

Draft Supplementary Guidance 20

Historic Environment: Energy efficiency and micro-renewables





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1. Introduction

Climate change targets

Climate Change is both an important and an urgent challenge.

The Kyoto Protocol sets binding targets for the European community and 37 other countries for reducing greenhouse gas emissions. The UK is a signatory to this protocol.

Scottish Government has pledged to reduce greenhouse gases and the Climate Change (Scotland) Act 2009 sets a target of an 80% reduction in omissions by 2050, with an interim target of at least 42% reduction by 2020.

Stirling Council is committed to reducing greenhouse gas emissions throughout the Council Area and will encourage the introduction of energy efficiency and micro renewable technology where and in a manner it is appropriate to do so.

The historic environment

The historic environment is central to Scotland's cultural heritage and sense of identity. Stirling has many visitors from around the world and the city's historic environment plays a very important part in the sustainable economic growth of Stirling.

The total quantity of listed buildings in the Stirling Council Planning Area is approximately 3.7% of the total number of buildings. Approximately 5.8% of the total building stock in the Stirling Council Planning Area is located within conservation areas.

Supplementary guidance

This guidance is supplementary to the current *Stirling Council Local Development Plan* and is in accordance with *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997*, *Scottish Planning Policy*, *Scottish Historic Environment Policy*, *Planning Advice Note 71* and *Historic Scotland's Managing Change in the Historic Environment Guidance Notes*. It aims to ensure future changes to Stirling's historic



environment are sensitively managed, based securely on a solid understanding of the cultural, educational, economic and social value of each unique historic asset and its setting and that all future decisions are based on informed consideration of the heritage asset to ensure it is preserved for future generations.

This supplementary guidance should be read in conjunction with the abovementioned documents and all other relevant *Local Plan Policies and Supplementary Guidance* where proposals may be considered to impact on or within the curtilage of listed buildings, in conservation areas or where there is likely to be an adverse impact on the historic environment. In particular relevant Policies and Supplementary Guidance are likely to include *Policy 22 'Low and zero carbon buildings' and its accompanying Supplementary Guidance 'Low and zero carbon development' as well as other relevant policies and supplementary guidance on the Historic Environment, Listed Buildings, Conservation Areas, Setting, Windows, Alterations and Extensions, Archaeology, Landscape, Trees etc.*

This supplementary guidance will develop as micro-generation technology advances and examples of good practice will be included upon completion.

Micro generation considerations and the historic environment

Micro-generation is the small-scale production of electricity, heat, or both from a low carbon source. Some of the technologies, such as solar and wind energy, use renewable sources whilst others continue to use fossil fuels, although with greater efficiency than conventional systems.

Interest is growing rapidly in the use of micro-generation systems for individual or small groups of buildings. Scottish Government's introduction of the Feed In Tariff Scheme in April 2011, which guarantees a minimum payment for all electricity generated by a system, plus a separate payment for the electricity exported to the national grid, will encourage the installation of micro generation systems, this is why it's even more important to have guidance on micro-generation renewables than ever before. The installation of micro-generation technology to a listed building, within a conservation area, an historic park or garden or close to/ within the setting of an ancient monument or an archaeological site requires careful consideration to be given to protecting the fabric and character of the building or landscape and it's setting.



This guidance is not intended to provide technical advice, which is already widely available from various organisations, its purpose is to encourage all those who have a responsibility for the historic environment, such as current owners, occupiers, agents, developers, planning authorities, installers of micro-generation technology etc, to carefully consider the introduction of micro-generation systems and their design and siting on individual buildings/settings and to advise on different solutions that can lessen the impact of micro-generation equipment on the historic environment.

There is a lack of reliable data available about historic buildings and much of what is available is based on assumptions that in relation to thermal performance older buildings perform less well than their modern counterparts. There is a lot of embodied energy in an historic building but there is also a general lack of understanding of traditional construction methods and materials. The hasty introduction of modern materials and methods will likely cause buildings to fail when they were previously functioning or could function well with the correct solution for that particular building and problem.

2. Definition of the Historic Environment

Listed building

A listed building is a building or structure that has been placed on Scottish Minister's Statutory List of Buildings of Special Architectural or Historic Interest. The listing process is set out in the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. The Act requires planning authorities to have special regard to the desirability of preserving the building or its setting and any development which will affect either should be appropriate to the character and appearance of the building or setting.

