Sustainable Construction
Policy and Plan

2015
Highlands and Islands Enterprise (HIE) is an ambitious organisation with a unique remit which integrates economic and community development. We work in a diverse region which extends from Shetland to Argyll, and from the Outer Hebrides to Moray, covering more than half of Scotland’s land mass.

As a Scottish Government Agency, HIE’s role is to lead regional growth and development, to seek investment opportunities that will be a catalyst for change, and to ensure that the Highlands and Islands derives maximum benefit from existing and emerging opportunities.

**HIE operating plan 2014 – 2017**

“Construction is vitally important to the Scottish economy, employing around 170,000 people – some 10% of all Scottish jobs. The output of the sector has a major impact on all of Scotland’s key sectors and therefore underpins the success of our whole economy”

Foreword

“Building Our Future” – our operating plan for 2014 – 2017 has a focus on sustainable development. The operating plan sets out four priorities, the building blocks of our work for the next three years, in line with the Government’s Economic Strategy. Our core activity will continue to be the building of strong and successful businesses, social enterprises and resilient communities. We will also invest in the growth of industry sectors and in strategic interventions and infrastructure required to underpin a competitive region.

The transition to a low carbon economy is at the top of national and regional priorities. Low carbon presents new economic opportunities such as renewable energy and the increased use of digital communication will contribute towards reduced emissions. We will support companies with growth opportunities in low carbon sectors and encourage businesses and communities to explore low carbon opportunities.

Scotland’s ambitious 2020 targets on renewable energy, zero waste and decarbonising transport and heat require concerted activity from private, public and third sector partners to tackle climate change. HIE is also supporting the region’s transition to a low carbon economy through a series of measures, including innovation in infrastructure and utilities, which increase business performance while also reducing the need to travel, impacting on the carbon footprint of the region. This provides an opportunity to transform resource use and stimulate the growth of a more circular and prosperous economy, so that waste as we know it is designed out of our economy, encouraging innovation in manufacturing, industry and retail.

The adoption of a sustainable approach to construction will contribute towards “Building Our Future” and help achieve our economic, social and environmental objectives.

This document sets out HIE’s Sustainable Construction Policy and Plan and has been endorsed by the HIE Leadership Team and by the HIE Board.

Alex Paterson

Chief Executive, Highlands and Islands Enterprise
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1st February, 2015
# Sustainable Construction Plan

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Introduction

This document is to update HIE’s customers, contractors, consultants and staff about how HIE is progressing to a more sustainable approach to property construction.

It is also intended that this policy and plan will serve as an exemplar policy for our stakeholders, regional businesses, public and other interested groups, for an achievable but progressive standard for the promotion of sustainability in construction in the Highlands and Islands. It should be read in conjunction with the Operating Plan 2014 – 2017 and our Carbon Management Plan.

Part 1 sets out HIE’s policy, it describes the background and wider policy context and gives our definition of ‘sustainable construction’. We set out how we will incorporate sustainable building principles into our construction programmes and describe the key legislation that will have an increasing effect on the management and operations of our tenants.

Part 2 describes the plan and how we shall deliver the policy. It narrates how sustainability is to be introduced and considered throughout the construction process and how sustainability is applicable to the various types of building. We list the various elements of a new building and detail those aspects which are highly desirable for incorporation into our construction development projects.

Finally, the plan provides firm targets for achieving more sustainably constructed buildings with the targets and their accompanying aspirations being tightened through subsequent revisions to the plan.

To enable publication of this document in this evolving environment, a datum has been established as at 1st April 2014. Policies introduced after this date are not considered in this version of the policy and plan. This document will be reviewed annually and revised as appropriate by HIE’s head of property and infrastructure.

Update on previous version

The Sustainable Construction Policy and Plan was first prepared in 2007. This identified how the Policy and Plan was influenced by Global policy, European Directives, United Kingdom and Scottish Government initiatives. The document has a heavy emphasis on environmental sustainability and ensuring value for money in the delivery of construction projects.

Since 2007, a prolonged worldwide economic recession has generally restricted economic growth and community development. The construction industry in Scotland has been particularly hard hit by this recession and has worked with the government and others to demonstrate and educate customers on the benefits of sustainable construction.

The Scottish Government Economic Strategy (published in 2007 and updated in 2011) identified that sustainability is vital if we are to nurture our environment and ensure that future generations can enjoy a better quality of life.

The world-leading Climate Change (Scotland) Act 2009 was passed unanimously by the Scottish Government. In 2011 the Government introduced a new strategic priority ; “Transition to a Low Carbon Economy”.

The HIE Operating Plan has recently been updated and reaffirms our strategic priorities. To help address these priorities we have further developed framework agreements and procurement practices designed to maximize potential for continuous improvement in the quality and sustainability of construction projects. All new HIE buildings in recent years have therefore been designed and constructed in such a way that supports economic, community and environmental sustainability through one or more of the following HIE Strategic Priorities;

- Supporting businesses and social enterprises to shape and realize their growth aspirations.
Highlands and Islands Enterprise  Sustainable Construction Plan

- Strengthening communities and fragile areas.
- Developing growth sectors, particularly distinctive regional opportunities.
- Creating the conditions for a competitive and low-carbon region.

HIE construction projects which have successfully addressed these strategic priorities recently include;

- Arnish Manufacturing Yard (to support the expanding renewable energy sector);
- European Marine Science Park (which aims to create an international centre of excellence);
- Enterprise Park Forres (high quality business units within a 100 acres landscaped site);
- Inverness Campus;
- Hatston Industrial Units, and;
- European Marine Energy Centre (marine based renewables).

Since 2007, the environmental sustainability of construction projects has mainly been assessed by use of BREEAM ratings. In implementing the BREEAM approach, HIE demonstrated successful delivery on a number of properties constructed. Examples of these include New Industrial Units at Hatston, Orkney ('Excellent'); Unit 9 Forres ('Very Good') and European Marine Science Park, Dunstaffnage ('Excellent'). HIE will continue to undertake post construction BREEAM assessments to compare actual with planned energy performance. The results will be used to compare against the ongoing property development programme and alternative assessment methods such as Sustainability Labelling introduced to the Scottish Building Regulations Technical Standards in May 2011.

Site selection, improved communications technology, design and orientation of new HIE buildings have been major factors in minimizing carbon emissions. Further reduction in the use of energy through “low carbon” heating systems and “renewable” energy generation systems has been increasingly adopted in new construction projects. Such technologies recently installed in HIE construction projects include the following:-

“Low Carbon” Heating Systems:

- Ground-sourced heat pumps have been installed to supply heat to Units at Enterprise Park Forres
- Biomass (wood pellet) heating has been installed in Phase 1 of the European Marine Science Park, Oban with capacity for future expansion to accommodate Phase 2 and beyond.
- Air-source heat pump technology at Unit 11, Enterprise Park Forres.

“Energy Generation” Systems:

- Wind Turbine technology at Hatston Industrial Units, Orkney
- Photovoltaic roof panels have been installed at Unit 11, Enterprise Park Forres.

Unfortunately, on occasion, efficiency in use of “renewable” energy systems has been significantly less than expected by occupants. A post-project evaluation approach has helped HIE to identify lessons learned, one of which is to adopt an “Energy Hierarchy” approach when planning construction projects. This approach prioritises energy conservation and energy efficiency measures whilst encouraging the use of renewables.

One of the main targets in the 2007 Sustainable Construction Policy and Plan was to investigate the introduction of whole life costing principles to our new build projects. The main objective in this regard was to ensure value for money in the delivery of construction projects. This concept has been embraced, and HIE Project Sponsors are keen to explore further measures to ensure value management in construction projects.

By forward planning long-term HIE construction initiatives such as Inverness Campus and Enterprise Park Forres we can help ensure a sustainable, low-carbon economy to benefit both current and future generations.
Part 1- Sustainable Construction Policy

Picture credit: Andrew Duke/HIE

Centre for Health Science, Inverness
Section 1: HIE Policy

1.1 Sustainable construction policy statement

HIE will promote construction projects which support regional growth and help create the conditions for a competitive and low-carbon region.

The HIE Strategic Infrastructure Plan will identify priority construction projects for investment in economic development. All new HIE construction projects will be designed to help achieve one or more of the HIE Strategic Objectives identified in our Operating Plan.

Construction value management techniques will be introduced and a sustainability review will be undertaken when planning each construction project. This review will consider the desired project outcomes in terms of economic, social and environmental benefits.

