The Highland Council
Comhairle na Gàidhealtachd

Supplementary Guidance
Stiùireadh Leasachail

Sustainable Design Guide
Iùl airson Dealbhadh Seasmhach

Supplementary Guidance
ADOPTED
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1. Background
Bun-fhiosrachadh

1.1 Introduction

1.1.1 The importance of taking a sustainable approach to the built environment was reinforced by the Scottish Government's adoption of the Climate Change (Scotland) Act 2009 and its delivery plan. Thus it is imperative that a sustainable approach to new development within the Highland Council area is adopted and implemented now.

1.1.2 This guidance has been prepared to encourage agents, architects, builders and clients to opt for buildings that are designed to respond to the local landscape and the local climate. This document will help you to consider all the relevant issues when planning a new development in the Highland Council area. Used well, it should help ensure that all future development will be well-designed, sustainable and sympathetic to its surroundings.

1.1.3 Taking a sustainable approach to building design is not a new phenomenon. This guidance takes an essentially traditional approach to design in order to deliver buildings that provide a resource-efficient, comfortable and flexible living environment in a sometimes hostile and certainly changeable climate. At the same time, this traditional approach can be supplemented by the increasing range of more modern, sustainable construction techniques and materials which can help ensure future developments in the Highland Council area are sustainable and of a high quality.

1.1.4 However, favouring a traditional approach to design does not mean that only traditionally-designed houses will be supported. On the contrary, innovative approaches to design and the use of sustainable materials will be welcomed, providing the result is sympathetic to the setting of the particular development.

1.1.5 Note that whilst this guidance seeks to improve the quality of design by making new development more sustainable, it does

not seek to prevent development from taking place which meets the needs of local people and businesses.

1.2 Planning Policy

1.2.1 This guidance has been developed to accompany and support the approach to Sustainability and Design contained within the Highland wide Local Development Plan (HwLDP). Specifically, this guidance relates to HwLDP Policy 28 Sustainable Design and Policy 29 Design Quality & Place-Making, however this Guide should be read in conjunction with all the other policies contained within the Plan, as well as the Council's complementary Supplementary Guidance: Housing in the Countryside - Siting and Design Guidance.

1.3 What is Good Design?

1.3.1 Good design in this context is a building that is fit for purpose and respects both its location and its function. Good design leads to buildings which relate well to their location, are functional, well-constructed and accessible, have a long life-span and are affordable as well as being sustainable.

1.3.2 Good design is also sustainable design. There is little point in incorporating all the latest sustainable techniques and materials if the building does not fit within its setting. Neither is there value in creating a beautifully designed building that relates well to its setting but is badly insulated and expensive to run.

1.3.3 Good, sustainable design makes sense for the Highlands as a whole: for its landscape and biodiversity; for its communities and economy; for the local businesses and the people who will live in the buildings once completed.

1.4 What are the benefits of Sustainable Design?

1.4.1 High quality and sustainably-designed buildings are essential to help us minimise long-term damage to the natural environment and support the social and economic fabric of the Highland area. Taking a sustainable approach to design can also make sound business sense for developers and provide financial benefits to the occupiers and users of buildings. For example, sensible siting and passive design measures can make the most of the available daylight and add little or nothing to the capital cost of a development, but can help reduce the cost of heating and lighting the buildings.

1.4.2 Future constraints on the availability of fossil fuels and the resultant increases in energy costs are an increasing concern. And whilst infrastructure for generating renewable energy adds to the capital cost of a scheme, the return on investment periods for occupiers and users of buildings grows shorter each year. There is

thus an increasing necessity to produce more energy efficient buildings with on-site renewable energy generating capacity.

1.4.3 Sustainable design also benefits local business involved in the supply of sustainable construction materials such as timber, which not only supports the forestry and sawmill industries, but also helps retain local skills in the use of such materials.

1.5 Structure of this guidance

1.5.1 This guidance is based on four key sustainable design principles:

- Conserving and enhancing the character of the Highland area;
- Using resources efficiently;
- Minimising the environmental impact of development;
- Enhancing the viability of Highland communities.

1.5.2 These sustainable design principles are explored in more detail in each of the following sections, and include a summary of the key design issues to be considered. This is supplemented by more detailed guidance on good practice and sources of further useful information.

1.5.3 The key design issues are also summarised in the practical Sustainable Design Checklist which can be found in Section 6 of this guidance.

1.5.4 Words and phrases which can be found in the Glossary at the end of this document are identified in italics in the body of this document.

1.6 Sustainable Design Principles

1.6.1 Sustainable design is as much about selecting the right site and appropriate architectural style as it as about utilising environmentally-friendly materials and construction techniques.

1.6.2 A balance will likely have to be struck in terms of the emphasis across all the elements highlighted in the Sustainable Design Checklist, since opportunities to address particular issues are often site-specific.

1.6.3 Applicants will need to demonstrate in their Sustainable Design Statements that they have:

- Carefully considered the issues detailed in the Checklist (Section 6);
- Identified how these issues apply to their specific development proposal;
- Arrived at an appropriate *sustainable design* solution for the proposed location, and one which meets or exceeds the minimum standards detailed in the Checklist.

1.6.4 Applicants will always be encouraged to go beyond the minimum standards, as working towards best practice provides a differentiating and competitive business advantage now, and in the future will allow developers to meet the increased Building Standards requirements, for example in terms of resource efficiency.

1.7 Sustainable Design Statements

1.7.1 This guidance will apply to all developments within the Highland area. Whilst much of this document is targeted at housing developments, the sustainable principles and the Checklist will apply across all developments, housing or otherwise.

1.7.2 Design and Access Statements are already statutory requirements for 'Major' and 'National' categories of development, developers should ensure that these statements address all the sustainability issues raised within this guidance and detailed in the Checklist contained in Section 6.

1.7.3 Whilst there is no statutory obligation to produce Design & Access Statements for 'Local' developments, Design Statements are still required in certain cases, such as Local developments in Conservation Areas or within the curtilage of Listed Buildings. Again, these Statements should address the issues detailed in the Checklist.

1.7.4 For the remaining developments within the 'Local' category, we would encourage applicants to produce a Sustainable Design Statement which addresses the issues detailed within the Sustainable Design Checklist in Section 6. Ensuring these issues are addressed for all developments will provide long-term benefits both for the applicants/developers and for the Highlands as a whole.

1.7.5 However, all developments are expected to achieve the minimum standards set out in the Checklist, although the size and scale of the development will influence the level at which each issue is considered. Applicants should use their Sustainable Design Statement to demonstrate how the standards contained within the Checklist will be achieved by the proposed development, and how the proposal will be implemented. The information provided must also be accurate and verifiable.

1.8 Contact us

1.8.1 If you have any questions regarding this guidance or how it applies to your particular development, please do not hesitate to contact your local Area Planning Office.

http://www.highland.gov.uk/yourenvironment/planning/planning-and-development-contacts.htm

2 Conserving and enhancing the character of the Highland area

A' glèidheadh agus a' leasachadh caractar sgìre na Gàidhealtachd

2.1 Overview

2.1.1 The relationship between landscape and the built environment creates the diverse and distinctive settlements which contribute to the overall character of the Highland area. However, in such a largely rural landscape, even the smallest development can have an adverse impact by being at odds with the landscape or the surrounding built environment.

2.1.2 Although new development need not be a copy or a pastiche of past styles, new off-the-shelf house designs are increasing prevalent throughout the area, eroding the Highlands' unique sense of place. Thus all new development should be designed with the Highland environment and climate in mind.

2.1.3 The combination of traditional skills, materials and knowledge of the landscape and climate, along with an increasingly wide choice of modern sustainable materials and construction techniques, should result in developments which reflect the special qualities of the Highland area.

2.2 Buildings and their setting

2.2.1 The distinctive patterns of settlements and communication links seen today in the Highlands reflect the historic opportunities and constraints presented by the natural environment of the area.

