Energy Performance of Buildings Directive

Building Energy Rating (BER)

ADVISORY REPORT

Energy use in our homes is responsible for more than a quarter of Ireland's total CO_2 emissions. Reducing energy use will save you money and is good for the environment. This report provides advice on improving your Building Energy Rating, reducing your energy usage and costs, while improving the comfort and condition of your home.

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Assessor: Niall McLaughlin
Address: BALLYHARRY
LECAMY
CO. DONEGAL
BER: 101057479
MPRN: 10017876230

Ventilation

General Operational Advice.
Care should always be taken to ensure a sufficient level of ventilation to maintain fresh air levels in each room. For health and safety reasons it is important to ensure an adequate air supply to combustion appliances e.g. gas fires. If draught stripping is damaged at any time make sure to replace it.

Chimneys

This dwelling has one or more chimneys.
Chimneys increase heat loss in a dwelling by allowing heated air to escape. There are 3 upgrade options available to you.
(a) Installing a closed-in stove will reduce heat losses, and will also be approximately twice as efficient as an open fire, giving the same heat for half as much fuel.
Cost: High **Impact:** Medium

(b) Ducting a supply of outside air directly to the heating appliance will avoid the appliance drawing heated air from the room and so will reduce the heat loss. If possible, the appliance should be room sealed to provide an external air supply, eliminating all air exchange with the room in which it is situated.
Cost: High **Impact:** Low

(c) Installing a chimney damper will reduce heat losses when the fireplace is not in use. If the chimney is never used it can be permanently sealed which involves installing a permanent insulated panel. An adjustable vent may need to be incorporated into the panel to avoid the chimney space becoming damp.
All changes to ventilation must comply with relevant Building Regulations requirements, particularly Part F (Ventilation) and Part J (Heat Producing Appliances).
Cost: Medium **Impact:** Low

Fan & Vents
This dwelling has one or more fans/vents.
Fans and vents increase heat loss in a dwelling by allowing heated air to escape but can be important in ensuring adequate ventilation. If there is no cover on the inside of the vents, installing controllable vent covers will allow you to control the air flow through the vents, and so can help reduce heat loss. All changes to ventilation must comply with relevant Building Regulations requirements, particularly Part F (Ventilation) and Part J (Heat Producing Appliances).
Cost: Low **Impact:** Low

Draught Lobby
This dwelling has a draught lobby.

Suspended wooden floor
This dwelling has a solid floor.

Draught Stripping
This dwelling has 100% draught stripping.

Ventilation System
This dwelling has natural ventilation.

Building Elements

Floors
General Operational Advice.
Floors can be a source of significant heat loss and dampness in a dwelling. Installing insulation will reduce this heat loss, and so reduce the energy demand of the dwelling. Floors with a heat loss greater than the current building standards (with a U-Value > 0.25) could be improved. It should be noted that installing floor insulation generally involves a considerable amount of work. The floor space must also have adequate ventilation to prevent dampness. All changes to ventilation must comply with relevant Building Regulations requirements, particularly Part F (Ventilation) and Part J (Heat Producing Appliances).

There are floor areas in this dwelling with a U-Value of <0.6 and >=0.25.
Cost: High **Impact:** Low

Roofs
General Operational Advice.
Proper insulation will help retain valuable heat and improve overall comfort levels. If insulation is disturbed or damaged at any time, e.g. in attic space, make sure to restore or replace it.

Roof Insulation
The roof is one of the largest heat loss areas in a dwelling. Installing insulation will reduce this heat loss, and so reduce the energy demand of the dwelling. Roofs with a

heat loss greater than the current building standards could be improved. The current building standard for pitched roofs that are insulated on the rafter, or for a room in roof, is to have a U-Value <= 0.2. For pitched roofs that are insulated on the ceiling, the current building standard is to have a U-Value <=0.16. For flat roofs, the current building standard is to have a U-Value <=0.22. Blanket insulation, rigid board insulation or expanding foam may be used to achieve the required insulation level. Loose beads may also be used for roofs insulated on the ceiling. It should be noted that installing roof insulation generally involves a considerable amount of work. The attic/roof space must also have adequate ventilation to prevent dampness. All changes to roof insulation must comply with relevant Building Regulations requirements, particularly Part F (Ventilation), Part J (Heat Producing Appliances) and Part B (Fire Safety).