Site selection, improved communications technology, design and orientation of new HIE buildings will be major factors in energy efficiency and minimizing carbon emissions from construction projects.

In line with our obligations to meet the challenging targets set by the Climate Change (Scotland) Act 2009 Highlands & Islands Enterprise will adopt an “Energy Hierarchy” approach to the design of new-build and refurbishment projects. This will help achieve a measurable improvement in the energy performance of our property portfolio by 2017. We will continue working towards the Government target of new buildings occupied and owned by public authorities to be nearly zero-energy buildings by 31 December 2018.

All new construction projects will be designed to exceed standards for carbon dioxide emissions, as identified in the Scottish Building Regulations Technical Standards, and will achieve the maximum practical BREEAM (or equivalent) rating to achieve the key HIE project objectives within available financial resources.

This policy and the associated plan provide the background and rationale to these aspirations and objectives.

1.2 HIE sustainability policy structure

Our policy has been developed from the targets, objectives and approaches as laid-down in our Operating Plan, 2014 - 2017. The plan confirms our commitment to creating the conditions for a competitive and low-carbon region and achieving the objectives set in our Carbon Management Plan.

1.3 Purpose of the sustainable construction policy and plan.

The purpose of this sustainable construction policy and plan is to promote sustainable construction in the transition to a low carbon region by establishing and applying minimum standards of sustainability that will be incorporated into the design, construction and whole-life management of our property portfolio. The policy will also set us on a timetable to achieve the European Union energy efficiency target that all newly constructed public buildings (ie: built for use by the public sector) will be nearly zero-energy buildings by 31 December 2018. The policy will be progressively revised to meet these targets. It will be implemented directly on all new projects through our framework contracts.

1.4 Maintenance of the sustainable construction policy and plan

The policy and plan is intended to be an evolutionary document amended to meet economic growth and community sustainability corporate requirements as they develop. Greater sustainability is increasingly being introduced across the public sector and as a consequence public policy is evolving rapidly.

This document will be reviewed and revised as appropriate by HIE’s Head of Property and Infrastructure.
Section 2: Background – why HIE needs a sustainable construction policy and plan

2.1 Global, European Union, United Kingdom and Scottish Government Policy.

Global:

The landmark Rio “Earth Summit” of 1992 covered three main themes; biodiversity, climate change, and sustainable development. It resulted in legally binding conventions on the first two. It also resulted in an “action plan”, called Agenda 21, on sustainable development, and a high level UN commission on sustainable development (UNCSD).

A World Summit on Sustainable Development (WSSD) took place in Johannesburg in 2002. But perhaps as a result of the lack of a legally binding agreement at Rio, policy progress on sustainable development was less tangible than in the areas of climate change and biodiversity. Development targets were mainly promoted globally via the Millennium Development Goals (MDGs) for 2015.

In May 2011, the Third Meeting of the UN High Level Panel on Global Sustainability (GSP) took place in Helsinki. It recognised that while MDGs had made progress in reducing poverty, progress had been limited in part because of an “ingrained sectoral approach” rather than advancing several elements of sustainability in parallel.

In June 2012, The Rio+20 UN conference on sustainable development took place in Brazil. World leaders renewed their commitment to sustainable development, and to ensure the promotion of economically, socially and environmentally stable future for our planet and for present and future generations. In the outcome report titled “The Future We Want”, the main theme of the conference was confirmed as achieving “a green economy in the context of sustainable development and poverty eradication”. Other themes included the following;

Mainstreaming Sustainable Development: “...we acknowledge the need to further mainstream sustainable development at all levels integrating economic, social and environmental aspects and recognise their inter-linkages, so as to achieve sustainable development in all its dimensions ...... we emphasise that sustainable development must be inclusive and people-centred.”

Innovation and Technology: “..We recognise the power of communications technologies and innovative applications to promote knowledge exchange, technical co-operation and capacity building for sustainable development...... We recognise the critical role of technology as well as the importance of promoting innovation...”.

Energy: “.. We recognise the critical role that energy plays in the development process ...using an appropriate energy mix to meet development needs, including through increased use of renewable energy sources and other low-emission technologies, including cleaner fossil fuel technologies, and the sustainable use of traditional energy resources..”

Climate Change: “...We reaffirm that climate change is one of the greatest challenges of our time, and we express profound alarm that emissions of greenhouse gasses continue to rise globally ......”

European Union:

The European Union Directive 2002/91/EC introduced standards for the energy performance of buildings. This has been updated by Directive 2010/31/EU. It identifies that reduction of energy consumption and the use of energy from renewable sources in the building sector constitute important measures needed to reduce the Union’s energy dependency and greenhouse gas emissions.

Key clauses in the Directive include the following;
(15) ".. alternative energy supply systems should be considered for new buildings, regardless of their size, pursuant to the principle of first ensuring that energy needs for heating and cooling are reduced to cost-optimal levels."

(16) ".. major renovations of existing buildings, regardless of their size, provide an opportunity to take cost-effective measures to enhance energy performance."

(21) ".. The Public Sector in each Member State should lead the way in the field of energy performance of buildings, and therefore the national plans should set more ambitious targets for the buildings occupied by public authorities."

(23) ".. Public authorities should lead by example and should endeavour to implement the recommendations included in the energy performance certificate."

".. For new buildings, Member States shall ensure that, before construction starts, the technical, environmental and economic feasibility of high-efficiency alternative systems such as those listed below, if available, is considered and taken into account;

(a) decentralised energy supply systems based on energy from renewable sources.
(b) Cogeneration (e.g. combined heat and power systems).
(c) District or block heating or cooling, particularly where it is based entirely or partially on energy from renewable sources.
(d) Heat pumps.

Article 9

1. Member States shall ensure that;
   (a) by 31 December 2020, all new buildings are nearly zero-energy buildings; and
   (b) after 31 December 2018, new buildings occupied and owned by public authorities are nearly zero-energy buildings.

United Kingdom:

The UK Government underlined its commitment to sustainable development in its 1999 publication A Better Quality of Life: A Strategy for Sustainable Development for the UK. It identified that, at the heart of sustainable development is the simple idea of ensuring a better quality of life for everyone.

In 2000 the DETR published Building a Better Quality of Life: A Strategy for more Sustainable Construction. This aimed to provide a catalyst for change in construction across the United Kingdom and identified priority areas for action. It encouraged individual businesses to;

- Make a commitment to address your impacts – do your bit for efficient resource use
- Aim to be “best in class” – explore the scope for greater eco-efficiency
- Embrace the principles of producer responsibility – care about what happens to built assets at the end of their lives
- Respect people – be a good employer, good neighbour and an ethical trader
- Communicate with stakeholders – report on environmental, economic and social performance, and;
- Work with others – specify what you want and help others throughout your supply chain to comply.

In 2007, the Office of Government Commerce published: “Sustainability – Achieving Excellence in Construction Procurement Guide”. This guide took the project procurement life-cycle as its base and focused on the key social, economic and environmental factors that should be addressed during the lifecycle.

Scotland:

In Scotland, the principles of sustainable development are expressed in 21 criteria in Scottish Planning Policy. The National Planning Framework and development plans are obliged by law to be prepared with the objective of contributing to sustainable development. Sustainability is also embedded into the Building Regulations for all
The Scottish Government has identified more ambitious climate change targets than those of the UK Government. The Climate Change (Scotland) Act 2009 provides a statutory long term framework to support progress towards a low carbon economy and sets the target of reducing greenhouse gas emissions by 42% by 2020 and 80% by 2050. The Act also obliges public sector bodies, in the exercise of their functions, to:

- Contribute to carbon emissions reduction (climate change mitigation).
- Contribute to climate change adaptation.
- Act sustainably.

Also introduced by the Scottish Government in 2009, the Sustainable Procurement Action Plan outlines an organisational approach to successful sustainable procurement inviting public sector organisations to produce their own Delivery Plans that set out how, and by when, improvements in sustainable procurement will be made.

The Energy Efficiency Action Plan 2009 sets the following energy reduction targets for 2020:

- To reduce total final energy consumption in Scotland by 12% (against a baseline of the average final energy consumption in 2005-7)
- Delivery of 11% of non-electrical heat demand by renewable resources.

The Highland Joint Regional Climate Change Declaration will help deliver the required step change in order to deliver the Energy Efficiency Action Plan.