The individual List Description of the building is an outline description only; it can be a very detailed, or very scant, description of the particular building. The protection afforded by the listing applies to both the exterior and interior of the building (including fixtures and fittings), as well as any object or structure fixed to it, it also applies to its boundaries and to any associated buildings or structures.



Conservation area

Conservation areas are areas of special architectural or historic interest. Development within a conservation area should preserve or enhance the character or appearance of the area.

Inventory of Gardens and Designed Landscapes

Scotland's Inventory of Gardens and Designed Landscapes is a list of nationally important sites (further details can be found in Scottish Historic Environment Policy 2009). The Inventory provides information on and promotes awareness of the significance of each site to assist in their protection and future management. The Historic Environment Amendment Act 2011 makes it a statutory duty for Historic Scotland to compile and maintain the Inventory on behalf of Scottish Ministers.

Scheduled ancient monument

A scheduled ancient monument is a monument of national importance that Scottish Ministers have given legal protection under the Ancient Monuments and Archaeological Areas Act 1979.

Archaeology

Archaeology is the study of the human past from physical traces left behind in the landscape. Discovered and undiscovered archaeology is extensive throughout the Stirling Council area, particularly in Stirling Old Town and Dunblane, and is protected.

Character, significance and setting

The importance of identifying the character and significance of an historic building, place, area and its setting is paramount. Consideration needs to be given not only to how the fixing and operation of micro-generation equipment physically impacts on a structure, but to how the introduction of that technology and all its associated equipment will impact on the setting of the building or area and on any archaeology.



3. Planning Consents and Building Warrant

Planning consents

Proposals that do not cause significant harm to the character and appearance of listed buildings and within conservation areas and which can meet the criteria of local and national policies and guidance will gain Planning Permissions and Listed Building Consent.

Permitted development

Certain limited forms of development are permitted on dwellings without the need for planning permission, it is the Local Authority who decides when Listed Building Consent or Planning Permissions are required and the need for consents should always be verified with prior to starting any work.

The necessity for planning permission for solar panels/photovoltaics or solar thermal equipment on domestic buildings is set out in the Town and Country Planning (General Permitted Development) (Domestic Micro generation) (Scotland) Amendment Order 2009 and is dependant on a number of matters such as, whether the property is; a listed building, in a conservation area, a house or flat, the proposed location and position of equipment, dimensions and projections of equipment, quantity of installations, surface area, visibility from a road, height of freestanding installation, distance from boundary. Other types of micro-generation will also likely require planning consent.

In relation to building mounted and stand-alone solar panels/photovoltaics or solar thermal equipment, the order states;

- (1) The installation, alteration or replacement of solar PV or solar thermal equipment on—
 - (a) a dwellinghouse or a building containing a flat; or
 - (b) a building within the curtilage of a dwellinghouse.



- (2) Development is not permitted by this class, in the case of solar PV or solar thermal equipment installed on a wall or pitched roof of a dwellinghouse, if:
 - (a) any part of the solar PV or solar thermal equipment would protrude more than 200mm beyond the external surface of the wall or the plane of the roof; or
 - (b) any part of the solar PV or solar thermal equipment would project higher than the highest point of the roof (excluding any chimney) on which the equipment is fixed.

- (3) Development is not permitted by this class, in the case of a building containing a flat, if–
 - (a) the solar PV or solar thermal equipment would be installed on any part of the external walls of the building; or
 - (b) in the case of solar PV or solar thermal equipment installed on a pitched roof, if the solar PV or solar thermal equipment would–
 - (i) protrude more than 200mm beyond the plane of the roof; or
 - (ii) project higher than the highest point of the roof (excluding any chimney) on which the equipment is fixed.

- (4) Development is not permitted by this class, in the case of solar PV or solar thermal equipment installed on a flat roof of a dwelling house or building containing a flat, if the solar PV or solar thermal equipment would–
 - (a) be situated within 1 metre from the edge of the roof; or
 - (b) protrude more than 1 metre above the plane of the roof.

- (5) Development is not permitted by this class, in the case of land within a conservation area or World Heritage Site, if the solar PV or solar thermal equipment would be installed on a wall or part of a roof which–
 - (a) forms the principal elevation of the dwellinghouse or the building containing the flat; and
 - (b) is visible from a road.



- (6) Development is permitted by this class, subject to the following conditions—
- (a) solar PV or solar thermal equipment must, so far as reasonably practicable, be sited so as to minimise its effect on the amenity of the area; and
 - (b) solar PV or solar thermal equipment no longer needed for or capable of domestic micro generation must be removed as soon as reasonably practicable.

