Best Practice in Sustainable Buildings

A Directory of Producers and Service Providers accredited as Best Practice by the Natural Energy Efficiency and Sustainability (NEES) Project

Associate Partners

Funders

Welcome

Increasing the supply and demand for locally-sourced natural and sustainable building materials and products can generate significant social, economic and environmental benefits, as well as reducing energy demand and improving the comfort of our homes and workplaces.

This brochure showcases products and services that have been selected as best practice by an international panel of independent experts assembled as part of the Natural Energy Efficiency and Sustainability (NEES) Project.

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NEES Products and Services

NEES Best Practice Products and Services use natural and recycled material that has been sustainably sourced from Northern Europe.

NEES Products and Services demonstrate best practice in improving the energy efficiency of existing buildings.

NEES Products and Services have been rated as best practice against five criteria: resource efficiency; environment and health; sustainability; enterprise; and scalability.

NEES Products and Services demonstrate best practice in environmental, economic and social sustainability.

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Anu Green - Green Roofs

Cork, Ireland

Anu Green is a full service green roof firm, providing everything you need to design and create a spectacular, unique, performance driven green roof.

They provide consultation, design assistance, project management, installation, and maintenance services. These can be contracted as a complete project or separately to promote sound green roofing practices.

Anu Green also supply individual components for those looking to install their own green roofs.

A green roof installed in West Cork, Ireland

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Green Roofs

An attractive and energy efficient alternative to conventional roofing systems

Natural

Green roofs are a natural and attractive alternative to conventional roofing systems. Anu Green work only with green roof systems based selected for their quality and the sustainability. All components used in the green roofs they install are made from minimum 60% recycled materials. Some of roofs are made from close to 100% recycled materials.

Energy Efficient

Green roofs were originally used as insulation for homes hundreds of years ago, however modern green roofs have lost this benefit for colder climates as they have become more lightweight. While this lightweight roof can be helpful for cooling buildings in warm climates, Anu Green has been working to design roofs that make sense in cold climates and seek to achieve both lightweight and insulating through their work with innovative and traditional growing mediums.

Sustainable

A well designed roof provides numerous ecological benefits as well as reducing the carbon footprint of buildings. In urban areas green roofs contribute to networks of green infrastructure that are essential for increasing and conserving local biodiversity, as well as improving local air quality by providing sinks for local pollutants and helping mitigate urban 'heat island' effects.

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ecological architecture

Sue Manning & Mary Roslin
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Ecological Architecture

Tombreck & Wemyss Bay, Scotland

Ecological Architecture was founded in 2008 by Sue Manning and Mary Roslin, who have been researching, teaching and practicing ecological architecture since the mid 1980's and are recognised as experts in the field. The partnership is based between Mary's home in Weymss Bay and Sue's farm at Tombreck, near Aberfeldy.

The farm is also home to a variety of innovative and sustainable buildings designed and built by Sue and Mary, including the Big Shed, which won the Carbon Trust's Low Carbon Building Award for 2013.

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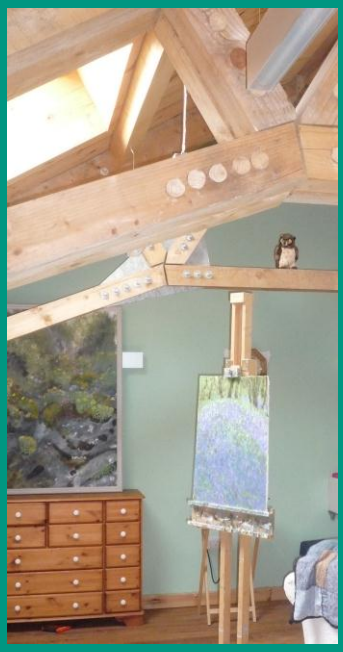
The Big Shed at Tombreck

http://thebigsheds.blogspot.co.uk/



Natural

The Big Shed at Tombreck was conceived as a community eco-building for use by the Loch Tayside population. It was completed during 2010-11, using building materials of local, natural and renewable origin, and with a percentage of reclaimed and recycled materials and components. It is also one of several buildings on the farm, all of which were designed and built by Ecological Architecture using natural and sustainable building materials, including hemcrete, straw bales, and reclaimed stone.

Energy Efficient

The Big Shed is an excellent example of how ecological design using sustainable building materials results in low carbon emissions and a reduced ecological footprint. Timber for the sitka spruce frame was sourced from within 15 miles of the farm, the sheepswool insulation levels are higher than required by current building regulations, and the building is heated entirely from renewable sources.