2.2.2 Traditionally, buildings have been designed to provide shelter from the often harsh climate and security for the occupants, whilst building groups have relied on structures including walls and landscape features to provide shelter and enclosure. Some of the more recent developments in the Highlands have been unsympathetic to this historical development pattern or building style and are consequently ill-fitting within the context of the Highlands.

2.2.3 Historically, buildings were oriented to provide the most shelter from prevailing wind and so had windows on the sheltered side, which may not have offered the

best view that modern buildings often attempt to do. However, this orientation also meant that the building could make use of the natural light and heat from the sun without the need for artificial lighting or heating.

2.2.4 In more recent times, buildings have been oriented to make the best use of the views available rather than taking account of the prevailing climate or making the most of the immediate landscape. Thus, in order to produce buildings which are both making the most of their locations and the available natural light and heat sources, we need to take advantage of the benefits that the development site provides, and at the same time make full use of the available sustainable materials and methods of construction.

2.2.5 What we build today will be here for generations if it is designed and built well. This means we need to ensure that all new developments make a positive contribution to their location. This can be achieved by carefully considering the site, scale, layout and design of the development, and how this relates to its surroundings. The special character of the place should be reflected in its buildings and serve the people who live, work or visit there.

2.2.6 Development sites should be viewed as a series of individual but connected spaces which relate to the existing topography and surroundings. These spaces then dictate where roads and streets can be fitted, and where within this spatial framework the individual buildings can be sited. This approach should lead to the sympathetic development of sites, and not a standard layout / pattern of development that is just imposed onto a site, irrespective of its setting and ground conditions. Therefore early and joint discussions with your Area Planning and Roads Offices are recommended so that developments are considered as a whole, and not as separate issues of planning permission and road construction consent.

2.2.7 Traditionally, buildings have been sited within the natural contours of the landscape and the scale of the landscape features, whereas modern construction methods have allowed developers to ignore these contextual elements through, for example, the re-levelling of the ground. The result is that developments appear visually intrusive in the landscape and are more exposed to the elements. A return to the traditional approach of respecting the existing ground levels should be made wherever possible in order to avoid such problems.

2.2.8 Where there are archaeological and/or cultural heritage interests on a development site, these features should be preserved and considered from an early stage in the design process. Taking this approach will help to enable and bed new development into the existing fabric of the area and respect the past.

2.3 Materials and traditional skills

2.3.1 The use or re-use of local materials in a building adds to the local distinctiveness and a sense of place. Thus the use of local materials, for example timber or natural stone, is actively encouraged, provided that they are fit for purpose within the principles of sustainable design. This will necessitate a balance being struck between sourcing materials locally, and bringing in specialised products which will optimise the sustainability and long term performance of the building.

2.3.2 Sustainable materials are those which have a low environmental impact. Generally they are:

- produced from a **renewable resource** or are re-used or recycled from a previous use;
- **sourced locally** to cut down on transport costs and to support the local economy;
- produced with **minimum ecological damage** and **no exploitation** of the workforce;
- **non-polluting** and **non-toxic** in manufacture, use or disposal;
- **low** ***embodied energy***, i.e. they are unprocessed or use the minimum amount of energy possible in their production.

2.3.3 Materials which cannot be repaired should be avoided. For example, minor damage to uPVC windows usually means that the whole window has to be replaced, whereas timber windows may only require simple repairs when damaged.

2.3.4 Since forestry is a traditional industry in the Highlands, and timber is a relatively low impact building material, choosing sustainably-produced timber from the Highlands will also cut down on environmental impacts arising from the transport of materials. However, care must be taken to ensure that all timber is sourced from sustainably managed forests. The FSC sign is a trademark of the Forestry Stewardship Council and is a mark of sustainable timber. This indicates that the wood used in the product comes from a forest which is managed to strict environmental, social and economic standards.

2.3.5 The original fabric of older buildings is likely to reflect the use of local materials. Sympathetic redevelopments should use locally-sourced, sustainable materials and construction methods which are compatible with the original building, for example lime mortar, traditional masonry and harling.

2.3.6 Some key considerations for all new developments include:

- **Designing for durability** by using naturally-durable local timber species including oak, European larch and Douglas fir.
- **Designing for recycling** by using recycled or previously used materials; using components which can be easily re-used or recycled at the end of the building's life, for example bolts and screws rather than nails; avoiding prefabricated products which are made of more than one element as these are difficult to separate.
- **Designing for maintenance** by using materials that can be repaired and maintained for example timber windows and doors, to prolong their lifespan.
- **Designing for health** by using non-toxic chemicals. Toxic chemicals are emitted from a huge variety of fittings and finishes including carpets, varnishes, and paints which affect indoor air quality.

Design for the future by using a flexible building design to ensure that a building can be easily adapted to changes in need, for example non-load bearing partitions enable significant changes to building layout to be made relatively easily.

2.4 The natural environment

2.4.1 Establishing what wildlife species and habitats are present on site before it is developed is the one of the key ways to maintain and improve the quality of the natural environment. This information should be taken into account when designing and planning the site to ensure that measures to protect existing wildlife will be taken if the development proceeds.

2.4.2 Key aspects include minimising disturbance to animals and plants, retaining existing on-site trees and vegetation, maintaining linkages to other existing semi-natural environments and open spaces. Corridors and buffers which enable wildlife to move between different areas include hedges, stone dykes and tree belts should be retained where they exist and should be considered an important aspect of the design of new development sites.

2.4.3 Tree felling and the destruction of semi-natural habitats such as woodlands, hedgerows, wetlands and meadows should be avoided. Existing habitats play an extremely important role in maintaining local biodiversity. They are also important in forming the setting for new developments and will be useful in helping new developments fit into their surroundings.

2.4.4 Using native and locally occurring species of plants in landscaping features will enhance local biodiversity by providing habitats for native wildlife and plant species. Locally occurring species are also likely to be better adapted to the local climate. The use of invasive, non-native plants, or any species that may encourage non-native species, should be avoided.

2.4.5 New on-site habitats can be incorporated into the design of new developments. The specific detail will depend on the local conditions and type of development, but this could include using green or brown roofs (which incorporate plants and lightweight gravels) to encourage wildflowers, insects and bird life, bird boxes, bat boxes, and planting on walls or building facades. As well as supporting wildlife, planting on walls and roofs can help to stabilise temperatures within buildings, therefore reducing uncomfortable extremes for users of the building.

2.4.6 The timing of construction, demolition and other site works should be planned to avoid particularly sensitive periods. This includes nesting birds and summer and over-wintering bat roosts. Note that it is an offence to deliberately or recklessly kill, injure, or disturb bats or to obstruct, damage or destroy a bat roost.

2.4.7 The impact of development on the water environment is also an important consideration, both in terms of construction works and the impact of the finished building and its setting. This includes for example minimising the effect of water runoff from hard-standing into rivers and streams and incorporating permeable surfaces, such as gravel to help reduce runoff rates. Crossing water courses, altering water flow in ponds, burns and wetlands or canalising or culverting burns should also be avoided.

2.4.8 Development on peaty soils should be avoided as the hydrology of bog systems can be severely affected leading to drying out and the release of stored carbon into the atmosphere. Peat bogs play an important role in locking up carbon which is a key contributor to climate change.

2.4.9 Where proposals are located on ecologically sensitive sites or those with complex protected species issues or mitigation, an Ecological Clerk of Works should be employed to deal with issues arising on site and to ensure compliance with the law and planning legislation.