In practice, the majority of solar panels now being constructed do not require planning permission due to their slim design and can be located on buildings without the need for permission, provided the criteria above are followed.

There are no general permitted development rights for the installation for any type of solar micro renewable on listed buildings and so consent will always be required.

[Flow chart of LBC/Planning Permission]

It is the responsibility of the Local Authority to assess the requirement for Planning Permissions and Listed Building Consent, prior to the commencement of any works on site. It is therefore strongly recommended that Stirling Council Planning Department is contacted at the earliest opportunity to advise on proposals to find out which, if any, consents are required.

General principles for micro renewables

The siting of micro renewable equipment on a main elevation of a listed building or building in a conservation area will not be considered acceptable as it is contrary to national and local policy because it will negatively impact on the character and appearance of the building it is put on and on the character of the surrounding area. The design, siting, quantity, size of micro renewable equipment will be expected to retain the architectural integrity of the building/area where it is proposed. A balance between the historic asset and energy efficiency or micro renewable will sometimes be required.



The principle of siting micro renewable equipment on the rear elevation of a building in a conservation area may be considered acceptable, only if all other locations have been considered first and this will be dependant on how visible the elevations are from public areas

Material considerations can include issues regarding the historical interest of a building or area and within the city of Stirling views to and from the castle will be a materail consideration.

Design statement

It is recommended that a design statement accompany an application for Listed Building Consent or Planning Permission for the installation of micro generation equipment, as this will demonstrate understanding and significance of the heritage asset. It will be expected that a section of the design statement will explain why the particular system has been proposed as being the foremost choice for the individual building/site from all other available choices.

Scheduled Ancient Monument

Scheduled Ancient Monument Consent may be required for any works that will affect a monument, sometimes in addition to Planning Permissions and/or Listed Building Consent, in these instances the Local Authority should be contacted to advise. Applications for Scheduled Ancient Monument Consent are made to Historic Scotland.

Building Warrant

The Council's Building Standards team should also be contacted to advise on any requirement for Building Warrant.



4. Types of Energy Efficiency and precursors to the installation of micro-generation technology

Maintenance

It cannot be stressed just how important it is to ensure a building is kept in a good state of repair and properly and regularly maintained, particularly its windows. Furthermore it is important with all buildings to ensure there is good ventilation as this helps to control moisture levels thereby reducing the amount of heat needed to provide a comfortable living/working environment.

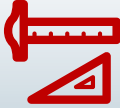
Prior to proposing micro-renewables all possible energy saving measures must be made. There are many energy conservation measures that will have no adverse affect on the fabric or character of an historic building and which should always be made before looking into installing micro-generation technology. In particular, changes in behaviour are often quick, simple and cheap and they offer the greatest money savings as well as reducing the building's carbon footprint more than any other action.

[Diagram demonstrating heat loss elements; 25% roof 35% walls, 15% doors, 15% floors, 10% windows.]

The following lists the sequence of behavioural changes that should be followed before micro-generation is proposed.

Sequence of behavioural changes

- Switching off electrical equipment when not in use
- Closing blinds, curtains or shutters at dusk
- Reducing the thermostat by as little as one degree
- Fitting low energy light bulbs throughout the building
- Installing/topping up loft insulation
- Fitting thermal window/door blinds/curtains
- Installing an energy monitor meter



In the optimisation of energy efficiency measures, as with any alteration, care must be taken to protect the fabric and character of an historic building and to ensure alterations are reversible or are of minimal intervention with its fabric. Consideration must be given to the compatibility of a new material with that of the building's traditional materials.

The following lists the sequence of repairs/refurbishments and physical alterations that should be followed once behavioural changes have been addressed and before micro-generation is proposed.

Sequence of repairs/refurbishments and physical alterations

- Window/door refurbishment including draught proofing
- Refurbishing/Installing window shutters
- Stop any water ingress / find suitable damp solutions
- Boiler replacement/ installing and maintaining an efficient heating and hot water system
- Introducing well-designed secondary glazing, also good for sound insulation
- Cavity wall insulation – this can sometimes be considered
- Interior wall insulation – this can sometimes be considered
- Floor insulation - can sometimes be considered
- Exterior wall insulation – this will not normally be considered

5. System selection and minimizing the impact on the historic environment

Micro-generation is one way of helping to reduce carbon emissions. The greatest energy efficiencies will be gained where the introduction of new technologies form part of an holistic approach to building management.