Sustainable

The Big Shed is a timber framed, timber clad building with a footprint of 240 square metres, and offers a flexible, multi-purpose space, capable of being used by different people and groups at different times. As well as being constructed sustainably, the Big Shed sustains the local community by hosting a range of community groups, a resident artist, and several start up businesses. It is equipped with a catering-standard kitchen, and being on the banks of Loch Tay provides makes it an exciting modern venue in a picturesque location, attracting locals and visitors alike.

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enviroglass

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Enviroglass

Shetland, Scotland

Enviroglass is a stand-alone trading unit within the Shetland Amenity Trust. It exists to provide a local, financially viable, recycling route for Shetland's waste glass, which it turns into a range of value-added products.

By processing the glass in Shetland, Enviroglass makes the isles a more self sufficient community and adds value to the local economy.

Profits are reinvested into projects which protect and enhance Shetland's unique environment. There is also an active education programme.

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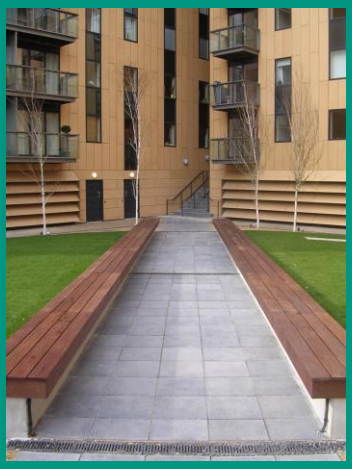
Precast Paving, Flooring, and Surfaces from Recycled Glass



Recycled

Enviroglass recycles Shetland's waste glass into 80 to 100% recycled glass products, the most popular of which is its 80% recycled glasscast paver.

Energy Efficient

Glasscrete is thought to have better heat retaining properties than traditional alternatives. This will be further investigated through the NEES project.

Size / Finish	Smooth	Yorkstone	Antislip
300x300x38 mm	•	•	
450x450x38 mm	•	•	
450x450x50 mm	•		
600x600x38 mm	•		
600x600x50 mm			•

Sustainable

Enviroglass is a cost effective, sustainable solution to Shetland's waste glass which feeds into the islands economy. Processing the glass in the islands saves the carbon costs of shipping Shetland's waste to the mainland and Enviroglass strives to reduce its carbon footprint where possible. If laid correctly, the pavers require minimal maintenance and have a long lifespan, at the end of which it can be 100% recycled as an aggregate.

Specifications

Enviroglass paving has been used extensively in a range of building and renovation projects, from kitchen floors to large scale public spaces. Supplying a large customer base, including architects, local authorities and individual homeowners, whatever your size of project Enviroglass can find a solution to fit your needs and those of the environment.

Suitable for indoor and outdoor use, a range of sizes and finishes are available, as detailed in the table above, and prices start at £24/m². All of the finishes can be treated to expose the glass aggregate or left unexposed, to naturally weather/wear.

For details of colour castings, please see the Enviroglass website. Colours and sizes can be varied to suit your needs and bespoke orders are welcome. Please contact Enviroglass to discuss your requirements and request a price list.

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ECOCEL
SUSTAINABLE WARMTH

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Ecocel

Cork, Ireland

Ecocel is a wholly owned Irish company that manufactures Ecocel Cellulose Insulation for the Irish home market. Ecocel is made from Recycled newspapers to generate a non-toxic, fire retardant insulation product.

Ecocel Cellulose acts as an effective protective shield to reduce the transmission of heat or sound and is suitable for insulation of Timber Frame Walls, Attics and Lofts.

Ecocel is fire retardant and approved by the Irish Agrement Board.

A knee wall and loft fitted with Ecocel Cellulose insulation

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Cellulose Insulation

A high performance, healthy and sustainable solution to energy efficiency

Natural

Ecocel cellulose is an insulation product manufactured entirely from recycled newspaper – a natural product designed to minimise energy loss more effectively than mineral fibres. Demonstrations using transparent plastic 'walls' show the superiority of cellulose in fitting attics, sloping ceilings and timber frame walls with many fewer gaps and voids than man-made insulating materials. The hygroscopic properties of cellulose mean that it absorbs and releases moisture in a way that allows buildings to 'breathe' naturally, and creates a healthier environment for occupants.