In June 2010, fourteen Highland organisations made public their commitment to tackling the issue of climate change by signing a Joint Regional Climate Change Declaration. Collectively, the group committed to:

- Measure their carbon footprint and reduce it by 3% per year
- Provide an annual update of progress
- Share information and work with partners in Highland to promote good practice.
- Encourage businesses and communities to take action.

By 2012 the number of signatories had grown to 22.

In October 2010, the Scottish Government published the Sustainable Procurement Delivery Plan setting out the key actions it will take to embed sustainable procurement in its procurement activity. Also in October, the Government published ‘Conserve and Save - The Energy Efficiency Action Plan for Scotland’. This document sets out the framework for the Scottish Government’s comprehensive approach to energy efficiency and microgeneration. It focuses on their contribution to energy and economic development, their role in reducing energy consumption in buildings and transport, and their role in delivering climate change targets.

The Government Economic Strategy update in 2011 gave clear priority to accelerating economic recovery. It identified six Strategic Priorities which will drive sustainable economic growth and develop a more resilient and adaptable economy. These priorities are:

- Supporting Business Environment;
- Transition to a Low Carbon Economy;
- Learning, Skills and Well-being;
- Infrastructure Development and Place;
- Effective Government, and;
- Equity

The new Strategic Priority - Transition to a Low Carbon Economy – was introduced to reflect the excellent opportunity Scotland has to secure investment and jobs from this growing sector and ensure that the benefits of this transformational change are shared across the economy and our communities. As around 50% of all
carbon emissions are derived from our built environment, the construction industry's role in reducing this environmental impact is vital.

From financial year 2011-12, public sector bodies are encouraged to produce a Scottish Public Sector Sustainability Report. It is anticipated that future requirements will include a report on sustainable procurement.

In 2013, the Sullivan Report of 2007 was updated. This resulted in the publication of “A Low Carbon Building Standards Strategy for Scotland”. Sustainability was therefore further embedded into the Scottish Building Regulations for all new buildings. Section 7 of the Scottish Building Regulations Technical Handbook 2013 introduces a system of Sustainability Labelling (SL), which is currently a voluntary system for non-domestic buildings other than school buildings. This offers an alternative to the BREEAM sustainability scoring system.

Reducing the carbon intensity of heat is considered central to achieving Scotland's ambitious climate change targets. Therefore, in January 2013, the Scottish Government published a Heat Vision for Scotland. This was guided by a "Heat Hierarchy" with the following priorities;

1. Reduce the need for heat
2. Supply heat efficiently at least cost to customers
3. Use renewables and low carbon heat resources.

The Heat Vision statement of ambition was as follows;

“By 2050 Scotland will have a largely decarbonised heat sector with significant progress made by 2030. This ambition will be realised through a number of means, including renewables and CCS, but is based on the fundamental first principles of keeping demand to a minimum, most efficient use of energy and recovering as much "waste" heat as practically possible, at least cost to consumers”.

The Resource Efficient Scotland programme was also launched in 2013, offering comprehensive information, advice and support to businesses, third sector and public sector organisations to implement energy, material resource and water efficiency measures that will translate into cost savings, increased competitiveness and reduced emissions.

Also in June 2013, the Scottish Government published further documents as follows;

- Low Carbon Scotland: Meeting our Emission Reduction Targets 2013-2027, and;

These documents confirm that the Scottish Government recognises that climate change will have far reaching effects on Scotland's economy, its people and its environment and is determined to play its part in rising to this challenge.

Most recently, in March 2014, the Scottish Government published “Towards Decarbonising Heat: Maximising the opportunities for Scotland - Draft Heat Generation Policy Statement for consultation. This document sets out the approach which will deliver an affordable and effective heating and cooling framework for Scotland through to 2050. Reducing the carbon intensity of heat is considered central to achievement of the Heat Vision.

The Scottish Government has also determined that a cost-benefits analysis should be undertaken (as part of a value management exercise) for new buildings owned and occupied by public authorities. From 31 December 2018, such buildings will require to be nearly zero-energy buildings only if the cost-benefit analysis over the economic lifecycle of such buildings is positive.

The current version of the Scottish Government Construction Procurement Manual identifies the following key sustainability issues for construction works;

- Project briefs should clearly set out the intended benefits of the facility.
- Tender documents to emphasise the importance of whole-life costing.
- The Design Brief should define targets for energy consumption during construction and in operation and the intended method of measurement.
- The Design Brief should define targets for water consumption during construction and in operation.
The Design Brief should define output targets for waste management during construction and the intended method of measurement.

- The Design Brief should define the target for use of recycled material in the construction of the facility.
- The Design Brief should define targets to minimise air, noise and dust during construction and in operation and the intended method of measurement.
- The Design Brief should define the requirement for use of a recognised environmental performance standard (e.g., Building Research Establishment Environmental Assessment Method, BREEAM).
- The Design Brief should take account of current and known future government legislation.
- The Design Brief should take account of all current and known future Health & Safety legislation.
- The supply team should give evidence of knowledge and competence of sustainable construction.

These are considered as essential requirements of HIE construction projects.
2.2 What is sustainable construction? – A definition.

Sustainability and associated phrases are used extensively in today’s media and in a wide range of contexts. It is important to make clear what is meant by sustainable construction. It is part of the process of Sustainable Development which addresses a combination of social, economic and environmental factors. For the purposes of this policy we define sustainable construction as follows:

‘Development of the built environment which meets the needs of the present without compromising the ability of future generations to meet their own needs.’

This broad definition incorporates far more than the energy and ecological issues with which sustainability is commonly associated. This is emphasised very clearly in the model for sustainability which is presented in both the UK and Scottish Government strategies:

- Living within environmental limits
  - Respecting the limits of the planet’s environment, resources and biodiversity – to improve our environment and ensure the natural resources needed for life are unimpaired and remain so for future generations.

- Ensuring a strong, healthy and just society
  - Meeting the diverse needs of all people in existing and future communities; promoting personal wellbeing, social cohesion and inclusion, and creating equal opportunity.

- Achieving a sustainable economy
  - Building a strong, stable and sustainable economy which provides prosperity and opportunities for all, and in which environmental and social costs fall on those who impose them (polluter pays), and efficient resource use is incentivised.

- Using sound science responsibly
  - Ensuring policy is developed and implemented on the basis of strong scientific evidence, whilst taking into account scientific uncertainty (through the precautionary principle) as well as public attitudes and values.

- Promoting good governance
  - Actively promoting effective, participative systems of governance in all levels of society – engaging people’s creativity, energy and diversity.

This model clearly places the importance of a ‘Strong, Healthy and Just Society’ alongside environmental needs, and recognises also the importance a sustainable economy, good governance and the sound use of science in achieving these aims.
2.3 The role of construction in meeting sustainability objectives.

Construction is vitally important to the Scottish economy, employing around 170,000 people – some 10% of all Scottish jobs. The output of the sector has a major impact on all of Scotland’s key sectors and therefore underpins the success of our whole economy. A sustainable construction sector is essential for sustainable development in a future low-carbon economy.

Infrastructure and construction projects are essential initiatives in meeting the Economic Development and Community Sustainability objectives of HIE. It is therefore important to ensure that key desired outcomes for each construction project are aligned with strategic objectives. Thereafter, environmental targets should be met where practical and affordable.

We cannot meet our declared environmental targets without dramatically reducing the environmental impact of buildings and infrastructure construction; we have to change the way we design and build.

The buildings in which we live and work have an impact across all areas of sustainability. The construction process places significant demands on global resources and continual demand for more buildings reduces mineral resources, biodiversity, natural vegetation and ‘greenfield’ land. The construction industry is the single largest contributor to UK waste, producing approximately 35% of landfill.

We have committed to play our part in addressing these issues in the Highlands and Islands through this sustainable construction policy and plan.

The Scottish Government has identified the following key areas for improvement of sustainability in the built environment as part of the overall "Energy Hierarchy":

- Reduced carbon footprint of activities within the construction sector, and better use of resources;
- Reduced daily water consumption in new buildings;
- Zero waste, at construction site level;
- Effective use of Government procurement power as an enabler to transform the market for innovative and sustainable solutions;
- Development of voluntary agreements and initiatives by the construction industry and its clients with the aim of reducing the carbon footprint and use of resources within the built environment;
- Greater uptake of training programmes, improving skills and increasing retention rates of skilled workers within a safer industry.