Minimal intervention

There are various types of micro-generation systems and their successful installation depends on the choice and location of equipment whilst giving consideration to the fabric and character of the building or site, its architectural, historic or archaeological importance and its setting. It will be expected that all proposals will have minimal intervention with the building's fabric and will be reversible.

Interest & significance

The amount of energy desired will help determine the type of system/s preferred, however, when selecting a micro-generation system it is essential to have a good understanding of the architectural, historic and/or cultural interest or significance of the building/area where micro-generation technology is proposed to retain the architectural integrity of the building and to enable the optimum retention of fabric and character of the heritage asset.

The various types of micro-generation systems include solar hot-water panels, solar electric (photovoltaics), micro wind turbines, heat pumps, biomass, hydroelectric, combined heat and power, fuel cells, heat exchange recovery systems and energy from waste/landfill gas. The impact of each type of micro-generation system on the building or area where it is proposed must be carefully considered.

Generally, the following will apply;

Location

It will be most unlikely to ever be considered appropriate to install micro-generation equipment on a principal elevation of an historic building and it will generally be expected for micro-generation technology to be concealed i.e. behind parapet roofs, in roof valleys or elsewhere that is discreet and will have little or no impact on either the fabric or the character of the building. It will generally be preferable to install micro-generation technology and all associated equipment on/in outbuildings or even some distance away from the main building/s on the site. In sensitive locations it might be preferable not to use, i.e. micro wind turbines, and to opt for other forms of renewable energy.



Design

The design, colour and scale of the proposed micro-generation equipment, all visible ancillary equipment and how it relates to both the immediate historic environment as well as its wider setting is important. Proposals should always be designed to avoid detrimental impacts on the historic asset and its setting.

Setting

The setting of an historic asset often extends beyond its boundary and can be either landscape or townscape. The setting is the way in which its surroundings contribute to how it is appreciated, experienced and understood.

It is important where there are proposals to introduce micro-generation technologies to define the setting and assess how the proposals may impact on the setting of the historic asset. Proposals should always seek to avoid detrimental impacts on the setting of an historic asset.

For further information see *Historic Scotland's Managing Change in the Historic Environment Guidance Note in the Historic Environment on Setting*.

Incremental change and cumulative visual impact

The character of both individual buildings and areas can easily be harmed unless the visual impact of micro-generation systems on buildings and the wider setting is given careful consideration.

The qualities that led to the designation of a conservation area, could be harmed if the visual impact of multiple installations is not carefully considered.

Buried archaeology

Systems that require foundations or include on buried pipes and/or cables include freestanding solar and photovoltaic panels, ground-source heat pumps, and hydroelectric systems, can potentially damage underground archaeology. It will generally be possible to preserve the archaeology intact and locate/route all necessary equipment without damage to it, however, the advice of Stirling Council's Archaeologist must be sought prior to commencement of any works. If a site is scheduled works may require Scheduled Ancient Monument Consent, which should be sought from Historic Scotland.



Maintenance and removal

The design and installation of a micro-generation system should always ensure: minimal damage in its installation; easy access for future maintenance; that all works are reversible and can easily be made good with the correct traditional materials after fixings have been removed.

Once obsolete micro renewable equipment should be removed at the earliest opportunity and the historic asset made good using the appropriate methods and materials.

Wildlife

Historic structures are commonly home to bat colonies and frequently support a wide variety of wildlife, of which many species are protected by law. Before undertaking any work that may disturb a protected species, in the first instance contact the Council's Biodiversity Officer to check whether a licence is required.

For hydroelectric technologies in the first instance contact the Council's Biodiversity Officer for any works that will affect a watercourse to check whether a licence is required.

6. Types of micro-generation technology

Historic building considerations, including the location/position, quantity, fixing and/or housing for micro renewable technology will be dependant on the individual building and the particular proposal.

For specific types or combinations of micro renewables, the following will apply;

Solar thermal /Solar hot-water panels and Solar electric / photovoltaics (PVs)

Prior to fixing panels on any roof it should first be ascertained that the existing roof structure is strong enough to accommodate the combined weight of the proposed panels.



The fixing of solar panels/PVs on principal elevations and where they will be visible from higher views of the building/area should always be avoided. Panels/PVs should always be installed in concealed or less conspicuous areas and all opportunities taken to reduce their visual impact should be taken, even if this may involve locating individual collectors in different locations or having less area coverage than proposed.