Further information

Additional and more detailed information on the siting and design of houses in the countryside:

- Housing in the Countryside Siting and Design Guidance - www.highland.gov.uk
- Landscape Character Assessments - http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/lca/
- National Scenic Areas - http://www.snh.gov.uk/protecting-scotlands-nature/protectedareas/national-designations/nsa/special-qualities/
- SEPA Regulatory Position Statement – Developments on Peat – www.sepa.org.uk

Comprehensive sources of information on sustainable materials include:

- www.greenspec.co.uk
- www.aecb.net
- www.greenbooklive.com

Information on the *embodied energy* of construction materials can be found at:

- http://opus.bath.ac.uk/12382/
- www.forestry.gov.uk

Timber specific information is available from:

- Forestry Commission Scotland - www.forestry.gov.uk
- Green Oak in Construction - www.trada.co.uk
- Centre for Timber Engineering - www.cte.napier.ac.uk

- Central Point of Expertise in Timber (CPET) - www.proforest.net

For architecture and design see:

- A Policy on Architecture for Scotland - www.scotland.gov.uk
- Designing Streets - www.scotland.gov.uk
- Designing Places - www.scotland.gov.uk
- Scottish Ecological Design Association - www.seda.uk.net

For biodiversity and protected species see:

- Highland Council Green Networks Interim Supplementary Guidance – www.highland.gov.uk
- Highland's Statutorily Protected Species Supplementary - www.highland.gov.uk
- Biodiversity planning toolkit - www.biodiversityplanningtoolkit.com
- Bats and other European Protected Species - www.snh.gov.uk

General information on the natural environment is available from a variety of sources including:

- SEPA Habitat Enhancement Initiative - www.sepa.org.uk
- Information on the use of native species in planting is available from Scottish Natural Heritage - www.snh.org.uk
- Biodiversity by design TCPA (2004) - www.tcpa.org.uk
- Advice for planners and developers - http://www.snh.gov.uk/planning-and-development/advice-for-planners-and-developers/
- *Green roofs* - www.ciria.org

3 Using resources efficiently
A' cleachdadh stòrasan gu h-èifeachdach

3.1 Overview

3.1.1 There are significant pressures on infrastructure arising from energy, water use and the management of waste. All new development should incorporate sustainable energy, water and waste management systems in order to reduce these pressures in line with the Scottish Government's 'Climate Change Delivery Plan' (June 2009). This includes incorporating energy efficiency measures and generating on-site energy from renewable sources, minimising and recycling waste, and using water conservation techniques including fittings and appliances which use less water.

3.1.2 Reducing the amount of energy and water used not only uses resources more efficiently and reduces emissions, but also reduces the cost of bills, making the buildings cheaper to run today and in the future, when the increased cost of fossil fuels will drive up energy bills.

3.1.3 Whilst changes in construction methods mean that buildings no longer have to be orientated to take advantage of the best of the local climatic conditions, they are thus often not protected from the worst of the weather. Taking advantage of the local climate means maximising solar gain and shelter from the weather, reducing the need for artificial lighting, heating and cooling in buildings. Not taking advantage of the local climate means future users of the building will have to bear the cost of higher fuel bills than would be the case if the building was designed to exploit the opportunities which the natural environment presents.

3.1.4 Using development land efficiently is necessary to minimise the area of land that is required for the built environment and associated infrastructure, such as roads & footpaths, drainage facilities, and energy generation.

3.2 Energy efficiency

3.2.1 Considering energy efficiency is fundamental to the sustainable design of buildings. Simply bolting on renewable energy technologies without first reducing the energy demand of the building through sustainable design must be avoided. It is important to note that the majority of energy used in the home is for space heating, and that the energy required, and therefore energy costs, can be significantly reduced by following the principles of sustainable design.

3.2.2 The siting, design, layout and orientation of buildings can have a significant impact on energy consumption and the comfort of those using the building. Designing with the climate in mind so that a building can benefit from solar gain, daylight and natural ventilation, whilst providing shelter and comfort is known as 'passive design'.

3.2.3 Passive solar design is a simple measure to reduce energy demand by providing light and heat from natural sunlight and solar gain, reducing the need for artificial light and heat. By keeping the main glazed areas of the building to within 30 degrees of south, this will maximise the potential for the sun to heat the building and for natural daylight to penetrate the building.

3.2.4 Solar electricity installations (photovoltaic tiles, cells, and panels) and solar thermal (water heating) installations also require this orientation. South-easterly orientation maximises early morning gains and reduces the likelihood of overheating in the afternoons.

3.2.5 It is also important to provide measures to prevent overheating of the building. This might include blinds or screens, and wider eaves will allow sunlight into rooms in winter when the sun is lower in the sky but will provide shade in summer when the sun is higher.

3.2.6 In exposed locations, buildings should be set down into a hillside or bank of land to gain shelter from the prevailing wind. The narrow end of buildings should face the prevailing wind to reduce wind chill. Additional shelter can be provided by planting (or using existing) trees and hedges. This can also help to prevent over-heating of the building during summer.

3.2.7 Designing the internal layout of a building is as important as the design of the external elements and appearance. The most frequently used rooms should be located to the south side of buildings to make best use of solar gain, whilst the north side should be used for less frequently used rooms, for example toilets, cloakrooms, and storage that all require less heating. Rooms that are sized to allow sunlight to hit the back wall will benefit from both the sun's natural heat and light, and so building depth is also an important consideration.

3.2.8 Attention to detail for draft-proofing and insulation is important. The provision of insulation, unheated draft lobbies and sunrooms will all cut down on heat losses. Conservatories should be well partitioned from the main building, and all walls, windows and doors facing into the conservatory should be insulated to the same level as any other external part of the building.

3.2.9 Vents and blinds should be provided to help reduce excessive summer heat. Ventilation is also important to prevent excessive moisture build up. The most energy-efficient method is passive ventilation, which does not require the use of energy, and can be as simple as incorporating opening windows and trickle vents in window frames.

3.2.10 Use of construction materials with a high thermal mass will allow the building to store heat and help reduce variations in internal temperatures. For example a green roof provides greater thermal mass helping to stabilise temperatures more than a traditional slate roof.

3.3 Generating energy where it's needed

3.3.1 The on-site generation of energy has long been a necessity for those in remote areas of the Highlands and those not connected to the national electricity or gas grids. Historically there has been a reliance on diesel-powered generators for power, with timber and fossil fuels being used for heating. However, fossil fuels such as coal, oil and gas are known to contribute to climate change through the emission of greenhouse gases, including carbon dioxide (CO2). Reducing consumption of fossil fuels is thus a fundamental step towards combating climate change.

3.3.2 Incorporating small-scale renewable or low-carbon energy systems into developments or individual buildings can make significant reductions in CO2 emissions. Examples include:

- Small-scale stand alone *wind turbines*;
- *Solar thermal* heating panels;
- Solar energy *photovoltaic* cells, tiles and panels;
- Air, ground, or water source *heat pumps*;
- Small scale hydro-electric schemes;
- *Biomass* heating systems;
- *Anaerobic digesters/biogas.*

When considering incoporating these technologies into developments or individual buildings there are a range of planning considerations and constraints, and a suite of applicable policies and guidance, therefore pre application advice should be sought."

3.3.3 Community heatin g schemes should be considered for small-scale developments of two or three buildings as well as for larger-scale developments. Larger-scale developments should also consider the use of a combined heat and power scheme (CHP).

3.3.4 Heating systems which use locally available fuel such as woodchips or wood pellets can help to reduce dependence on fossil fuels and other remote energy sources where security of supply could be an issue in the future. Using locally-sourced fuels will also help to support local businesses and reduces transportation costs and energy use.

3.4 Making the most of water resources

3.4.1 There is also a need to encourage more sustainable patterns of water use to ensure we protect and enhance the quality and quantity of water in the Highlands. For example by reducing demand for water in areas remote from the mains water supply, less water needs to be taken directly from watercourses or underground water reserves.

3.4.2 Water can also be conserved by capturing and recycling 'greywater' from household sources such as sinks, baths and washing machines. In those parts of the Highlands where rainfall is plentiful, using rainwater is likely to be more cost effective than installing a greywater system. Collecting and using rainwater will also reduce the amount of water entering streams and surface drainage systems, which in turn will help to reduce problems with flooding.