Energy Efficient

Besides the environmental advantages, the performance of cellulose has been proved in a variety of studies to offer better results than fibreglass and foam, and has a higher R-value performance in areas with a wide temperature variation. A study conducted by the TNO University in Delft monitored a home fitted with fibreglass and a home fitted with cellulose to provide the same U-value for insulation. Despite being nearly identical the temperature of the fibreglass home varied by 13°C, whereas the temperature in the home fitted with cellulose varied by only 3°C. Testing by the Natural Resource Council of Canada also found cellulose to have better fire retardant properties than fibreglass, and an improved performance of 22%-55% over a non-insulated cavity.

Sustainable

Ecocel's manufacturing process means the product has a low embodied energy compared to fibreglass and petrochemical-based foams. The product is made in Cork from locally-sourced recycled newspapers which would otherwise be exported, creating local employment from a waste material. This means the manufacture and use of cellulose insulation makes is a cost effective and sustainable solution to improving energy efficiency.

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FH Wetland Systems

Ennis, Co. Clare, Ireland

FH Wetland Systems Ltd. is an environmental consultancy based in Co. Clare which specialises in the design and planting of constructed wetlands, reed beds and zero discharge willow facilities.

Since starting the business in 1996 the team have also been involved in a wide range of other environmental work, including wetland habitat creation and restoration projects and edible landscaping projects.

Stormwater wetland at the University of Limerick

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Habitat Creation Project

Little Island, Co. Cork

When the Cork Main Drainage project was being implemented for sewage treatment for Cork city, there was an opportunity to create some wetland habitat near the access works for the site. Cork County Council and Ketch Landscaping employed FH Wetland Systems to carry out the habitat design and planting for the site.

Habitat creation projects such as this can double as attractive areas for public walks and amenity areas as well as serving the wildlife of the area.

Natural

There was no need for artificial liners beneath the site due to the presence of clayey subsoil, so the only necessity for lining was to mould and compact the soil within the right areas of the site.

Energy Efficient

The overall project requires no energy or maintenance due to the design layout and the selected landscape approach. In terms of carbon footprint, the trees planted as part of the habitat project will more than offset any carbon used during the construction process.

Sustainable

Wetlands constructed for sewage treatment or habitat enhancement are ideal systems, being essentially self sustaining and requiring relatively little energy inputs at the outset. In a world where we want to reduce or dependence on fossil energy, low energy or zero energy sewage treatment is a must.

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Locate Architects

Dunblane, Scotland

Locate Architects was founded in 2004 by Chris Morgan, who is one of only five RIAS advanced accredited Architects in Sustainable design in Scotland, and is a Past-Chair of the Scottish Ecological Design Association. Chris has over 20 years experience in sustainability in design, and is recognised as one of the leading Ecological Architects in the UK.

Locate's approach reflects a desire to locate buildings more fully into their surroundings, environment, and local culture so that they 'belong' as few modern buildings now seem to do.

Urras Oighreachd Ghabhsainn

(The Galson Trust Estate)

www.galsontrust.com

Natural

Locate designed this community building on the Galson Trust Estate building, which uses a Scottish-sourced timber frame without chemical preservatives, and organic painted timber cladding in preference to the cement rendered concrete block normally used on the Isle. The insulation is hemp and natural paints were used throughout. Scottish linoleum was used in preference to vinyl, and in other areas good quality hardwood was used to discourage the laying of carpets.

Energy Efficient

Chris Morgan of Locate is a certified Passivhaus Designer and used his experience to design a building with high levels of insulation, thermal-bridge-free detailing and good air-tightness. The building was the very first ever to be tested on the islands and achieved an excellent 0.77 $m^2/hr/m^3$. Healthy heat recovery ventilation was used to claw back the remaining heat and as a result the building is warm and comfortable with very little expenditure of energy. What heat is needed is delivered from an underfloor system fed by a ground source heat pump, powered by a wind turbine, so the building is broadly carbon-neutral in heating terms. Whilst the wind is used positively to harness electricity, the building form, inspired by older vernacular buildings, uses a clipped and hipped roof form to reduce heat loss and strain from the powerful prevailing winds.

Sustainable

Very few natural materials are now available on the islands, so where possible and affordable Locate sourced natural materials from Scotland and UK. The whole building has been designed with the principles of 'Design for Deconstruction' in mind so that most waste is designed out at source. The building design allows for alterations and the replacement of building components with minimal disruption, which also reduces waste during maintenance cycles. Most components are either repairable, re-usable, recyclable or compostable so the building offers an almost zero waste investment. The project was commissioned by a community group who have led the community buyout of the estate and set about improving conditions and the economic situation for this remote and rural area. The building provides a hub for the organisation and local community and is at the centre of a raft of other improvements including a large, proposed wind farm scheduled for installation in 2013.