These key areas are expanded upon in the objectives and detail of this policy and plan, primarily through energy efficiency initiatives and by implementing the relevant elements of the BREEAM 2011 or the Statement of Sustainability (Sustainability Labelling) building rating systems. This encourages environmentally aware site selection which considers:

- previous land use and available transportation links,
- more sustainable construction management with better waste control measures
- higher skills level within the workforce,
- enhanced design using more sustainable materials and elements of renewables,
- high-efficiency, low carbon heating systems with lower operating resource use, and
- encouraging a “fabric first” construction and more sustainable and environmentally aware approach to the subsequent operation of any building.
2.4 Strategy for Sustainable Procurement and Construction

2.4.1 Sustainable Procurement Action Plan

As described in Section 2.1 the Scottish Sustainable Procurement Action Plan was issued in October, 2009. The Action Plan provides generic guidance for public bodies in Scotland on sustainable procurement. Sustainable procurement is defined in the Plan as "A process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis and generates benefits not only to the organisation, but also to society, the economy and the environment".

Effectively implementing the Sustainable Procurement Action Plan will assist individual organisations in demonstrating their compliance with the Public Bodies Duties in the Climate Change (Scotland) Act 2009 and subsequent Scottish Government policy.

The Action Plan makes clear that the greatest benefits are to be gained by considering sustainability at the outset of the procurement process – when requirements are being identified, specified and advertised. It provides advice on how to specify requirements in a way that will maximise social, economic and environmental benefits.

Contract Strategies for all procurement should include a ‘Sustainability Review’ which takes full account of sustainability issues, such as :-

- Testing whether requirements can be reduced or avoided altogether by delivering the outcome in some other way
- The need for cost-effective requirements taking account of whole life costs including purchase, installation, running costs including energy and disposal
- Ensuring requirements take account of social, economic and environmental issues where appropriate.

The above approach will be adopted for all construction procurement, including initiatives for rationalisation of HIE-occupied facilities. The objective is to demonstrate continuous improvement in sustainability performance.

Identifying sustainable outcomes at the beginning of the procurement process ensures that all tenderers are bidding to a set minimum standard. This helps to ensure that tender evaluations and contracts awards meet the obligations of equal treatment and transparency required by European legislation for public sector procurement.

Sustainable Construction must also be delivered within the context of our strategic objectives - sustainable procurement is good procurement and will help to deliver optimum value for money, for example by reducing consumption/waste (doing more with less), reducing environmental impacts (using environmentally preferable goods/works/services), delivering additional social benefits (e.g. supporting training and employment opportunities) and/or supporting economic growth. These factors will be considered by HIE in a value management assessment when planning construction projects.

The Action Plan also promotes sustainability in public sector contracts through the use of a ‘Flexible Framework’ – a self-assessment tool that enables organisations to measure and identify steps to improve the sustainability of their procurement. The flexible framework looks at sustainable procurement through various aspects of the organisation’s operation and provides a straightforward means of assessing where the strengths and weaknesses lie and what should be done to improve performance.

2.4.2 Carbon Impact Assessment

Integrating greenhouse gas assessment into decision making through carbon impact assessments is identified within the public body guidance to comply with part 4 of the Climate Change (Scotland) Act 2009. These duties require public bodies, in exercising functions, to act;

- In the way best calculated to contribute to delivery of the Act’s emissions reduction targets;
- In the way best calculated to deliver any statutory adaptation programme, and;
• In a way that it considers most sustainable.

By incorporating of a prioritised “Energy Hierarchy” in our project appraisal, HIE will help meet these climate change objectives whilst creating the conditions for a competitive and low-carbon region.

Priority 1: Energy Conservation (where practical, eliminate the need for energy demand in the first place).


Priority 3: Utilisation of renewable, sustainable resources (thereby helping decarbonise heat production).

Priority 4: Utilisation of other low-greenhouse gas emitting resources (further reducing carbon emissions).

Priority 5: Utilisation of conventional resources as we do now (the least preferred option).

2.4.3 Waste Management

To help achieve the Scottish Government objective of creating a circular resource economy, Zero Waste Scotland (ZWS) has been established. Key aims include the following:

• Resources must be consumed more efficiently.

• More value must be added to recyclable or re-usable materials.

• Fewer resources should be wasted.

The Scottish Government launched Scotland’s first Zero Waste Plan in June 2010. This describes a vision of a Scotland where all waste is seen as a resource; waste is minimised; valuable resources are not disposed of in landfills, and most waste is sorted, leaving only limited amounts to be treated. Two new targets to be achieved by 2025 are as follows:

• 70% of all waste to be recycled;

• A maximum of 5% to be sent to landfill.

The Zero Waste Plan is being driven by ZWS. HIE will explore a range of potential collaborations with ZWS to both support account managed businesses and improve resource efficiency in HIE asset management. On a project-by-project basis, this will supplement existing “green” initiatives such as BREEAM and Sustainability Labelling.

The construction industry also keen to support sustainable development through the Considerate Constructors Scheme. As part of the scheme, members agree to seek sustainable solutions and minimise waste, the carbon footprint and resources when undertaking construction projects. HIE contractors are encouraged to sign-up to the scheme.

2.5 Energy Performance of Buildings (Scotland) Regulations 2008

Transposition of provisions of the Energy Performance of Buildings Directive 2002/91/EC (EPBD) were concluded in Scotland by the introduction of the Energy Performance of Buildings (Scotland) Regulations 2008 which came into force on 4th January, 2009. The directive sets standards for energy requirements for all new buildings and large existing buildings subject to major renovation. It introduces mandatory energy certification of all buildings and regular inspection of heating and cooling systems.

From 1st October, 2008 it has been a requirement to display an Energy Performance Certificate (EPC) prominently within all public buildings over 1,000 sq.m. This was subsequently reduced to 500 sq.m for such buildings frequently visited by the public and with effect from 2015, will apply to such buildings over 250 sq.m (Directive 2010/31/EU: Article 6). EPCs are designed to promote the improvement of the energy performance of buildings. They are based upon actual energy usage of a building and increase transparency about the energy efficiency of public buildings. The certificate looks similar to the energy labels provided on new cars and electrical appliances such as fridges and freezers – it uses a similar scale for energy efficiency, i.e. from A+ to G with A+ being an excellent rating and G very poor. The A4 sized certificate is valid for a period of 10 years from the date on which it was issued.

Directive 2010/31/EU updates the earlier Directive and states that public authorities should lead by example.
and should endeavour to implement the recommendations included in the EPC. The format of EPCs has changed with effect from 9th January 2013. An example of the new format is shown in Appendix 1.

**Application to HIE Buildings**

Many of the current HIE Industrial and Office buildings were constructed prior to the Energy Performance of Buildings (Scotland) Regulations 2008. Although these buildings will have been designed to comply with the Building Regulations at time of construction, their EPC ratings will be considerably lower than those for buildings constructed in recent years.

Consultants were appointed in 2009 to produce EPCs for all HIE Industrial and Office property. The results can be summarised as follows;

- Average EPC rating for HIE Industrial property: E
- Average EPC rating for HIE Office property: E+

The HIE standard form of lease for both Industrial and Office buildings places full repairing responsibility on the tenant. Responsibility for improving energy efficiency throughout the course of a lease would therefore lie with the tenant.

For all new buildings (including Industrial premises for occupation by others), and major refurbishment of vacant property, it is recommended that HIE set a minimum level of EPC rating “B”. By the adoption of this approach, combined with a programme of sales of existing buildings, HIE will continuously improve the average energy performance of our property portfolio.

### 2.6 Air Conditioning Systems

The European Directive now requires regular inspection of systems in excess of 12kW. Inspections of HIE Air Conditioning systems in existing buildings were undertaken between 4th January, 2009 and 4th January, 2013. HIE will continue to meet our obligations in this regard.

Air conditioning systems can account for 50% of the energy used in a building. The Air Conditioning Inspection is therefore gaining recognition as an excellent tool to help you identify energy-saving opportunities. This process will be incorporated in our Carbon Management Plan. It often pays for itself in just a few weeks when no, and low-cost, measures identified during the inspection are implemented. The aims of the inspection are to:

- Provide building owners/operators with information about system performance, and
- Identify opportunities to reduce your CO2 emissions and save energy and money

The output of the inspection is a report highlighting measures which, if adopted, will have the potential to save energy and money within a reasonable payback period. The frequency of inspection in Scotland is at the discretion of the Inspector and can range from three years for poorly maintained and inefficient systems up to five years for those systems that are well maintained and demonstrate excellent levels of efficiency.

