

Further to the seminar we have put together a summary of information, facts and figures about sustainable design which you may find useful. We will be more than willing to discuss further, any queries you may have on the topic.

Office Environmental Policy

Paul McAlister Architects are committed to sustainability both within the office and through producing socially responsible and environmentally sustainable buildings. The principles of Sustainability are incorporated at every stage of the design process and are managed by our design team.

Design Strategy

In each project we aim to find the optimum balance between sustainability, value and design quality, based on our client's priorities and taking a life-cycle approach. We design robust and durable buildings without compromising on aesthetic quality. Innovation forms a central part of our approach in relation to new materials, technologies and energy use. We work closely with service engineers with a strong track record in sustainable design.

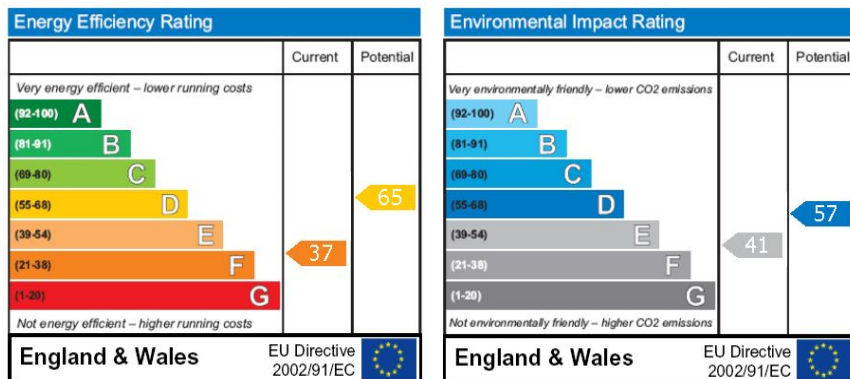
For more information you are also welcome to view our website: 'www.green-barn.co.uk' which features items such as:

- Sustainable Living
- Design Principles
- Build an Eco Home
- 6 Easy Ways to Save Energy
- Eco Improvement Grants

Government Legislation

Every building which is constructed, sold or rented will require an Energy Performance Certificate (EPC) - similar to labels on domestic appliances e.g. refrigerators. These certificates assess each building, rating their energy efficiency and carbon emissions.

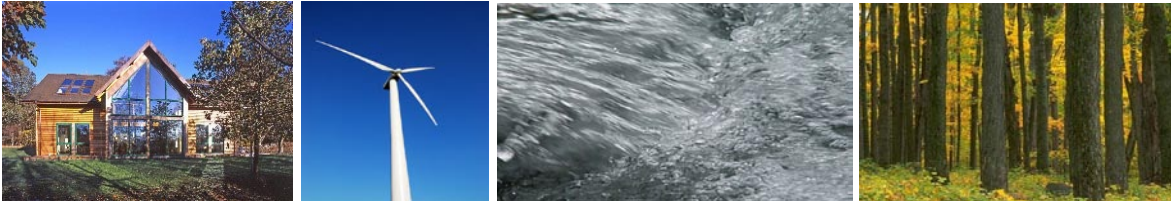
- Buildings rated A - G, (A is the most efficient, G is the least) also providing advice on how to increase the rating.
- Much easier to compare buildings of the same type. Prospective buyers or tenants can factor the future costs of fuel and energy into investments.
- Energy performance certificates are being phased in as follows:
- From **6th April 2008** all buildings with a floor area exceeding 10,000 sq/m
- From **1st July 2008** all buildings with a floor area exceeding 2,500 sq/m
- From **1st October 2008** all other buildings
- The penalty for failing to produce an EPC is 12.5% of the ratable value of the building (min penalty £500, max £5,000), with a default penalty of £750 if this formula cannot be applied.



How to respond:

Renewable Energy Sources

- **Biomass boilers** – utilises wood's **carbon neutral** energy to power boilers which can generate both heat and electricity
- **Windmills** – a simple, easy method of generating clean electricity. The larger the blades turned by the wind, the more power is generated, excess can be sold back to the national grid.
- **Photovoltaic (PV) cells** – semiconductor panels of glass and aluminium use the sun's light to generate electricity which can be **converted for domestic use**, stored, or sold back to the national grid.
- **Solar Panels** – flat plate heaters or evacuated tube collectors, absorb heat from the sun to **heat household water**. At times this can provide up to 2/3 of domestic hot water.
- **Geothermal Energy** – ground sourced heat pumps, an offshoot of refrigeration technology. Absorbs heat through coils of piping placed in the earth surrounding the house.



Materials

- The choice of materials greatly affects a building's **environmental impact**
- **Embodied Energy**. All materials undergo **processing**, leading to **waste generation** and **energy use**. This may be minimal, e.g. vernacular builds using locally sourced materials, or extensive, e.g. a large pre-fabricated construction.
- **Cut down on non-renewable/harmful materials**. Many man-made forms of insulation contain harmful chemicals and/or use ozone-depleting HCFC's and non-renewable resources during their manufacture. Opt for greener alternatives where possible.

10 Design Principles for a Passive House

- **Super insulation** – the external building envelope should have a low 'U' value
- **Space heating** – Use of heat recovery ventilation in conjunction with super insulation
- **High volume to external surface ratio**
- **Triple-glazing** – glazing & frames should total a low 'U' value
- **Air-tightness** – air leakage must be kept to a minimum
- **Whole house mechanical ventilation** – with heat recovery.
- **Elimination of cold bridges** – Use bridge-free connection details
- **Passive solar gain** – In some parts, solar heat gains are, on average, can be greater than heat losses, even in winter
- **Thermal mass** – reduces summer overheating, maintains stable winter temperatures
- **Renewable energy** – particularly for water heating & electricity generation

