Not suitable, because a wet heating system would be difficult to accommodate.
Recommendation:	none
Appendix:	

3.6.2. Solar Photovoltaics

Current situation:	4kW on the Annexe. There would be room for more.
Recommendation:	none
Appendix:	

3.6.3. Solar thermal

Current situation:	Insufficient hot water usage to be justified.
Recommendation:	none
Appendix:	

3.6.4. Heat pumps

Current situation:	One Ground Source Heat Pump for the Annexe.
Recommendation:	Consider one for the main building
Appendix:	2.6.4

3.7. Funding for energy saving projects

Current situation:	Reserves are limited. Applications to fund the Annexe ventilation system have not succeeded so far.
Recommendation:	Survey to ascertain whether there is a cheaper design that meets energy and noise requirements.
Appendix:	2.7

3.8. Waste & water

3.8.1. Water efficiency

Current situation:	Welsh Water carried out a survey recently and fitted new taps in the toilets, together with dual flush toilets in the ladies.
Recommendation:	none
Appendix:	

3.8.2. Waste reduction and recycling

Current situation:	<p>The Local Authority empties the waste bin and the two mixed recycle bins weekly. These are stored outside the building and users are supposed to put recycle directly into these. Many do not, using instead the several undifferentiated bins within the building because they are more convenient. Cardboard from deliveries is one waste stream, but the majority arises from functions.</p>
Recommendation:	Put clearly labelled pairs of bins in the higher-use areas of the building, especially the kitchen
Appendix:	2.8

3.9. Community Building Action Plan

This action plan highlights the main recommendations/opportunities to improve resource efficiency within the community building. They have been broken down into no cost, low cost, and capital cost recommendations. However, to identify the actual cost of each measure, further research/support will be needed. Additional support for the installation of particular recommendations can be discussed further with the Regional Client Manager.

Action Plan: No cost recommendations

Recommendation	Implementation Date
Discuss reductions in packaging, disposable crockery and other waste generators with regular Hall users	

Action Plan: Low cost recommendations

Recommendation	Implementation Date
Replace incandescent lamp and old T12 lamp with energy efficient lamps.	
Provide recycling bins alongside waste bins within the building	

Action Plan: Capital cost recommendations

Recommendation	Implementation Date
Install ventilation system for the Studio	
Install Ground Source Heat Pump and improved ventilation system for the Hall	
Consider insulation options for the main building	

4. Next Steps

The action plans should be discussed amongst the community group representatives to decide on the next stage of implementation.

The REW Community support service can provide additional tailored support to aid communities in realising the installation of resource efficiency measures. Where there is greatest opportunity for resource efficiency improvements the Regional Client Manager can arrange for specialist support in assessing the savings, cost and business case for implementing recommendations.

5. Energy advice for the home

Through the Resource Efficient Wales service we are also able to provide, free in depth advice to customers about their homes and how to make them more energy efficient.

This service includes advice on renewable technologies, heating, insulation, waste and water as well as the financial incentives available to encourage their uptake, such as the renewable heat incentive, feed in tariff and energy company obligation. The advice is normally provided over the phone, but if there are a group of people interested then we may be able to organise a visit.

If you or anyone in your community could benefit from this service please get in touch on 01452 833 607 or email REW@severnwye.org.uk.

6. Contact Details

6.1. Regional Client Manager

Any questions or further guidance should be directed to the Regional Client Manager:

Andy Rowland

Y Plas

Phone: 01654 703965

Machynlleth

Email: andy.rowland@ecodyfi.org.uk

SY20 8ER

6.2. Central Contact Hub

If the Regional Client Manager cannot be contacted, clients should direct their enquiries to the Central Contact Hub and an appropriate member of staff can help with the enquiry.

Severn Wye Energy Agency

Unit 15 Highnam Business Centre

Phone: 0800 500 3076 / 01452 833 607

Highnam

Email: REW@severnwye.org.uk

Gloucester

Gloucestershire

GL2 8DN

7. Appendices

Attached to this report are a series of information sheets relevant to each client. Each recommendation makes reference to the associated appendix sheet, which can be found overleaf.