Inspections may only be carried out by organisations that have entered into a protocol with The Scottish Government. The Scottish Government has entered into protocol with the following professional organisations / institutions to undertake inspections:

- BESCA (Building Engineering Services Competence Accreditation Ltd)
- CIBSE (The Chartered Institution of Building Services Engineers)
- STROMA
- BRE (Building Research Establishment)
- ECMK
- QUIDOS

Only members of protocol organisations may undertake these inspections.
2.7 BSRIA Soft Landing Scheme

Background
It is clear that sustainability, energy efficiency and the overall performance of new and existing buildings needs to improve radically. Surveys of recently completed buildings regularly reveal massive gaps between client and design expectations and delivered performance, especially energy performance.

An underlying problem is that designers and builders are normally employed to produce or to alter buildings, and their involvement comes to an end when the work is physically complete and handed over. They are seldom asked or paid to follow-through afterwards, to pass on their knowledge to occupiers and management, or to learn from the interaction. Consequently, the industry does not unlock all the value in the buildings it creates. Nor does it fully understand what it is creating, what works well, and what needs to be improved.

HIE seeks to “soften” the rigid separation between construction and operational processes by improving the communication between building contractors, HIE staff and new building occupiers. Thus helping ensure that buildings are handed over in a state of good operational readiness and avoid a ‘hard landing’. HIE will consider using the BSRIA Soft Landing Scheme in situations where communications between the building contractor, HIE staff and building occupiers are a key component of successful occupancy outcomes. The planned Educational Resource Centre at Inverness Campus, in particular, will embrace the Soft Landing Scheme principles.

What does the Soft Landing Scheme do?
The BSRIA Soft Landing Scheme provides a unified vehicle for engaging with outcomes throughout the process of briefing, design and delivery. It dovetails with energy performance certification (see Section 2.5), building logbooks, green leases, and corporate social responsibility.

It can run alongside any procurement process and helps design and building teams to appreciate how buildings are used, managed and maintained.

The Scheme provides the best opportunity for producing low-carbon buildings that meet their design targets. It includes fine-tuning in the early days of occupation and provides a natural route for post-occupancy evaluation.

Adopting the Scheme
Developers, Contractors and Consultants will be required to demonstrate their willingness to adopt the Soft Landings process. They will be required to show evidence that they understand it and what their responsibilities should be. This capability statement should typically include experience in energy monitoring and targeting, experience in afterscare services including the use of ‘Building Performance Evaluation’ feedback techniques (for example, energy and occupant satisfaction), and an appreciation of design reviews and reality-checking, with specific respect to client expectations and required operational outcomes.

Please also note that BSRIA has produced a BREEAM 2011 / Soft landings interpretation note for clients and design teams.

Further detail on the BSRIA Soft Landing Scheme can be found on the following link:-
BSRIA Soft Landing Scheme

HIE has recently adopted a policy of re-commissioning systems in empty buildings to demonstrate systems to new tenants and introducing building user guides, providing a “helping hand” to new business occupiers.

2.8 Other legislation and building standards.
There are a range of other legislative standards which developers should consider and these are listed in the reference section.
2.9 Council planning perspectives

The HIE network operates across seven local authority and two national park authority areas. These authorities are each developing their own strategies and policies to incorporate sustainable governance. While we are endeavouring to establish high quality construction projects with a high degree of sustainability incorporated therein we must meet the requirements of each of the planning authorities and co-operate with these authorities in the implementation of local plans.
Part 2 – Sustainable Construction Plan

Picture credit: Andrew Duke/HIE

Unit 9, The Enterprise Park, Forres
Section 3: Scope of HIE sustainable construction plan

3.1 HIE property portfolio

This sustainable construction plan incorporates all aspects of HIE’s property development and refurbishment activities. As well as the new-build (mainly provision of services sites, offices and industrial units) programme, the plan covers site purchase, specialist projects and property alterations.

3.1.1 Land purchase

HIE already owns a number of development sites selected for their locations with potential to attract new employment, foster key industries and strengthen communities. A review of the undeveloped sites to demonstrate their sustainability credentials will be undertaken.

Future site purchases will be subject to a value management analysis and “sustainability review”, with a BREEAM or Sustainability Assessment (Sustainability Labelling) as part of the pre-purchase business case diligence. Reference to SEPA flood zones following the current SEPA Flood Map should be carried out during land purchase negotiation.

It is recognised that in the Highlands and Islands there are fewer brown field sites than in other regions and there is frequently little choice of sites given physical conditions and planning considerations.

3.1.2 New-build

Given continued general market failure to provide speculative industrial premises in the region, HIE commissions a number of advance and bespoke offices and industrial units each year. The primary purpose of these developments is to meet one or more of the following HIE strategic objectives;

- Supporting businesses and social enterprises to shape and realize their growth aspirations.
- Strengthening communities and fragile areas.
- Developing growth sectors, particularly distinctive regional opportunities.
- Creating the conditions for a competitive and low-carbon region.

The Strategic Infrastructure Plan identifies priority construction projects and financial resources allocated in each financial year. Each project is subject of an options appraisal and value management process with a focus on meeting the key desired project outcomes.

In particular, all new buildings will be designed to exceed the standards for carbon dioxide emissions, as identified in the Scottish Building Regulations Technical Standards, and will achieve the maximum practical BREEAM (or Sustainability Assessment) rating, within available financial resources, to meet the key HIE objectives for each project.

3.1.3 Specialist projects

HIE also undertakes a number of specialist projects where the infrastructure more explicitly supports the wider strategic project objectives. Examples of such projects are the Centre for Health Science and the University Campus, both in Inverness, the European Marine Energy Centre in Orkney and the European Marine Science Park in Dunstaffnage – all are centres of excellence. Such projects are by their nature exemplar projects and a higher sustainability standard than normal will generally be anticipated.

3.1.4 Site servicing

The preparation of sites for industrial/commercial buildings by installing the site infrastructure is a key component of helping ensure that HIE address our strategic priorities. The selection of sites, the sustainable use of water, drainage and road works are therefore part of this plan.
3.1.5 Refurbishment

Major renovations of existing buildings, regardless of their size, provide an opportunity to take cost-effective measures to enhance the energy performance of the building.

When more than 25% of any HIE-occupied building is subject to refurbishment then, where practicable, the works will be undertaken to the same standards as for new-build. The major refurbishment of other buildings will seek to achieve a minimum EPC rating of “C” assuming budget availability, ie: not “without compromise”.

Most HIE buildings are occupied by tenants on full repairing and insuring leases. This places responsibility on the tenant for the duration of the lease. In instances where tenants seek to improve the energy efficiency of their buildings, HIE will give consideration to;

- Approval of tenant requests to undertake energy efficiency improvements funded through the “Green Deal”;
- Undertaking the works as “Landlord’s Improvements” and recovering the capital cost through an appropriate increase in annual rent subject, of course, to availability of funds within HIE.

HIE will also work closely with Resource Efficient Scotland to help ensure that tenants have access to the best available advice prior to undertaking energy efficiency improvements.
Section 4: Elements of the plan

This section sets out the key elements of our construction projects and highlights those aspects that are of particular importance in sustainability. In meeting and realising our sustainability objectives, a balance must be struck between the varying social, economic and environmental factors and consequently, compromises may have to be agreed in elements of our construction projects.

This plan, together with our Carbon Management Plan, forms the first steps in improving and developing the sustainability of our property portfolio and helping achieve ambitious sustainable development targets such as the 2018 near zero-energy requirement for public buildings.

4.1 Proposed Construction Projects.

All proposed construction projects should seek to address one or more of the HIE Strategic Objectives as identified in the Operating Plan. A key role for property managers is the preparation of fully costed and appraised proposals for consideration as part of the Strategic Infrastructure Plan.

4.2 Project Approval.

At inception of project proposals, an internal project sponsor will be identified (usually the Area Property Manager), who will have effective ownership of the project. The project sponsor will be responsible for preparation of a paper for approval locally by the Area Manager and submission, via the relevant Director, to HIE Management Team in the normal manner. Once approved, the project sponsor will have lead responsibility for delivery of key project objectives.

It is important for every project to have a sponsor to:

- Ensure separation of decision making responsibilities between the project manager (usually an employee of the prime consultant) and project sponsor;
- Ensure accountability for the realisation of project benefits, and;
- Carry out senior stakeholder management.

Papers proposing construction projects will identify the strategic objectives to be addressed by the project and the expected key outcomes in terms of economic, community and environmental benefits.