3.4.3 In addition, the energy consumed by heating the water for washing, central heating systems and so on, has a major impact on our energy consumption. Therefore water conservation devices which limit the amount of water used and 'A' rated appliances which reduce water use can also help to reduce energy consumption and energy bills.

3.4.4 Thus, as water conservation becomes increasingly important, it is good to know that there are many simple and low-tech ways we can conserve water resources:

- *Greywater*/Rainwater capture for flushing water closets, car washing and garden taps;
- Installing water-saving devices such as aerating taps and low-flush cisterns;
- Installing 'A' rated appliances within the home which can reduce the total amount of water, and energy, used.

3.5 Flooding

3.5.1 All developments should be located outwith any functional flood-plain. Although flooding cannot be wholly prevented, careful building design and the use of certain construction materials can reduce the impact of flood events. Green roofs, permeable surfacing for paths and parking areas and appropriately-designed Sustainable Urban Drainage Systems (SUDS) can all help to alleviate flash-flooding by reducing the speed and impact of rainwater runoff.

3.6 Waste Water

3.6.1 In all cases, the preferred foul drainage solution should be via a connection to the public sewer. Where no connection is available for larger developments, a system should be designed and built to a standard to allow adoption by Scottish Water and can easily be connected to the public sewer at a later date. Where a public sewer connection is not available for small-scale housing developments, foul water must be treated before it is discharged to land or a watercourse to comply with the relevant Building Standards and SEPA regulatory regimes. Whilst various off-the-shelf manufactured sewage treatment plants are available, more sustainable and natural sewage treatment solutions are available, including wetland and reed bed treatment systems, and composting toilets. Advice and guidance from SEPA and a suitably qualified drainage engineer should be sought to help you deliver an appropriate solution for your specific site.

3.7 Reducing construction waste

3.7.1 Around one third of all waste going to UK landfill sites is from the construction industry. The production of Site Waste Management Plans helps developers to reduce waste and makes savings on Landfill Tax payments, as well as helping companies improve their overall environmental performance and meet regulatory controls.

3.7.2 Developers are also encouraged to sign up to the Considerate Constructors Scheme which aims to improve the image of the construction industry, its processes and products. The scheme includes initiatives regarding responsible materials use, recycling and minimising the need for waste disposal.

3.7.3 A Site Waste Management Plan should accompany all large development proposals. This is a means to identify the volume and type of material to be excavated and/or demolished, opportunities for the re-use and recovery of materials and demonstrates how off-site disposal of waste will be minimised and managed. Such a plan can also deliver financial benefits to the developer by helping to manage material supply and waste, reducing the likelihood of materials being over-ordered and decreasing the amount of waste that needs to be disposed, thereby cutting development costs.

3.8 New ways with waste

3.8.1 Over 70 per cent of collected household waste is recyclable or compostable. Dedicated space for recycling facilities should therefore be incorporated into all new developments. The type of waste and recycling facilities provided for end-users will vary depending on the type and scale of the development and the current provision by the local council. Developers should therefore aspire to

meet or exceed current best practice with regard to recycling and waste management standards for storage of household waste.

3.8.2 On-site composting is a highly sustainable option for the treatment of suitable waste materials. It treats the waste where it is generated and the end product of the waste treatment - i.e. the compost - can also be used on-site. Composting areas and bins should therefore be provided in rear gardens away from the house.

3.9 Valuing land as a scarce resource

3.9.1 The Highland area is characterised by its wild land and primary land uses such as farming and forestry. Making efficient use of available development land is therefore important to ensure that the character of the Highlands remains intact.

3.9.2 The re-use of derelict or redundant buildings and previously developed 'brownfield' land is one important aspect of the efficient use of land for development. However, not all derelict buildings will be in sustainable locations, and appropriate new uses for such buildings will likely be site-specific.

3.9.3 Site planning should take account of all land uses from the outset rather than considering some as optional extras towards the conclusion of the development process, as this will also help to make the best use of the available land resource. The land uses for consideration should include: community amenity, sustainable drainage and renewable energy.

3.9.4 Designers should also ensure that road layouts in new developments are not used as a means to dictate the position of buildings, pedestrian routes or open space provision. Joint discussions with Planning and TECS representatives at an early stage of a development are therefore recommended in order to arrive at an efficient and effective use of land within the development site.

3.9.5 However, it is also important to consider the private space within which a house sits, as this is an important aspect of the development which should be considered from the outset of the design. Developments which identify uses for all land on the site and make a clear distinction between public and private space will help prevent pockets of land becoming derelict in the future.

Further information

Additional and more detailed information on the siting and design of houses in the countryside:

- Housing in the Countryside Siting and Design Guidance - www.highland.gov.uk

- Information on household waste and recycling including identifying what can be recycled and where can be found at:
- www.wrap.org.uk
- Composting - www.wasteawarescotland.org.uk & www.soilassociation.org
- www.crns.org.uk

Advice on managing construction and demolition waste is available from:

- www.constructingexcellence.org.uk
- www.ice.org.uk
- www.aggregain.org.uk
- http://www.wrap.org.uk/construction/index.html
- www.envirowise.gov.uk

Information on sustainable drainage options, water conservation and *rainwater harvesting* systems is available from:

- *Green roofs* & SUDS manual - www.ciria.org.uk
- Highland Housing Alliance - Sustainable Drainage Design Guide for housing in the countryside
- Regulations, good practice advice and *habitat* enhancement - www.sepa.org.uk
- Recycling rainwater and grey water - www.environment-agency.gov.uk
- Sewers for Scotland, SUDS - www.scottishwater.co.uk

Comprehensive practical guidance on auditing use of energy, energy efficiency, and availability of grants is available from:

- www.energysavingtrust.org.uk
- www.carbontrust.co.uk
- www.sbsa.gov.uk

General information on *renewable energy* generation is available from:

- www.cat.org.uk
- www.energysavingtrust.org.uk
- Wind energy - www.bwea.com
- www.communityenergyscotland.org.uk
- Micro-generation Certification Scheme - www.microgenerationcertification.org
- *Anaerobic Digestion/Biogas* - www.biogas-info.co.uk

Information on *climate change*, reducing carbon emissions and climate-proofing buildings for the future is available from:

- http://www.scotland.gov.uk/Topics/Environment/climatechange (Including Scotland's Climate Change Delivery Plan (June 2009))
- www.energysavingtrust.org.uk

4 Minimising the environmental impact of development
Ag ìsleachadh buaidh leasachaidh air an àrainneachd

4.1 Overview

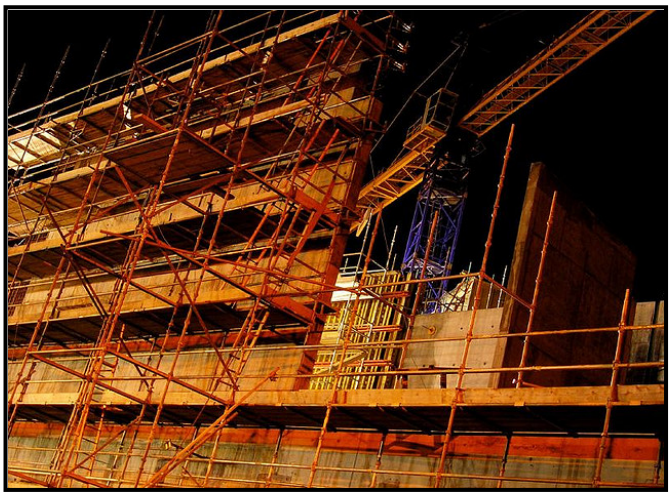
4.1.1 No matter how well-designed a development proposal may be there are still a number of potential environmental impacts which can result from the development process or the way the finished development is used.

4.1.2 For example, construction processes can cause detrimental impacts to air quality, and contribute to light and noise pollution. In addition, development usually creates the need for transportation of people and goods such as the delivery of materials to a construction site, and the need for future residents to travel to work, school or community facilities.