There are areas of pitched roof insulated on the rafter or room in roof in this dwelling with a U-Value of <0.4 and >0.2.
Cost: High **Impact:** Low

There are areas of pitched roof insulated on the ceiling in this dwelling with a U-Value of <1.5 and >=0.4.
Cost: Medium **Impact:** Medium

There are areas of pitched roof insulated on the ceiling in this dwelling with a U-Value of <0.4 and >0.16.
Cost: Medium **Impact:** Low

Walls
As often the largest surface area, the wall can make up one of the largest heat loss areas in a dwelling. Installing insulation will reduce this heat loss and can help reduce thermal bridging and so reduce the energy demand of the dwelling. Walls with a heat loss greater than the current building standards (i.e. have a U-Value > 0.27) could be improved. Insulation may be installed as cavity fill, where the gap between the inner and outer layers of external walls is filled with an insulating material. If cavity insulation is not applicable or is not technically possible, insulation may be installed internally or externally. Internal insulation involves a layer of insulation being fixed to the inside surface of external walls, and a suitable fire resistant finish being incorporated or applied. External solid wall insulation is the application of an insulant and a weather-protective finish to the outside of the wall. It should be noted that installing wall insulation generally involves a considerable amount of work.

There are wall areas in this dwelling with a U-Value of <0.6 and >0.27.
Cost: High **Impact:** Low

Windows
Much heat can be lost from dwellings through their windows as they have relatively poor thermal insulation compared to other elements of the building. Installing energy efficient windows such as low-E double glazing helps to retain heat and improves comfort through elimination of cold window surfaces and associated downdraughts and condensation. The use of shutters, lined curtains and blinds can improve heat

retention at night and further reduce downdraughts. Windows with a heat loss greater than the current building standards (i.e. have a U-Value > 2) could be improved. However, it should be noted that best benefits are achieved through the upgrade from single to low E double or triple glazing. Note that single glazing can also be improved by adding secondary glazing rather than changing to proprietary double glazing.

There are window areas in this dwelling with a U-Value of <2.7 and >2.
Cost: High **Impact:** Low

Doors
Heat is lost from dwellings through doors which often have relatively poor thermal insulation compared to other elements of the building. Installing insulated doors will reduce this heat loss, and also generally reduce draughts through air gaps at the frames. Doors with a heat loss greater than the current building standards (i.e. have a U-Value >2.0) could be improved.

There are door(s) in this dwelling with a U-Value of <4 and >=2.7.
Cost: Medium **Impact:** Low

Hot Water
General Operational Advice.
Ensure that the hot water cylinder insulation is not disturbed or damaged. Incomplete insulation increases heat loss and costs money.

Hot water primary circuit losses
The hot water system in this dwelling has no cylinder thermostat.
Installing insulation on hot water distribution pipework reduces heat loss in areas where it is not required. This reduces the amount of heat required to be generated by the heating system, and so reduces the amount of fuel required. Ideally, this involves all pipework (flow and return) between the boiler and hot water cylinder being insulated (including in walls and floors). In general, the simplest improvement that can be made is to install a cylinder thermostat to reduce unnecessary heat loss from the primary pipework.
Cost: Medium **Impact:** Low

Hot water cylinder insulation
The hot water cylinder has factory fitted insulation.

Cylinder Timer /Thermostat
The hot water cylinder in this dwelling does not have timer and thermostat.
A hot water cylinder thermostat enables the boiler to switch off when the water in the cylinder reaches the required temperature. This minimises the amount of energy that is used and lowers fuel bills. Consider installing a hot water cylinder timer and thermostat to reduce unnecessary heat loss from the hot water cylinder. The lower the storage temperature the less the heat loss from your cylinder. However, you should not set the storage temperature below 60°C so as to avoid the risk of legionnaires disease.
Cost: Medium **Impact:** Low

Lighting

General Operational Advice.

CFLs use 20% of the energy used by typical incandescent bulbs to give the same amount of light. A 22 Watt CFL has the same light output as a 100 Watt incandescent. LED lights use less than 10% of the energy required for corresponding tungsten lights. Low energy lighting will give highest savings in rooms that are most often used.

Lighting - low energy bulbs

The low energy lighting in this dwelling is <50%.

Replacement of traditional light bulbs (tungsten or incandescent) with energy saving bulbs (LED or CFL) can reduce lighting costs significantly. They also last considerably longer than ordinary light bulbs. Consider replacing traditional light bulbs with energy saving bulbs.

Cost: Low **Impact:** Medium

Space Heating

General Operational Advice.

Your automatic timer switch or programmer allows you to schedule the heating duty on the hot water system and to turn the system on and off as required. Use this facility to limit the running time for the hot water system to fit your specific needs and you will save money. Likewise the heating system can be set to provide space heating only when needed. Room thermostats normally turn the boiler and heating circulation pump off when the room temperature has reached the desired level. A room thermostat is normally located in a living area or circulations area (hall or landing). Guide temperature settings are 20°C for a living room and 16 - 18°C for circulation areas. However, the most appropriate setting depends on location of the thermostat and the heating system design. Choose the lowest setting that gives acceptable comfort conditions. Finding the setting to suit you may take some experimentation. A reduction of 1°C on your thermostat can reduce annual space heating costs by 10% or more. TRVs (Thermostatic Radiator Valves) can be set to suit the heating requirements of the room(s) in question.