Once approved, the project sponsor (supported by a member of Core Property Team where required) will have lead responsibility for ensuring that the project objectives are met in compliance with the HIE Rule Book: Chapter 8 [Property, Infrastructure & Environment].

The project sponsor will work closely with the project manager, and other project team members, to ensure efficient, effective, economic and sustainable delivery of the project key outcomes.

4.3 Construction Value Management.

When planning infrastructure and new build development projects, it is essential to ensure that long-term economic, social and environmental factors are considered at the outset. Part of this process is to always consider the whole life cost (both cost in construction and cost in use of the building) and hence the whole life resource need of human activities. While a simple construction may have a low initial capital cost, it could prove costly in the long-term to address issues such as attracting tenants, major repairs or environmental pollution.

On large sites, it is also important to consider the effects which individual design of buildings could have on the longer-term sustainability of the wider site. For larger sites, such as the Inverness Campus and Enterprise Park Forres, HIE will develop long-term masterplans which consider sustainable development issues in the long term. As with all projects, a balanced judgement will be required relative to cost and quality within available timescales.
4.4 Site Appraisal and Selection

Building development can have a clear and significant impact in reducing land availability and/or quality for ecological, recreational and agricultural use. However, when development is carried out on land of poor value the ecological or recreational utilisation can be improved. In our construction developments we would wish to:

- Maximise efficiency and effectiveness by adaptation of existing facilities.
- Shared use of facilities with other public sector or private sector organisations.
- For large sites, develop and implement asset management plans which address economic, social and environmental sustainability issues in the long term.
- Develop on brown field sites which benefit from existing infrastructure within urban development plans wherever possible, recognising that the region does not have a large number of derelict industrial sites compared to other areas.
- If green field sites are chosen, land with a low ecological value would be preferred choice, subject to planning zoning, flood zoning and physical factors.
- Prior to construction, and in appropriate cases, carry out a site ecological evaluation report and wherever possible seek to improve site ecological and/or recreational value.
- Employ creative land engineering to avoid removal of excavated materials off site and reduce building exposure by creating protective bunds etc.
- Utilise on-site crushing of products of demolition for re-use.

4.5 Construction Management.

To most effectively achieve sustainability, whilst meeting HIE strategic objectives, construction developments must employ the highest standards of project planning, construction and building operational management. We will therefore standardise our procurement contracts and work with our Prime Consultants and Framework Contractors to maximise potential for successful delivery of contracts and long-term skills development.

To ensure compliance with The Construction (Design and Management) Regulations, all prospective designers and contractors (including individuals and sole traders) will be required to demonstrate that they have the necessary health & safety skills, knowledge and experience to carry out the relevant duties. One way of demonstrating this is through accreditation by a relevant independent third party.

During the construction process, matters of particular importance are: management of a construction site, energy management during construction, strict control of waste and pollutants and management of construction and health and safety.

It is also important to ensure that appointed contractors can demonstrate competence in delivering sustainable construction. We will therefore insist that:

- Our Framework Construction Contractors, are:
  - ISO 9001 accredited in Quality Management (or any subsequent equivalent accreditation)
  - ISO 14001 accredited in Environmental Management (or any subsequent equivalent accreditation)
  - Registered Considerate Contractors and be able to demonstrate a consistent achievement of a score of at least 36.

- Our Framework Construction Contractors should implement Site Waste Management Plans (SWMP), on all construction projects using available guidance from Zero Waste Scotland where required.

The above requirements will typically also apply to all contractors on projects of a value above the relevant OJEU Threshold and projects identified by HIE to be environmentally sensitive.

To help ensure a sustainable construction industry in the Highlands and Islands, HIE will encourage all:

- Lead contractors and sub-contractors to have training programmes in place to gain recognised and appropriate industry standard workplace accreditation.
- Lead contractors, sub-contractors and building managers to maintain the highest standards of health and safety management and ensure that staff are given appropriate health and safety training.
4.6 Health, wellbeing and design quality

We recognise our role within the public sector to lead by example in the provision of sustainable, healthy work environments. We also recognise that the quality of the built environment helps to attract a good quality, motivated workforce. Good design is a key component in a healthy working environment and we are committed to promoting work spaces that offer intelligent building design and, in particular, achieve:

- Good sustainable design that enhances local vernacular and offers a healthy working environment.
- Design that takes full advantage of natural light and ventilation (e.g. glazed vestibules and low emissivity glass).
- Energy efficient lighting maintained at the appropriate luminance levels lighting and zoned to allow separate control.
- Set appropriate thermal comfort levels at design stage.
- Building design achieves ambient internal noise levels appropriate to room occupancy/use.
- Access to outside green-space with external seating to encourage outside gathering and ‘fresh-air’ work breaks.
- Easy cycle access and covered cycle storage facilities.
- Showering facilities to encourage exercise to/from the work place.
- Design criteria to include adaptability and flexibility.
- Inclusion, where practicable, of ‘public art’ in our building developments, provided that the artwork installed can be maintained by the completed building’s tenant.

4.7 Energy and micro-renewables

We shall play our part in meeting the Scottish Government targets for CO₂ reduction. The Climate Change (Scotland) Act 2009 targets reducing greenhouse gas emissions by 42% by 2020 and 80% by 2050 based on 1990 levels.

We are also working towards the government requirement for all public buildings built from 2019 to be ‘carbon neutral’. The significant design features which we expect to see employed in new construction projects are:

- Flexible design to facilitate future changes in working practices/sharing of premises.
- Optimising high building envelope performance through good-design.
- Design which benefits from solar gain and natural shelter.
- Significantly improved insulation standards – typically 10% above current technical standards.
- Use of dedicated low energy lighting.
- Intelligent energy use monitoring and management.
- Use of renewable energy and/or green tariffs.
- Heat reclamation from ground source or extract air; solar water heating where appropriate.
- Use of natural ventilation design; mechanical ventilation systems should only be used where absolutely necessary.

In line with the Scottish Building Regulations Technical Standards 2013 (which require that buildings and their heating systems are commissioned to achieve optimum energy efficiency) we will adopt a prioritised “Energy Hierarchy” approach. Consideration of renewable energy and micro-renewables will form part of this approach.

By designing a durable, energy efficient shell and installing highly efficient low-maintenance power and heating systems, we can help reduce carbon emissions and the whole life cost our buildings. The availability of regular income from initiatives such as Feed-in Tariffs and Renewable Heat Incentive funding will also be considered as part of our whole-life costing process.

We will work with Resource Efficient Scotland to identify the most appropriate sustainable design initiatives such as district heating schemes and standardised design of buildings.

Energy use of existing HIE buildings, which are leased on full repairing and insuring terms, will not be directly within our control. We will, however, seek to take measures to encourage our tenants to manage these buildings as efficiently as possible. Given our complex mix of building types and occupation, further study will
be required to determine how best we can ensure the optimisation of estate whole life costs.

Facilitating the development of renewable energy technologies is also a clear HIE objective in supporting the Transition to a Low Carbon Economy. This is a major economic development opportunity for the region and we are determined to support and promote this growth opportunity where practicable.

We will also explore the potential for improving sustainability through the use of the existing HIE property portfolio for energy generation and micro-renewables.

4.8 Transport

Fuel used in transportation of goods, including building materials, is a major contributor to CO\textsubscript{2} emissions (some 25% of UK total) and the construction of roads, both in terms of resource supply and land use, is detrimental to the environment. Nevertheless, independent transport is essential to promote healthy economies in rural areas across the Highlands and Islands.

When considering sites for development, and in operational use of buildings, HIE will seek to contain transport-related CO\textsubscript{2} emissions through initiatives such as co-ordinated procurement and shared use of facilities.

The provision of good transport infrastructure and, in particular access to public transport and cycle access, is an essential element of sustainability. Even when in remote locations, developments should be located within reasonable travel distance by public transport, private car, cycling or on foot, of existing or new-planned communities. To help ease the transport to work burden, the opportunities gained from broadband access and remote working, will continue to be encouraged.

We shall encourage:
- Good public transport links
- Scope for charging points for electric vehicles
- Cycle paths
- Secure cycle storage facilities
- Working from home opportunities

4.9 Water

Water provision is often not thought of as being a serious resource sustainability issue in the Highlands and Islands. However, security of water supply is only one concern when considering the sustainability of a construction project and water issues. Water provision i.e. storage, treatment and pumping, is an energy intensive activity, taking up as much as 4% of UK energy demand, with the consequent contribution to CO\textsubscript{2} emissions and climate change. Water extraction has a significant impact upon water courses, wildlife and activities associated with this natural resource. Clearly there is also a significant financial cost of water wastage. Therefore, as a matter of good practice, we believe serious attention should always be given to conservation of water, in both the construction and operation of our estate.