4.1.3 Whilst at first glance it may seem that the developer has little control over some of these impacts, the overall approach taken to the design and execution of the development can in fact influence all these issues.

4.2 Minimising the impacts of construction

4.2.1 Construction activity can generate significant amounts of noise and air pollution, for example in the form of dust. Minimising the impact of construction activities on the amenity of neighbours is therefore important. Good site management practices should therefore be put in place to ensure potential pollution from all sources is minimised.



4.2.2 The Considerate Constructors Scheme (CCS) is a voluntary scheme designed to promote and encourage safe, considerate, clean and responsible builders and building sites. Guidance on addressing noise and air pollution can be found on the CCS website (see Further Information on page 20).

4.2.3 Light pollution can result from both construction activity and out-of-hours site security. Appropriate measures should therefore be put in place to limit light pollution.

4.2.4 And finally, Travel Plans for construction sites will also help to ensure better-planned deliveries which limit the overall generation of traffic movements and associated noise and air pollution on-site. Better-planned deliveries can also have the added benefit of reducing development costs.

4.3 Unobtrusive developments

4.3.1 The quality of the dark night skies is a significant contribution to the sense of wildness that can be experienced in the Highlands. To maintain this quality, all developments should minimise the light pollution which they create during both the construction phase and the use of the development.

4.3.2 Consideration should be given to how disturbance from light pollution can be minimised where external lighting is required. Pedestrian routes which are lit should use light fittings which direct light towards the ground in order to avoid light pollution. Opportunities to look at lighting that can be dimmed / turned off when not in use, for example, on demand street lighting, should also be considered.

4.3.3 A reduction in the levels of noise from building occupiers and users can be achieved by using, for example, acoustic glazing, acoustic barrier fencing and landscaping belts. Solutions should reflect traditional materials, planting schemes and use native species.

4.4 Transport - Reducing the carbon footprint

4.4.1 Transport is the only sector of the economy from which emissions have been rising consistently since 1990. Since most developments will generate additional traffic movements and requirements for parking, this is a key issue that must be addressed to help reduce the carbon footprint of new developments.

4.4.2 One way of tackling these problems is through the promotion of active travel and public transport. Active travel through walking and cycling is energy efficient, cost effective, and health promoting. Cycle parking is thus essential to support cycling as a practical travel choice, particularly in urban areas and developments which are served by a train line or bus service,

where cycling is used as a means of starting or finishing the journey. Public transport is most efficient in urban areas where load factors are high and has the opportunity of reducing congestion on the road network. New developments should therefore consider how they can connect to and contribute towards improvements in active travel and public transport networks and facilities.

4.4.3 In rural areas of the Highlands private transport is still heavily relied upon despite high fuel costs, and car ownership levels therefore remain relatively high. Since an effective transport system is one of the key factors to sustaining rural populations, the private car will continue to be the transport mode of choice in these areas due to the lack of a comprehensive public transport network.

4.4.4 However a number of additional and novel approaches have emerged in recent years to supplement or fill a gap in the rural transport network. For example, parts of the Highland Council area are now serviced by community transport schemes, such as the Dial-a-Ride scheme in Caithness. Such schemes will continue to be supported through the Local Transport Strategy in order to provide access to transport for non-car users and also to help reduce the reliance on private motor vehicles in rural areas where the regular bus service is insufficient or non-existent.

Further information

Comprehensive advice on reducing the impact of construction is available from the Considerate Constructors Scheme:

- www.ccscheme.org.uk.

Highland Council's Construction Environmental Management for Large Scale Projects:

- www.highland.gov.uk

Transport and travel information can be found at:

- www.cyclingscotland.org
- Highland Council Local Transport Strategy - www.highland.gov.uk
- Highland Core Path Plan - www.highland.gov.uk
- SNH Guidance on Access Plans - www.snh.gov.uk/docs/B639282.pdf
- Transport, air pollution and air quality – www.environmental-protection.org.uk

5 Enhancing the viability of Highland communities
A' meudachadh comas obrachaidh choimhearsnachdan Gàidhealach

5.1 Overview

5.1.1 The way people live and work is changing, and increases in life expectancy also means that the way we use our homes, access services and community facilities is also changing.

5.1.2 Sustainable buildings will be flexible and accessible in their design, so that they remain fit for purpose and function effectively even when our lifestyles change. This might be due to changes in the way we work or changes in our health. Buildings built to Lifetime Homes Standards have flexibility built into their design. Some buildings are deliberately designed for short-term use, but in such cases the building should be designed to enable effective re-use or recycling of its components.

5.1.3 Flexible design should also allow for home working, whether in traditional industries and supporting services, or new opportunities arising from the increasing range of communication technologies available. There is also an increasing demand from those seeking alternative lifestyles which may embrace a back-to-the-land approach. Private space thus remains an important consideration, with increasing interest in gardening - particularly grow your own - reminding us of the need for suitably-sized gardens, as well as the provision of public space in the form of allotments and community gardens.

5.2 Making homes that last a lifetime

5.2.1 Evidence shows that the population of the Highland area is likely to age faster than the national average. Buildings built to Lifetime Homes Standards have flexibility built into their design which can be easily adapted to suit different requirements over time. This gives the building a longer lifespan, and in the case of housing allows residents to stay in their home and community if their needs change.

5.2.2 The design of accessible buildings should consider both the internal and external environments; not only how to get into the building, but how to get to the door of the building, and once inside how to move around and access rooms and facilities as required.

5.3 Working from home

5.3.1 People in rural areas have traditionally been employed in primary land uses including farming, forestry and the services which support these industries. As a result of the increased flexibility which information and communication technologies (ICT) bring, allied to an increasing interest in alternative lifestyles, the rural economy is diversifying. Commuting will also likely remain an important aspect of rural life, as there is often a lack of employment opportunities within the local community.

5.3.2 As a consequence of this, there are changing demands for the design of housing in particular. This includes the designation of space for working from home. This is not limited to an office space within a house or outbuilding, but could also include workshops, studios, retail outlets etc. Plans for home-working should be thought about at the outset and should include access to broadband.

5.4 Buildings fit for many purposes

5.4.1 New buildings which are sited and designed to allow for future changes to internal layout or external extension will have a longer useful lifespan. Using construction techniques which enable significant changes to be made to the building with ease will help to extend the building's use - for example non-structural partitions which can be easily removed or re-positioned to create new spaces.

5.5 Community facilities

5.5.1 Access to services and facilities is fundamental to the viability of communities. This includes services such as schools, colleges, libraries, health centres, banks and shops, as well as community facilities such as village halls, community centres, public parks and open spaces. These services and facilities must be available for those without access to private transport.

5.5.2 New development must also provide adequate private and public open space for residents. The Council has set out its requirements for the provision of open space within "Open Space in New Residential Developments: Supplementary Guidance".

5.5.3 The distinctions between public and private space should be obvious, using sympathetic boundary treatments and local materials. The public and private spaces should flow naturally into the wider countryside to help the development sit naturally within its setting. Boundary treatments which create a suburban edge, such as solid timber fencing, should be avoided.

5.5.4 Links to the wider countryside are an important aspect of community life, and may include paths which are remote from main roads to help ensure safer routes for pedestrians and cyclists.

5.6 Adapting to climate change

5.6.1 Climate change predictions indicate hotter, drier summers, and warmer wetter autumn and winter periods. More frequent and more extreme storms including high winds and flash flooding are also predicted. This will impact on all forms of infrastructure including storm drains and sewers as well as the built environment in general. Buildings being constructed today will still be around in 50 years time when these climate changes will be making more of an impact. What we build today needs to take into account future climatic conditions.

