Energy Efficient Scotland

Strategic Environmental Assessment

Environmental Report

May 2018

Scottish Government
Riaghaltas na h-Alba
gov.scot

Non-Technical Summary

What is Energy Efficient Scotland

Scottish Ministers announced in June 2015 that they would take long-term action to reduce the energy demand of, and remove carbon from (decarbonise) the heat supply to, our residential, services and industrial sectors, and designated energy efficiency as a national infrastructure priority.[1]

Most recently, in December 2017, Scottish Ministers published 'The future of energy in Scotland: Scottish energy strategy', a ground breaking first energy strategy for Scotland which sets out the Scottish Government's vision for the future energy system in Scotland. This strategy sets a vision to achieve by 2050 'A flourishing competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses'.

This strategy recognises that we cannot be entirely certain what our energy system will look like by 2050, so sets ambitious targets for 2030 which supports the principle of the pursuit of low or no regrets options to set us on the right path to the low carbon future:

- The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources;
- An increase by 30% in the productivity of energy use across the Scottish economy.

Energy Efficient Scotland (the Programme) is a key part of this and is being rolled out during 2018. It is a 20 year programme aimed at driving energy efficiency and a low carbon energy system in Scotland's homes and buildings. This It will run for 20-years and brings to life one of the six energy priorities as set out by our Scottish Energy Strategy: that of improving energy efficiency.

This programme will contribute to achieving these ambitious climate change targets, whilst continuing to help tackle fuel poverty and ensuring Scotland is a good place to do business. It will be a coordinated programme to improve the energy efficiency of homes and buildings in the commercial, public and industrial sectors and to decarbonise heat supply.
In conjunction to the targets set by the Energy Strategy, the Climate Change Plan outlines the steps we will take to reduce emissions across the economy, including in the residential and services sectors, which will see their emissions reduced by 23% and 59% respectively by 2032 on 2015 levels.

Achieving these targets will mean that to be fit for the future Scotland's homes, commercial properties and public sector estate will need to be near zero carbon where feasible by the middle of this century. Scottish Ministers announced in June 2015 that they would take long term action to reduce building energy demand and decarbonise heat supply; designating energy efficiency as a national infrastructure priority. The Programme is the culmination of this thinking.

The initial phases of the Programme are focusing on delivering existing programmes more effectively and developing new pilot schemes to test delivery mechanisms for residential and non-domestic buildings. By 2050, through the Programme, aims to transform the energy efficiency and heating of our buildings so that wherever feasible, buildings will have near zero carbon emissions.

[1] http://www.gov.scot/Resource/0049/00491180.pdf

Phase 1: Design	Drafting of Climate Change Plan and the Energy Efficiency Strategy The evaluation of Delivery Scenarios Publication of the Routemap in 2018
Phase 2: Development	Design and development of standards for the energy efficiency of buildings across all sectors and tenures with clear timescales Delivery/funding mechanisms – including a range of funding including grants and loan schemes Advice and information to ensure that both domestic and business customers are able to access appropriate, clear and up to date advice on both their requirements, the options open to them and the potential benefits Phased deployment (including optional and compulsory modifications to standards, funding/delivery mechanisms and advice)
Phase 3: Deployment	Monitored and evaluated on a five year cycle

The publication of the Routemap is the culmination of works undertaken to date and marks the transition from strategic statements on energy efficiency to a set of clearly identified actions which will be undertaken during the course of the next 20 years to improve the energy efficiency of Scotland's building stock. It sets out the journey homes, businesses and public buildings will take to become more energy efficient and will guide the decisions that Scottish Government will be making, with its partners, over the next 20 years It sets out the long-term ambitions to improve the energy efficiency and a timeline to achieve them.

Moving forward, the Programme now frames its work around a number of key areas:

1. The setting and implementation of **long term standards** for both domestic and non-domestic sectors, introduced using a phased approach, with a backstop date of 2040 for all buildings in Scotland;
2. As part of the broader work on long term standards, the setting of a revised **Energy Efficiency Standard for Social Housing** (**EESSH**);
3. **Local Heat & Energy Efficiency Strategies** (**LHEES**) to provide a strategic framework for delivery of the Programme at a local level, and a **new approach to regulation of district heating** that creates a more attractive climate for investors and consumers with the intention of further expanding this source of heating across Scotland;
4. A revised approach to **heating systems in existing buildings**, with the phased removal of support for high carbon forms of fossil fuel heating from 2020;
5. **An Offer** to all which will provide a variable rate of advice, information, support and direct delivery for everyone in Scotland. The Offer will be fully mobilised by 2020;

Proposals 1-3 above are the subject of this assessment.

What is Strategic Environmental Assessment (SEA)?