Dist. System losses and gains (control category)

The heating system controls in this dwelling could be improved.

The heating system would benefit from a programmer/timer and room thermostat to enable the boiler to switch off when no heat is required. This would reduce the amount of energy used and lower your fuel bills. Thermostatic radiator valves (TRVs) could also be installed to allow the temperature of each room to be controlled to suit individual needs, adding to comfort and reducing heating bills. For example, they can be set to be warmer in the living room and bathroom than in the bedrooms. TRVs should be fitted to every radiator excluding the radiator in the same room as the room thermostat and to the radiator/towel rail in the bathroom. The room thermostat is needed as well as the TRVs, to enable the boiler to switch off when no heat is required.

Cost: Medium **Impact:** Medium

Main Heating System

General Operational Advice.

You should have your boiler professionally serviced at least once per year. A clean and serviced appliance will operate more economically and will have a longer service life.

Efficiency of main heating system (Gas or Oil)

This dwelling has an oil/gas main heating system. The efficiency of the boiler is >80% but <86%.

If your boiler is over 15 years old and/or has an efficiency of less than 80% you should consider upgrading it to a condensing boiler. A condensing boiler is capable of much higher efficiencies than other types of boiler, meaning it will burn less fuel to heat this dwelling. Boilers with an efficiency of over 90% are available on the market. This improvement is most appropriate when the existing central heating boiler needs repair or replacement, and it is rarely that circumstances would make this impractical. Condensing boilers need a drain for the condensate which may limit where they can be located. This can be borne in mind if you are considering remodelling the room containing the existing boiler even if the existing boiler is to be retained for the time being. Biomass boilers could also be considered as a low Carbon Dioxide direct alternative to a gas or oil boiler. Biomass boilers usually require more fuel storage space than gas/oil boilers. Heat pumps could also be used to improve the energy consumption levels but are not as easily retrofitted, particularly when the dwelling does not have underfloor heating.

Cost: High **Impact:** High

Thermal Solar Panels

This dwelling has no solar water heating.

Solar Panels, also known as "collectors", can be fitted to a building's roof. They use the sun's heat to warm water, or another fluid, which passes through the panel. The fluid is then fed to a heat store (e.g. a hot water tank) and helps provide hot water directly or can provide a source of hot water for the central heating system in the dwelling. Solar panels work throughout daylight hours, even if the sky is overcast and there is no direct sunshine. Solar panels can also be used to meet some space heating demand. Ideally the panels should be located on an unshaded, south facing roof at a tilt angle of 30°- 45° to the horizontal. Space will be need to accommodate an appropriately sized cylinder for the system and a thermal mixing (anti-scald) valve should also be installed.

Cost: High **Impact:** Medium

PV Solar System or Microturbine

This dwelling has no microturbine or Photo Voltaics (PV).

A solar photovoltaic (PV) system is one which converts light directly into electricity via panels placed on the roof with no waste and no emissions. This electricity is used throughout the home to supplement the electricity purchased from an energy supplier. Ideally the panels should be located on an unshaded, south facing roof at a tilt angle of 30°- 45° to the horizontal. Batteries can be used to store electricity from the PV array or wind turbine. However, this increases the installation and equipment cost as well as maintenance cost. A Micro-windturbine is a small turbine placed on the

property which uses wind to generate electricity. The electricity is used throughout the home to supplement the electricity from an energy supplier. The turbine should not be subject to wind shelter. To be effective, the turbine should be at a height well clear of nearby roofs and other obstructions.
Cost: High **Impact:** High

General Energy Advice

Appliances
New kitchen appliances carry energy rating labels which rate energy efficiency on a scale of A to G. When buying new appliances look for at least A rated products which are more energy efficient and cost less to run. Do not under or overload appliances such as dishwashers and washing machines. For washing machines, a 40°C rather than a 60°C wash cycle cuts electricity use by approximately a third. (Modern washing powders and detergents can work equally effectively at lower temperatures). Defrost your freezer regularly to save energy and extend the operating life. Equipment on standby uses up to 20% of the energy it would use when fully on. When an appliance is not in use, turn it off fully.

Carbon dioxide Emissions
Using one unit of electricity in your house releases up to three times as much CO_2 as one unit of gas. The use of renewable technologies (such as solar water heating) avoids the harmful greenhouse gas emissions associated with energy production.

Lighting
Avail of natural daylight whenever possible and avoid leaving electric lights switched on in unoccupied rooms. All lighting lamps carry an energy label similar to that on appliances (i.e. an A to G label) so always choose the most efficient to suit your particular needs.

Glasnevin, Dublin 9, Ireland
Glas Naíon, Baile Átha Cliath 9, Eireann
T. +353-1-8369080 | info@sei.ie
F. +353-1-8372848 | www.sei.ie

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