5.6.2 Drainage systems should be designed to enable excess runoff during storm events to be dealt with, thereby preventing flash flooding. Gutters and other rainwater goods should be sized to account for increased and heavier rainfall. Rainwater collection systems such as water butts should be incorporated to collect and recycle water for use during dry spells.

5.6.3 Roof designs should be robust and use the traditional approach of steep pitches and sarking. Incorporating over-hanging eaves to cope with increased rainfall as a result of climate change can still reflect these traditional approaches. External walls should be protected from increased rain by large eaves and splash zones at the base of walls.

5.6.4 You should use materials which are durable, can be maintained and repaired, and which are locally or easily obtained should be used. This allows damage to be dealt with in a timely manner which may save money in the long run.

5.6.5 To avoid the risk of damage from water and damp penetration, attention should be given to designing and detailing junctions, for example between external walls and windows and doors. This should enable water to be quickly shed so it is not allowed to collect in joints which may damage materials, for example through wet rot.

5.6.6 Internal building temperatures can be stabilised to reduce the risk of overheating in summer by incorporating thermal mass into the design, for example by incorporating a green roof. Shading and shelter can be provided through landscaping and natural ventilation rather than reliance on energy intensive mechanical ventilation or air-conditioning systems.

5.6.7 Landscaping and planting should be designed to provide shelter from severe storm events and shade from excessive solar gain.

Further information

Information on building homes to last a lifetime, including the Lifetime Homes Standards, can be found at:

- www.lifetimehomes.org.uk

For information on what *climate change* is go to:

- www.sepa.org.uk

To find out what action Scotland is taking to address climate change see the Scottish Climate Change Programme which is available from the Scottish Climate Change Programme (SCCP):

- www.scotland.gov.uk

For practical household action on climate change see:

- www.infoscotland.com

For information on *Open Space* requirements see:

- Open Space in New Residential Developments: Supplementary Guidance - www.highland.gov.uk

6 Sustainable Design Checklist
Liosta-sgrùdaidh Dealbhadh Seasmhach

6.1 How to use this checklist

6.1.1 Clients, developers and architects should use the following checklist to prepare their Sustainable Design Statement and to ensure that their development proposal meets the minimum standards for all the required elements. Evidence to support this should be provided in the Sustainable Design Statement.

6.1.2 Not all the elements of the checklist will be appropriate to all developments. Your Sustainable Design Statement should be used to show that you have considered each of the issues in turn and what actions you have taken to address them. If you believe something contained within the checklist is not relevant to your development, then please contact your local Area Planning Office.

6.1.3 Not all the elements of the checklist will necessarily be relevant if a Planning Permission in Principle is being submitted. However, all the checklist elements for a development proposal should have been considered by the time an Approval of Matters Specified in Conditions is being sought. Again, if in doubt, please contact your local Area Planning Office.

6.1.4 Anyone considering built development of any kind is strongly advised to have discussions with their local Area Planning Office prior to the submission of a planning application. This will help to ensure that all issues relevant to the application are identified and addressed at an early stage in the development process.

6.1.5 Note that the standards detailed in the following Sustainable Design Checklist are the minimum that are required at the current time. However, all proposals for development in the Highland area are encouraged to go beyond the minimum standards and achieve the highest level of sustainable design possible.

NB: Highland-wide Local Development Plan (HwLDP) Policy 29 Sustainable Development is relevant for ALL the items in the following checklist		
Sustainable Design Checklist	**Minimum Standards**	**Relevant Policies & Additional Guidance**
1. Layout, scale, proportion, materials, construction and finishing Will the appearance of the development be visually appropriate, complementing local character whilst reinforcing local distinctiveness (e.g. materials, road pattern etc) and be clearly integrated with the wider community? A. Building materials and colour complement local character B. Site layout, building style and scale enhance local character C. Roof-scapes visually respect the local context (allowing for low carbon technologies where appropriate) D. Continuity of local building details such as simple and uncomplicated design of roofs, dormers, windows and doors E. Potential for personalisation by prospective residents 1. F. Contemporary approach which reflects the local vernacular where appropriate.	A – D achieved	HwLDP Policy 30 Design Quality & Place-Making HwLDP Policy 62 Landscape Housing in the Countryside Siting and Design Guide (Supplementary Guidance) Residential Layout and Design Supplementary Guidance PAN 68 – Design Statements

2. Landscaping Has a landscaping scheme been drawn up for the site which ensures that: A. Landscape forms the context for the development B. The development integrates into or enhances the present landscape character C. Green spaces are provided for public/private and site boundaries (including tree and shrub planting) D. Public open space and recreational provision is given as required E. Safeguards green networks within the site, and establishment of green network features that link into the wider green network.	Landscape Scheme drawn up covering criteria A – E.	HwLDP Policy 62 Landscape HwLDP Policy 76 Open Space and Open Space in New Residential Development: Supplementary Guidance Housing in the Countryside Siting and Design Guide (Supplementary Guidance) Trees, Woodland & Development Supplementary Guidance Green Networks Interim Supplementary Guidance Natural History Museum Plant Finder Website: http://www.nhm.ac.uk/fff/search.html for information on native species
3. Cultural heritage Are the culturally and archaeologically important features on the site and their settings known, and how will these be affected by the development?	Important features are identified, assessed and protected.	HwLDP Policy 58 Natural, Cultural & Built Heritage Heritage Strategy Supplementary Guidance

4. Materials Which materials are from secondary or recycled sources, have low-embodied energy, and are from sustainable and/or local sources? A. A: Roof B. External walls C. Internal walls (including separating walls) D. Upper and ground floors (including separating floors) E. E. Windows	At least 3 out of the 5 key elements achieve a Green Guide rating of A+ to D. 100% of timber must be from FSC/PEFC sources.	BRE Green Guide to Specification provides additional background information Housing in the Countryside Siting and Design Guide (Supplementary Guidance) Forestry Commission Scotland's 'Sustainable Construction Timber' gives additional guidance on sourcing and specifying timber
5. Natural heritage Has an assessment been made of the site's ecology and will the ecological value of the site be protected or recreated to equal quality and or enhanced?	Assessment undertaken and strategy produced by an ecologist (or equivalent) to protect or recreate existing ecological value.	HwLDP Policy 58 Natural, Cultural & Built Heritage

6. Enhancing wildlife Will there be: A. No net loss in relation to habitats and species? B. A mixture of locally occurring species specified for planting and landscaping schemes? C. Any new links between habitats within the site or links to habitats outside the development boundary? A. D. An increase in important or sensitive habitats identified in the Local Biodiversity Action Plan (LBAP), either by creating or restoring ecological value (as assessed by an ecologist), or support for a species identified in the LBAP?	A – D achieved	HwLDP Policy 59 Protected Species HwLDP Policy 60 Other Important Species HwLDP Policy 61 Other Important Habitats HwLDP Policy 75 Green Networks Green Networks Supplementary Guidance Guidance on Development and Biodiversity (Supplementary Guidance) Trees, Woodlands & Development Supplementary Guidance

7. Energy efficiency What steps have been taken towards reducing CO^2 emissions through energy-efficient design for the proposed development? A. Minimising energy demand for the site through orientation and maximising passive solar gain B. Maximising the thermal efficiency of individual buildings through thermal mass, insulation, natural shelter, and appropriate glazing 2. C. Minimising demand for water heating, space heating and cooling, lighting and power in individual dwellings through efficient equipment and controls.	A – C achieved	

8. Renewable energy Has the energy demand for the development been calculated to determine: A. The amount of low or zero carbon technology e.g. wind, solar, hydro, photovoltaic (PV), Combined Heat and Power (CHP) that is practicable to meet the extant Building Standards CO^2 emissions reduction target. B. The % of total site energy demand that will be produced from on-site renewable energy technologies. A. C. Meeting the remaining energy demand efficiently, e.g. non-renewable or waste powered district heating and cooling.	A - C is required only where the development is 500m^2 or over. The CO^2 emissions reduction target should be met through a combination of on-site low or zero carbon technologies (LZCT) and other appropriate measures. The amount of low or zero carbon technologies (LZCT) employed will depend on the technical constraints and scale of the proposed development.	Climate Change (Scotland) Act Scottish Planning Policy (SPP) A Low Carbon Building Standards Strategy For Scotland Scottish Building Standards