Waste and water run-off management is also a serious issue. Waste water treatment is an energy intensive process and poor run-off water control can generate localised flooding and water erosion problems. In our development projects, where practicable, we shall deliver:
- Reduced water demand through water saving devices
- Utilisation of grey water recycling schemes.
- Incorporation of leak detection systems
- Monitoring of water use by meters.
- Exemplary incorporation of Sustainable Urban Drainage Systems (SUDS).

4.10 Materials

The construction sector is the single biggest user of material resources in Scotland. It produces some 10 million tonnes of waste annually, which is about 45% of the waste generated in Scotland. Zero Waste Scotland have identified that the sector is beginning to embed good waste management practices, but still needs to address the wider issues of resource efficiency in procurement, design, building and refurbishment processes.
The sourcing of materials for construction has a significant impact and far reaching effects both locally and globally. These impacts are induced on many levels; the physical damage of obtaining primary resource such as deforestation or mineral extraction, the significant energy use of secondary processing, the pollution from secondary processing (i.e. the significant CO₂ release during cement production), the energy and resource use of material transportation and finally the resource loss and pollution of construction waste.

The Highlands and Islands can produce some outstanding natural materials which could find greater use in construction.

Local stone and timber, both in primary and secondary (processed) states, offer materials which are well-suited to the region's climate as well as offering aesthetic benefits, a blend with the environment and may provide more sustainable resourcing with lower transport energy needs. Wherever practicable, subject to accreditation, performance and cost criteria, we shall use such local materials and Contractors/Consultants will be required to demonstrate why, should they chose not to do this.

In our construction developments we will encourage the following:

- Full compliance with the Waste (Scotland) Regulations).
- The embedding of resource efficiency into procurement policies in line with the Scottish Sustainable Action Plan.
- The adoption, by construction contractors, of a new Resource Efficiency Voluntary Agreement developed by Zero Waste Scotland.
- Recycling of building materials wherever possible (e.g. roof slates and slabs)
- Utilisation of BRE's green guide 'An Environmental Profiling for Building Materials and Components' when sourcing sustainable material - HIE wish to promote the use of ‘A’ listed materials for construction.
- Promotion of the use of innovation in green technologies across the Highlands and Islands.
- Environmental Management Systems (EMS) and sustainable certification should be sought to validate origins and processes of materials.
- Porous block pavers to supplement the use of SUDS.
- Work with Zero Waste Scotland and facilities management (FM) service providers to develop and extend service-based business models which allow more resource-efficient use of high-impact products.
- Encourage innovation to stimulate the creation of new resource efficient products, services and/or business models that will support the move to a zero waste society.

4.11 Pollution.

The impact from local and global pollution offers a clear threat to the Highlands and Islands rich culture and countryside, the regions greatest resource. The minimisation of air, land and water pollution is central to sustainable development in all locations but is of particular relevance in this region. The permitted use of polluting substances is a highly legislated environment with very high and stringent standards. Over and above these requirements, we would wish, through a high quality of construction and operational management, to keep the pollution impact of our building developments to an absolute minimum. In particular, materials with a Global Warming Potential (GWP) such as refrigerants, insulants and nitrous oxide (NOx) emissions from heating systems should be kept to a minimum. In our developments we will seek to:

- Keep NOx emissions from space heating to a minimum (40mg/kWh).
- Avoid the use of insulating materials with a GWP = 5 or more in either manufacture or compositions.
- Locate developments in flood free zones. Where existing land stock is to be utilised a flood alleviation plan must be submitted.
- Incorporate the use of SUDS to minimise local flooding.
- Specify formaldehyde-free timber products.
- Specify water-based solvent-free timber treatments and ‘zero maintenance’ finishes.
4.12 Skills
The sustainability agenda brings many changes and opportunities to building technology and construction management and new technologies such as renewable energy. These changes will require skills development to enable the deployment of technology and practices and to ensure effective through-life support. Over the years HIE’s construction partners have demonstrated a keen interest in skills development, working closely with sectoral skills bodies and providing training to Modern Apprentices. Through our developments we shall, working with partners and stakeholders, encourage the establishment of sustainable local labour skills to support these new requirements and to use our leverage to maximise the skill improvement opportunities.

4.13 Property Management
We will work with our portfolio managing agents to promote a ‘responsible tenant’ ethic in achieving sustainable maintenance and utilisation of our building stock.

We will encourage our tenants to:

- Attend information days on energy efficiency through the Energy Saving Trust /Resource Efficient Scotland.
- Utilise preventative planned maintenance systems
- Ensure appropriate use of materials and labour for repair and maintenance
- Minimise waste and significantly improve use of recycling
- Increase use of renewable energy sources
- Reduce energy use in operation
- Implement a Green IT plan
- Implement a Green Transport plan

HIE will take these matters into account when devising future lease terms for properties.
Section 5: Project process

HIE will continue to follow its framework contract procurement route using the services of property prime consultants and framework contractors. In addition, HIE will shortlist design consultants best placed to deliver the framework programme with individual projects being procured through mini competitions or other selection criteria as required.

5.1 Business justification for a building project

The relevant HIE project sponsor (supported by the core property team where required) will be responsible for identifying key project outputs and outcomes.

As part of the business justification process, the HIE project sponsor will ensure that a “Sustainability Review” forms part of the initial options appraisal. Thereafter the project sponsor (with input from the core property team where required) will retain responsibility for sustainability issues throughout the project.

The main responsibilities are:
- To integrate sustainability objectives into the defined project business needs;
- To ensure that all options appraised deliver strategic sustainable objectives;
- To consider if the business need can be delivered by re-use of existing buildings or facilities;
- To ensure, so far as practicable, that the whole life value assessment within the business case properly reflects the expected duration of the business need (and any available energy efficiency funding initiatives such as Feed-in Tariffs and Renewable Heat Incentive).

5.2 Feasibility study/scheme design

The HIE project sponsor will ensure that the prime consultant is fully briefed on the desired project outcomes, including sustainability requirements so that they can be fully incorporated into the project brief. The prime consultant will then:
- ensure that the project brief requirements are set out in the form of an output specification that is clear;
- define outputs that are measurable;
- encourage innovation from the supply team;
- use industry standard benchmarks for measurements.

On completion of the feasibility stage the prime consultant shall include an assessment of how well the desired outcomes will be met by the preferred design solution.

5.3 Pre-contract design

The HIE project sponsor will ensure that the prime consultant is fully advised on the project objectives and specific sustainability performance criteria so that they can be fully incorporated into the outline design requirements on which the prime contractor will base his pre-contract design. The prime consultant will then:
- ensure periodic buildability and design reviews that consider the detailed delivery of sustainability and other objectives in the design process. On high profile projects a formal BREEAM or Sustainability Labelling assessment will be undertaken as part of a review workshop;
- consider if sustainability Key Performance Indicators (KPIs) can effectively be incorporated into the contract requirements;
- undertake a review of the achievement of sustainability outputs as part of the target cost report;
- ensure that the project appraisal paper put forward for financial approval narrates how the project takes account of HIE’s key project objectives, sustainable construction policy and plan and the expected BREEAM (or Sustainability Assessment) scoring for the project.
5.4 Construction process

The HIE project sponsor will ensure that the prime consultant is fully advised on any additional project specific sustainability or other requirements and performance criteria so that they can be fully incorporated into the construction contract requirements. The prime consultant will then:

- ensure periodic buildability and design reviews to ensure that sustainability and other criteria continue to be met. This information will be incorporated in the monthly prime consultant reports to HIE.
- review the sustainability outcomes as part of the project closeout and review process.
- work with the prime contractor, their design team, HIE and the end user (where known) to ensure smooth handover of any landlord-furnished items of plant in a manner which minimises waste of energy or materials.

5.5 Management and operation

The HIE project sponsor (assisted by the HIE core property team) is responsible for ensuring that lease obligations continue to be on FRI terms such that tenants are responsible for all repairs and maintenance. HIE will keep abreast of changes to leasing practise arising from practical experience of the introduction and operation of micro-renewables and other building features offering greater sustainability. HIE will introduce ‘seasonal commissioning’ of HIE-furnished plant and equipment to minimise energy use.