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Dynamic Woods

Scottish Wood

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Inzievar Woodlands

Oakley, Dunfermerline, Scotland

Inzievar Woods is a managed woodland - the environment, local community and economy are all taken into consideration in deciding how best to manage each part of the woodland. This ensures that there is enough in the woodlands for everyone to enjoy whatever their priorities.

Inzievar and its sawmill are suppliers of Scottish hardwoods - oak, elm, beech, sycamore, ash and larch – which can be used as naturally durable beams, flooring, and decking.

Profits from the sale of timber go to local environmental projects and Scottish Wood is licensed to use the Scottish Working Woods label .

SCOTTISH WORKING WOODS

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Scottish Wood

Natural

Inzievar's sawmill is located in a mixed woodland that has been reclaimed for use both as a public amenity and as a working woodland: showing how private ownership and community interest can come together for the benefit of all. The sawmill also processes timber from woodlands accredited by Scottish Working Woodlands.

Energy Efficient

Timber is one of the oldest building products we use, and it is integral to the design of many highly energy efficient and sustainable buildings. As well as being beautiful, traditional kiln-dried timber can last for hundreds of years with minimal maintenance. Inzievar also make minimal use of machinery and source their electricity from Ecotricity, meaning their timber has the lowest possible carbon footprint.

Sustainable

Using Scottish timber sourced from woodlands managed for sustainability not only helps preserve their future , it also exploits a highly under-used renewable resource, creates jobs and training opportunities, and supports rural regeneration.

Scottish Elm

95% of the Scottish elm processed at Inzievar comes from sustainable woodlands in the Northern Periphery Region.

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MAKAR

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MAKAR

Inverness, Scotland

MAKAR manufacture natural Structural Insulated Panels (nSIPs) as well as providing a comprehensive Design and Build service for all building needs.

MAKAR specialise in the use of local Scottish timber and use natural materials to make energy efficient buildings that are as appropriate to client needs as they are to the surrounding landscape. To date MAKAR have completed more than 60 buildings throughout Scotland.

A MAKAR house can arrive on site and be constructed to wind and watertight within an average of 3 days.

The Di Rollo House, Ullapool, designed and built by MAKAR

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nSIPS and Design and Build

Providing new homes that are designed, manufactured and built using locally-sourced materials and skills

Natural

MAKAR specialise in the use of local Scottish timber and use renewable natural materials to make energy efficient buildings that are as appropriate to client needs as they are to the surrounding landscape. Locally-sourced natural materials will weather and blend in better with their surrounding environment, and buildings and structural insulated panels made from natural materials can biodegrade into the soil after the lifetime of the building.

Energy Efficient

MAKAR's products and services are designed to minimise both the carbon emissions related to construction processes as well as those related to the day-to-day operation of the finished building. MAKAR's structural insulated panels are made from natural materials are an effective solution to improving energy efficiency using a product with a minimal embodied carbon footprint. Combining these with their comprehensive in-house design and build service maximises the performance of MAKAR homes throughout their life cycle, as well as making them thermally comfortable and cheap to run.

Sustainable

Produced by a local workforce, MAKAR support the regional Highland economy by sourcing high quality materials from their network of the best local suppliers. MAKAR has always sought to maximise the Scottish content and value of the buildings it manufactures and erects, which means commissioning a MAKAR home supports local social and economic development as well as Scotland's natural environment. MAKAR's commitment to using homegrown timber has kept the company at the forefront of pioneering work to further the application of this resource, which is apparent in the bespoke architecture they produce.

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About Us

The Natural Energy Efficiency and Sustainability (NEES) Project is a partnership of eight agencies in five different European regions (Scotland, Ireland, Northern Ireland, Sweden and Greenland) led by the Cork Centre for Architectural Education, University College Cork. The project is funded by the European Union's Northern Periphery Programme and includes universities, building research centres, social enterprises, social housing organisations and regional development partnerships.

In Scotland the project is led by the Sustainable Urban Environments Research Group at Glasgow Caledonian University.

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NEES products and services demonstrate best practice in using locally-and sustainably-sourced natural and recycled materials. This means creating jobs and supporting development, as well as saving energy.

Locate architects

enviroglass

MAKAR

ecological architecture

Ann Green
GREENROOFS LANDSCAPE DESIGN

Dynamic Woods
Scottish Wood

FH WETLAND SYSTEMS

ECOCEL
SUSTAINABLE WARMTH

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