9. Foul wastewater treatment Will the development be connected to the public sewer; if not has a sustainable waste water treatment system been designed to avoid unacceptable damage to the water environment?	Separate systems are proposed for foul and surface water drainage. Foul drainage is via a connection to the public sewer, or where no connection is available, system is designed and built to a standard to allow adoption by Scottish Water and can easily be connected to the public sewer at a later date. Discharges from private sewerage systems will be registered or licensed by SEPA depending on the development size.	HwLDP Policy 64 Water Environment HwLDP Policy 66 Waste Water Treatment

10. Flooding What measures have been taken to ensure that the development will: A. Be free from significant risk of flooding; B. Not add to the area of land that requires flood prevention measures; and B. C. Not affect the ability of the functional floodplain to store or move flood waters?	Reference has been made to SEPA's Flood Risk Maps to determine if a Flood Risk Assessment is required. In all cases the development site is demonstrated to be outwith the functional floodplain (i.e. there is not more than a 1:200 year flood risk).	HwLDP Policy 65 Flood Risk Planning for Managing Floods Supplementary Guidance

11. Surface water runoff Which of the following localised strategies for ensuring that runoff from the finished development does not exceed runoff from the previously undeveloped site have been proposed and designed in accordance with the SUDS Manual C697 published by CIRIA: A. Prevention of runoff at source – through simple design measures on individual buildings (e.g.; minimising paved areas) to allow water to return to the natural drainage system as near to the source as possible and not to contribute to runoff. B. Source control of runoff rate/volume - through control of the rate/volume of runoff generated close to source e.g.: rainwater harvesting systems, green roofs and individual soakaways for buildings. C. C. Site control of water management – water is managed from several areas e.g.: roofs and parking areas into one large soakaway or device such as an infiltration basin. This incorporates enhancing *biodiversity* and amenity, and is sized to allow incorporation of further developments in future.	A and B	HwLDP Policy 67 Surface Water Drainage

12. Water conservation How will the development sustainably meet the required water demands including through the use of: A. Water efficient appliances such as dual flush toilets, aerating taps, and water-efficient white goods; B. Rainwater collection for re-use; D. C. Green roofs.	A	
13. Waste and recycling Has suitably screened space been made available for the storage of waste and recyclables in or around each building including: A. Space for sorting and storing recyclable materials; B. Space for general waste storage; E. C. Space for composting organic kitchen and garden waste?	A - C	Managing Waste in New Developments Supplementary Guidance

14. Site management How will development of the site be undertaken in a manner which minimises disturbance to neighbouring properties and the environment including addressing: A. Noise pollution B. Light pollution C. Air pollution D. Construction waste E. Surface water run-off F. Soil handling G. Protection of trees H. Traffic movements F. I. Access	Considerate Constructors Scheme is implemented to minimise noise, light and air pollution and a Site Waste Management Plan is put in place which reflects the requirements of Netregs, including identifying: • types of waste removed from the site; • the person who removed the waste; and • the site that the waste is taken to. Key sources of potential disturbance and pollution are identified and mitigation measures put in place.	Considerate Constructors Scheme provides additional background information Highland Council's Construction Environmental Management Process for Large Scale Projects Trees, Woodlands & Development Supplementary Guidance Netregs - www.netregs.gov.uk

15. Transport How does the development proposal make a positive contribution towards the improvement of the sustainable transport network by: A. Reducing car dependency; B. Promoting sustainable transport modes; C. Creating or linking to existing sustainable travel modes including the core path network, safe routes to schools and workplaces by cycle, pedestrian or public transport; G. D. Reducing the need to travel; demonstrated through a Transport Assessment where transport impacts are considered to be significant.	Positive impacts are demonstrated on A - D	HwLDP Policy 57 Travel Highland Council Local Transport Strategy

16. Pedestrians and cyclists How close is the development to existing public transport networks? What provision is made for secure cycle storage in new buildings and at associated local facilities including transport hubs?	State approximate distance from the centre of the development to nearest bus stop. For residential development the design provides external cycle storage space, for example in private garden area garages, or in the case of flats secure communal cycle storage. For non-residential development secure cycle storage is provided on-site.	HwLDP Policy 57 Travel Highland Council Local Transport Strategy

17. Efficient use of land and existing buildings How does the design ensure that: A. Disturbance to soils is minimised for example through minimising required earthworks. B. Where appropriate demolition materials will be re-used on-site, rather than transported off-site as waste materials. H. C. Existing redundant and derelict buildings are sympathetically converted and/or restored where appropriatewith a bat survey and mitigation plan carried out if neccesary	A-B C is required where derelict and redundant buildings exist on the development site. Their exclusion from a development proposal should be adequately explained and evidenced.	HwLDP Policy 36 Housing in the Countryside (Hinterland areas) Housing in the Countryside Supplementary Guidance Highland's Statutorily Protected Species Supplementary Guidance
18. Design for flexibility Has flexibility been designed into all units to provide adaptability to changing needs? A. Has design to Lifetime Homes Standards been adopted? B. Has infrastructure been installed to allow for home working, e.g. telephone / WiFi for all developments? C. Does building structure and position allow for future extension? I. D. Have construction techniques been used which enable internal walls to be easily removed or re-positioned to create new spaces?	A-B required for residential developments. C-D required for non-residential developments.	HwLDP Policy 46 Communications Infrastructure

19. Private amenity space Is there provision for private amenity space e.g.: private garden, balcony, roof terrace or patio, or a communal garden/courtyard which is easily accessible for occupants of designated properties, and does the size and type of area provided allow for: A. All occupants to sit outside at once; B. Safe access by those using wheelchairs or mobility aids; C. Growing fruit or vegetables; D. Composting of kitchen and garden waste; J. E. Drying washing.	A - E	
20. Accessibility of community facilities How far in miles is the development from the following facilities? A. Healthy facilities such as a surgery or pharmacy; B. Education facilities such as a crèche, primary and secondary schools; C. Shop; D. Bank, Post Office or cash machine; K. E. Leisure facilities such as a community centre or indoor sports facility.	State approximate distances from the development to the facilities listed A-E.	HwLDP Policy 38 Accommodation for an Ageing Population HwLDP Policy 41 Retail Development Highland Council Local Transport Strategy

Glossary
Beag-fhaclair

Acoustic glazing: Windows that have been designed and constructed for high levels of sound transmission loss.

Active travel: An approach to travel and transport that focuses on physical activity (walking and cycling) as opposed to motorised and carbon-dependent means.

Anaerobic Digesters: Processes and systems which convert organic matter such as household food and garden waste, farm slurry, waste from food processing plants and supermarkets, into energy. The main products resulting from this anaerobic digestion process are biogas (a mixture of methane and carbon dioxide), which is very similar to natural gas, and digestate, a low level fertilizer. The biogas can be used to generate electricity, gas or heat, or compressed for use as a biofuel. The fertilizer is rich in nitrates and phosphates.

Artificial light/ing: any light source other than natural light. Artificial light sources include those with a continuous spectrum such as candles, normal electric light bulbs (tungsten lighting), special photographic light bulbs (photoflood bulbs), as well as discontinuous light sources such as fluorescent tubes.

Biodiversity: The variety and essential interdependence of all living things; it includes the variety of living organisms, the genetic differences among them, the communities and ecosystems in which they occur, and the ecological and evolutionary processes that keep them functioning.

Biofuel: A wide range of fuels which are in some way derived from biomass. The term covers solid biomass, liquid fuels and various biogases.

Biogas: Typically refers to a gas produced by the biological breakdown of organic matter in the absence of oxygen (anaerobic digestion). Biogas originates from biogenic material and is a type of biofuel.