It will not always be acceptable to install solar panels/PVs on the building, however, it may be possible to fix them to ancillary structures, boundary walls or freestanding within garden grounds.

Flush fitting on a roof can be less conspicuous than raised panels, this is dependant on the depth of the equipment, but will require removal of the roof covering under the panels and flashing to be installed around it. In instances where this is acceptable slates, or occasionally tiles, should be carefully removed and securely stored on site to enable their use to re-roof the area under the panel when it is removed at the end of its useable lifetime. Sarking and joists should be retained and unaltered.

On lead roofs extra regard must be taken with the design and location of the proposed installation to allow the natural expansion and contraction of the material.

Micro wind turbines

Turbines and their foundations and associated cabling will impact on the character and fabric of the building or area. Turbines are particularly obvious when they in motion and can detract greatly from a historic feature.

A turbine can be mounted directly onto an historic building or can be pole mounted, however, a building mounted turbine will create vibrations that can lead to damage to the fabric of the historic structure and a pole-mounted turbine will require adequate foundations. A building mounted turbine will rarely be considered acceptable, as it will impact on both the fabric and character of the structure. Pole mounted may be acceptable and should be sensitively located not to impact on the setting of the historic structure or area.

Careful consideration must be given to the location of associated underground cabling to avoid causing damage to archaeological remains.



Heat Pumps – ground (geothermal), air, water

Ground source, or geothermal, is currently the most common and most efficient heat pump. Careful consideration must be given to the location of associated underground pipework to avoid causing damage to archaeological remains. Internally, the installation of an underfloor heating system could also impact on archaeology.

Associated equipment should be discreetly housed, preferably in outbuildings, flat-roofed area with parapet roof etc.

Small scale Biomass

This system can be inserted into an existing farm/estate complex where existing buildings can be utilised for housing equipment and fuel storage. This system also requires a sensitively designed and located flue, ideally the flue will be completely concealed within an existing chimney.

Micro-Hydroelectric

Historic mill buildings/sites could be suitable locations to install a new hydroelectric system, particularly where this will reuse/reintroduce mill wheels and other associated equipment.

It may be possible to contain a new system in an existing outbuilding or to construct a discreet new building. Consideration will be required to be given to existing features and to the archaeological impact of any new works.

Micro-Combined heat and power (micro-CHP) and other systems

No one micro-generation system is likely to be able to supply all of the heat and/or electricity needed in a single building and combination of different technologies may be preferred. Domestic combined heat and power systems require a separate renewable or fossil power source.



7. Alternatives to Micro-generation; Carbon offsetting

There will be instances where it will not be acceptable to install micro-generation equipment on an historic building/site, as it will cause irreversible damage to the fabric or character of the building. Although it is expected that these instances will be rare it should not be perceived that no further action could be taken to reduce carbon emissions, as this is not the case. In these instances once the current building owner/occupier has adopted all suitable energy-saving measures they will be encouraged to opt for voluntary carbon offsetting. This can be as simple as changing to an energy supplier that offers the choice of a 'green' tariff. A 'green' tariff being one of three types where the supplier: guarantees to buy a set amount of electricity from a renewable source for every unit of electricity you buy; assists the financing of renewable energy projects or; supports other environmental, carbon offset or research projects.



APPENDIX 1

Further information/contacts/sources of advice

Contacts

Stirling Council Planning Department Room 229, Viewforth,
Pitt Terrace, Stirling FK8 2ET. Tel: 01786 442 515

Stirling Council Biodiversity Officer, Viewforth, 14-20 Pitt Terrace,
Stirling, FK8 2ET.

Historic Scotland

Longmore House, Salisbury Place, Edinburgh, EH9 1SH. Tel: 0131 668 8600

APPENDIX 2

Glossary

- DC – Direct Current
- AC - Alternating Current
- Curtilage — the historic area of land attached to a house/building
- SEPA – Scottish Environment Protection Agency
- SNH – Scottish Natural Heritage
- Historic Asset – listed building, conservation area, scheduled ancient monument, archaeology, Inventory of Gardens and Designed Landscapes and the setting of any of the preceding.



Further Information

Please contact:

Economy, Planning and Regulation
Planning Services
Stirling Council
Viewforth
Stirling
FK8 2ET

Telephone: 01786 442522

E-mail: LDP@stirling.gov.uk

www.stirling.gov.uk/localdevplan

If you need help or this information
supplied in an alternative format
please call 0845 277 700.