5.6 Demolition/re-use

At the end of a property’s planned life, the relevant HIE property manager will be responsible for ensuring that consideration of potential re-use of the facility is given full consideration. Then, if disposal and demolition is the preferred option, s/he will be responsible for ensuring that disposal is achieved in the most responsible manner.
Section 6: Targets/objectives

6.1 Evaluation of sustainability

Having identified the purpose and aims of Sustainable Construction, we need to set challenging but realistic targets to achieve these aims. In line with other public strategies in this area these targets need to be both specific and achievable to encourage full stakeholder engagement in realising our aspirations for a competitive and low-carbon region.

When considering construction projects for inclusion in the HIE Strategic Infrastructure Plan, we will identify the relevant HIE Strategic Objective(s) and the key desired outcomes in terms of Economic, Social and Environmental benefits.

When developing large sites under the control of HIE, we will develop masterplans which maximise the potential for sustainable development in the short, medium and long term. This will include consideration of district heating or combined heat and power schemes which “decarbonise” heat production.

Construction value management techniques (incorporating whole-life costing) will be adopted from the planning stages of each project and will incorporate a sustainability review. This review will identify sustainability factors which might affect the final outcome of the project.

Environmental performance assessment models such as BREEAM and Sustainability Labelling (as identified in the Scottish Building Regulations Technical Standards 2013) will be used in the planning and performance monitoring of all construction project. All new projects will be designed to exceed current Building Regulations standards for carbon dioxide emissions, and will achieve the maximum practical BREEAM or Sustainability Labelling rating to allow achievement of the key HIE project objectives within available financial resources.

When designing new buildings for occupation by HIE, we shall consider shared occupation with other public sector bodies, maximising the use of digital communication technology and application of our “office of the 21st century” approach as means of reducing the carbon emission from our business operations.

In line with our obligations to meet the challenging targets set by the Climate Change (Scotland) Act 2009 HIE will adopt an “Energy Hierarchy” approach to the design of new-build and refurbishment projects. This will help achieve a measurable improvement in the energy performance of our property portfolio by 2017.

We will undertake post-project evaluation of all construction projects and identify “lessons learned” to help inform the planning process for future projects.

We will continue working towards the Government target of new buildings occupied and owned by public authorities to be nearly zero-energy buildings by 31 December 2018.
6.2 The plan targets

1. When considering construction projects for inclusion in the HIE Strategic Infrastructure Plan we will identify the relevant HIE Strategic Objective(s) and key desired outcomes in terms of Economic, Social and Environmental benefits.

2. When considering development of large sites under the control of HIE, we will prepare masterplans which maximise the potential for sustainable development in the short, medium and long term. This will include consideration of district heating or combined heat and power schemes which “decarbonise” heat production.

3. From 1st April 2015, construction value management techniques (incorporating whole-life costing) will be adopted from the planning stages of each project and will incorporate a “sustainability review”. This review will identify sustainability factors which might affect the final outcome of the project.

4. The environmental performance of all HIE construction projects will be assessed using either BREEAM or Sustainability Labelling (as identified in the Scottish Building Regulations Technical Standards 2013). All new projects will be designed to exceed current Building Regulations standards for carbon dioxide emissions, and will achieve the maximum practical BREEAM or Sustainability Labelling rating to allow achievement of the key HIE project objectives within available financial resources.

5. When designing new buildings for occupation by HIE, we shall consider shared occupation with other public or private sector bodies, maximising the use of digital communication technology and application of our “office of the 21st century” approach as a means of reducing the carbon emissions from our business operations.

6. In line with our obligations to meet the challenging targets set by the Climate Change (Scotland) Act 2009, HIE will adopt an “energy hierarchy” approach to design of new-build and refurbishment projects. This will help achieve a measurable improvement in the average energy performance of our portfolio by 2017.

7. We will undertake post-project evaluation of all construction projects and identify “lessons learned” (particularly in relation to energy efficiency) to help inform the planning process for future projects.

8. We will continue working towards the Government target of new buildings occupied and owned by public authorities to be nearly-zero energy buildings by 31st December 2018.

The costs of meeting the above targets should be met from within the allocated budget for relevant projects.
6.3 Action plan timescales

When implementing the various initiatives within this plan, the following key dates shall be adhered to:

**Current Projects**

1. Prepare masterplans when considering development of large sites under the control of HIE.

2. Assess environmental performance of construction projects using either BREEAM or Sustainability Labelling.

3. When designing new buildings for occupation by HIE, consider shared occupation, maximising the use of digital communications and application of our “office of the 21st century” approach as a means of reducing carbon emissions from building operations.

4. Adopt an “energy hierarchy” approach to design of new-build and refurbishment projects.

5. Undertake post-project evaluation of all construction projects and identify “lessons learned” to help inform the planning process for future projects.

**April 2015**

6. When considering construction projects for inclusion in the HIE Strategic Infrastructure Plan, identify the relevant HIE Strategic Objective(s) and key desired outcomes in terms of Economic, Social and Environmental benefits.

7. Adopt construction value management techniques for each project.

**December 2018**

8. Meet Government target of all new buildings occupied and owned by HIE to be nearly-zero energy buildings.
European Marine Science Park

Recently completed, Phase 1 of the Science Park provides a high quality sustainable building with biomass energy centre and comprising 2,847 m² GFA 2-storey laboratory/office with plant storey at roof level.

Picture Credits : ADF Architects / HIE
Glossary

Biodiversity – Biodiversity reflects the number, variety and variability of living organisms. It includes diversity within species, between species, and among ecosystems. The concept also covers how this diversity changes from one location to another and over time.

BRE – Building Research Establishment

BREEAM – Building Research Establishment Environmental Assessment Method

Climate Change – alteration of earth’s atmosphere due to human/natural activity

CO2 - Carbon Dioxide

EIA – Environmental Impact Assessment

EMS – Environmental Management System – management systems that illustrate the limitation of environmental impact of business activity. ‘Network Green’ is the HIE internal EMS


EU – European Union

GWP – Global Warming Potential, substances that have a chemical formula scientifically proven to induce Global Warming.

IPCC – Intergovernmental Panel for Climate Change

Mineral Extraction – the mining of raw materials prior to processing into workable materials.

NOx – Nitrous Oxide

ODP – Ozone Depleting Substances, substances that have a depleting impact on the ozone layer

SEA – Strategic Environmental Assessment, assessment of activities and their impact upon the environment.

SUDS – Sustainable Urban Drainage System

Sustainable Development – development that maintains a balance between environmental, economic and social needs taking into account long and short term effects on future generations
References


Sustainable Development and Climate Change (Scottish Government) – http://www.scotland.gov.uk/Topics/Built- Environment/.../sus-dev


Inpiring change for Scotland's resource economy– presentation by Marissa Lippiatt, Head of Resource Efficient Scotland.


The Rio+20 UN conference on sustainable development 2012 - www.un.org/futurewewant


Climate Change (Scotland) Act 2009 - http://www.scotland.gov.uk/Topics/Environment/climate change


McClleland Report – Scottish Government procurement -
http://www.scotland.gov.uk/Publications/2006/03/14105448/0


HIE Strategic Environmental Assessment - http://www.hie.co.uk/environmental-assessment.html

BREEAM for Offices – procurement and design stage - http://www.breeam.org/page.jsp?id=17

BRE SmartWaste - http://www.smartwaste.co.uk/

Other useful links

ERDF 2007-2013 - http://www.gos.gov.uk/gonw/EuropeanFunding/StructuralFunds0713/?a=42496


Securing a Renewable Future: Scotland’s Renewable Energy Strategy -
http://www.scotland.gov.uk/Publications/2007/03/22084213/15


European Landscape Convention - http://www.coe.int/t/e/Cultural_Co-operation/Environment/Landscape/

Changing Our Ways: Scottish Climatic Change Programme -
http://www.scotland.gov.uk/Publications/2006/03/30091039/6

Building A Better Quality of Life: A Strategy for more Sustainable Construction (DETR 2000) -

Sustainable development policy and its basis in theory (Fenwick Elliot) - http://www.fenwickelliott.co.uk

Designing Buildings WIKI - http://www.designingbuildings.co.uk/wiki/Value-management

Towards a more efficient European Procurement Market - http://www.scotland.gov.uk

Be prepared-EU sustainability legislation and its impact on purchasing and supply management -
http://www.cips.org

Highland Council: Scotland’s Climate Change Declaration Annual Progress Report 2011/12 -
http://www.highland.gov.uk


Keith Bryers – 1st February 2015
APPENDIX 1

Example Energy Performance Certificate