Biomass: Biological material derived from living, or recently living organisms. In the context of biomass for energy this is often used to mean plant based material, but biomass can equally apply to both animal and vegetable derived material.

Brown roof: A roof that incorporates a substrate (laid over a waterproof membrane) that is allowed to colonise naturally. Sometimes referred to as an ‘alternative roof’.

Brownfield: Land that was developed but is now vacant or derelict, or land currently in use with known potential for redevelopment. Such land can be located within both urban and rural areas.

Built Environment: The urban environment consisting of buildings, roads, fixtures, parks, and all other improvements that form the physical character of a city, town or village.

Carbon footprint: The total set of greenhouse gas emissions caused by an individual or organisation, event or product.

Climate Change: Any long-term significant change in the weather patterns of an area, which can occur naturally or by changes people have made to the land or atmosphere.

Combined Heat and Power (CHP): Also called cogeneration, CHP is the use of the waste heat generated by an engine or power station to produce useful heat, typically for heating of a building.

Community transport: Vehicular movements of people by not-for-profit organisations and bodies, including bus services provided by the Council.

Cultural heritage: Qualities and attributes possessed by places and objects that have aesthetic, historic, scientific or social value for past, present or future generations.

Eaves: The underside of a roof that extends beyond the external walls of a building.

Embodied energy: The quantity of energy required to extract, process, manufacture and transport a material.

Floodplain: The land adjacent to a water body, stream, river, lake or ocean - that experiences occasional flooding.

Fossil fuels: Natural resources, such as coal, oil and natural gas, containing hydrocarbons. These fuels are formed in the Earth over millions of years and produce carbon dioxide when burnt.

Green roof: (also referred to as an eco-roof or living roof) is a roof of a building that is partially or completely covered with vegetation and soil, or a growing medium, planted over a waterproofing membrane. Vegetated roofs reduce heating and cooling loads on a building, reduce the urban heat island effect, increase roof life span, reduce storm water run off, filter pollutants and CO2 out of the air, filter pollutants and heavy metals out of rainwater, and increase wildlife habitat in built-up areas.

Green Network: A network of greenspaces and green corridors within and around settlements, linking out into the wider countryside. They can help to enhance the area's biodiversity, quality of life and sense of place. A green network also provides the setting within which high quality, sustainable development can occur.

Greenhouse gases: Gases in the earth's atmosphere that absorb and emit radiation within the thermal infrared range, and include water vapour, carbon dioxide, methane, nitrous oxide, and ozone

Greywater: Any water that has been used in the home, except water from toilets, which may be reused for other purposes, for example watering the garden.

Groundwater: All water below the surface of the land. It is water found in the pore spaces of bedrock or soil, and it reaches the land surface through springs or it can be pumped using wells.

Habitat: Living environment of a species, that provides whatever that species needs for its survival, such as nutrients, water and living space.

Heat pumps: These work like a refrigerator moving heat from one place to another. Heat pumps can provide space heating, cooling, water heating and sometimes exhaust air heat recovery.

ICT (or Information and Communication Technologies): Technologies such as telephony, cable, satellite and radio, as well as digital technologies, such as computers, **information** networks and software.

Infrastructure: The basic services and facilities needed to support development. These include road access and water and sewerage facilities.

Land use: The manner in which a parcel of land is used or occupied.

Landfill: An area of land identified for the deposit of waste.

Landfill Tax: Introduced in the UK in 1996 as the UK's first environmental law. A tax based upon the type and quantity of waste being disposed to landfill.

Light pollution: An excess of artificial light, especially near urban areas, reducing visibility of stars, etc. in the night sky.

Natural ventilation: a method for reducing energy use and cost and for providing acceptable indoor environmental quality rather than using mechanical ventilation. Natural ventilation systems rely on pressure differences to move fresh air through buildings. Openings between rooms such as transom windows, louvers, grills, or open plans are techniques to complete the airflow circuit through a building.

Open space: Greenspace consisting of any vegetated land or structure, water, path or geological feature within and on the edges of settlements, and civic space consisting of squares, market places and other paved or hard landscaped areas with a civic function.

Passive design: A design approach that uses natural elements, often sunlight, to heat, cool or light a building.

Passive solar: Technologies that convert sunlight into usable heat, cause air-movement for ventilation or cooling, or store heat for future use, without the assistance of other energy sources.

Passive ventilation: Using the convective nature of warm air and the ability to control windows and vents as the environment changes to control air floor in a structure.

Permeable surface: A surface where the material itself is impermeable to the inflow of rainwater, but has inlets or holes through it which water enters the soil below.

Photovoltaic: or PV for short; a solar power technology that uses solar cells or solar photovoltaic arrays to convert light from the sun directly into electricity.

Rainwater harvesting: A system that collects rainwater from where it falls rather than allowing it to drain away. It includes water that is collected within the boundaries of a property, from roofs and surrounding surfaces.

Renewable Energy: Generation of power from naturally replenished resources such as sunlight, wind, and tides. Renewable energy technologies include solar power, wind power, hydroelectric power, geothermal, and biomass.

Renewable Resource: A resource that can renew or replace itself and, therefore, with proper management, can be harvested indefinitely.

Runoff: The water that flows off the surface of the land, ultimately into our streams and water bodies, without being absorbed into the soil.

Sarking: Wood panels, or "sarking boards", which are placed under the tiles of a roof to provide support.

Small scale renewables (or micro renewables): The term given to small-scale renewable technologies that are of a scale used on individual buildings. As well as wind, small hydro and bio-mass, micro renewable technologies also include solar energy and heat pumps.

Solar gain: The process of providing a net heat gain within a structure, over and above the normal heat loss, by passive collection of the sun's heat through windows and other glazed areas.

Solar Power (or Energy): Use of sunlight, or solar energy, to heat and light buildings, generate electricity (using solar photovoltaic systems - PV cells/panels), heat hot water, and for a variety of commercial and industrial uses.

Solar thermal: A system that uses a heat exchanger to collect heat from the sun, and use this to heat water.

SUDS (or SUstainable Drainage Systems): Drainage techniques used to treat and return surface water run-off from developments (roof water, road run-off, hard standing areas) to the water environment (rivers, groundwater, lochs) without adverse impact upon people or the environment. Further guidance can be found in CIRIA's SuDS Manual C697 or Sewers for Scotland 2nd Edition.

Sustainable Design: Design which reduces the possible negative effects on the environment as far as possible and makes the most of social and economic benefits.

Thermal Mass (or thermal conductivity): The capacity of an object to store heat. It is an effective way to improve thermal comfort in a building since it will absorb heat when the surroundings are hotter than the mass, and give heat back when the surroundings are cooler. When situated well and in combination with passive solar design, thermal mass can play an essential role in saving energy and be used actively for heating and cooling.

Travel Plan: A package of actions designed by a workplace, school or other organisation to encourage safe, healthy and sustainable travel options.

uPVC: Unplasticised Polyvinyl chloride is a thermoplastic vinyl polymer constructed of repeating vinyl groups (ethenyls) having one of their hydrogens replaced with a chloride group.

Ventilation: The process of "changing" or replacing air to regulate temperature and moisture control, amongst other things. By applying the right design features, natural ventilation and cross ventilation can be used to control indoor temperature and therefore reduce the energy bill significantly. For these reasons, controlling the air movement is essential. Draughts and air leakages will increase the need of supplementary mechanical cooling and heating.

Watercourse: A term including all rivers, streams ditches drains cuts culverts dykes sluices and passages through which water flows.

Wind Turbine: A machine that converts the kinetic energy in wind into mechanical energy. If the resulting energy is used directly by machinery, such as a pump, the machine is usually called a windmill. If the energy is converted to electricity, the machine is called a wind generator.

Getting Involved

If you would like more information or to get involved in the production of future plans please contact us in one of the following ways:

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