Strategic Environmental Assessment (SEA) is the assessment of the likely significant environmental effects that a public plan, programme or strategy will have on the environment if implemented. The process identifies how environmental damage can be avoided or reduced by suggesting how it can be changed. It also allows the public to give their view on the programme and its potential environmental impacts.

This Environmental Report sets of the findings of the assessment of those aspects of the Programme described above which we have already consulted (but not yet responded), or on which we are currently consulting, in line with the move from design phase to development phase.

The SEA has been undertaken in accordance with the Environmental Assessment (Scotland) Act 2005 (the '2005 Act') and in parallel with the development of these proposals. This iterative process enabled the SEA to inform and influence the development of the documents by considering how the adoption of the policies, policy development milestones and proposals they set out may impact on the environment.

What is the current state of the environment?

Scotland's environment is rich in natural and cultural heritage. Its network of European protected sites supports many important and rare plants, birds and animals. Many biodiversity features are in good condition, but continuing efforts are needed to avoid the further decline of some species and habitats.

Scotland's air, soil and water are generally in good condition, but there are concentrations of pollution in some parts of the country. Current trends suggest that with continuing action, pollution will continue to reduce over time; but there will still be a need for behavioural change to achieve more significant progress in the long term.

Scotland has high quality landscapes, with many iconic views and scenic areas. Our National Scenic Areas (NSAs) and National Parks require special attention to ensure development does not erode their special qualities. Scotland's wild land areas are set out in the Scottish Natural Heritage (SNH) 2014 map of wild land. Many areas are recognised as being of regional and/or local importance; forming the backdrop for our settlements and attractive areas for recreation and tourism. Our historic environment includes World Heritage Sites, listed buildings, conservation areas, gardens and designed landscapes and archaeology (including scheduled monuments), with each seen as important relics of our history and past patterns of settlement. Many further archaeological resources remain undiscovered.

Scotland has many natural resources and material assets, not least its high quality agricultural land, and extensive areas of forestry and woodland. Scotland's transport infrastructure is also a key asset in connecting our urban and more remote rural areas, and supporting future growth.

It is widely held that climate change is one of the most serious threats facing the world today. It is already having an impact on weather patterns, increasing air and sea temperatures, and impacting on Scotland's unique biodiversity. Further changes in levels and timing of rainfall, temperatures, and more extreme weather events are expected; all of which have the potential to affect other aspects of the environment. Whilst progress is being made to reduce emissions that cause climate change, action continues with the implementation of the Climate Change Plan and Energy Strategy, and the commitment by Scottish Government to Energy Efficient Scotland.

Setting a long term standard

When the Scottish Government consulted on these elements of the Programme in January 2017 there was a clear consensus around setting long term targets, providing clarity and a clear direction of travel. We are now proposing to set the long term mandatory standard for all residential properties at EPC band C. To support our fuel poverty targets we are proposing a

more ambitious, non-statutory, target for those households in fuel poverty, with a standard of EPC band C by 2030 and EPC band B by 2040.

Within the setting of a common metric for all residential properties are proposals to build on the existing energy efficiency standard for Social Housing (EESSH) to set new milestones.

For non-domestic properties we will build on current regulations[2] made under the Climate Change (Scotland) Act, resulting in all non-domestic buildings being assessed and improved to the extent this is technically feasible and cost effective by 2040. Following investigation, we will consult on the setting of a long term standard for non-domestic buildings in 2019.

Local Heat & Energy Efficiency Strategies

The Programme is building on existing legislation and programmes that are already supporting the improvement of energy efficiency in our homes, businesses and public buildings. The work we are doing with local authorities on the development of Local Heat & Energy Efficiency strategies (LHEES) will build on pilots and continue to offer funding to their development during the Transition Programme phase of the Programme. LHEES will be the link between our long term targets and national policies and delivering energy efficiency and heat decarbonisation on the ground. The Scottish Government consulted again from November 2017 to February 2018 on the potential for local authorities to have a statutory duty to develop LHEES. We are currently analysing the consultation responses and will issue our final response as part of the response to the consultation accompanying the Routemap.

Wider regulations on the district heating sector

As well as consulting on Local Heat & Energy Efficiency Strategies, we are currently considering the potential for regulation of district and communal heating in order to assist in encouraging the development of this technology, particularly as it could play an important role in helping local authorities meet their objectives set out in their LHEES for the Programme.

We consulted on establishing a regulatory framework that would provide confidence for investors and would ensure protection for district heating consumers proposing that the public sector could take a leading role in the development of district heating where an LHEES identified it was appropriate to do so. Further refinement of this proposal is currently ongoing and forms part of this assessment. .

What are their likely environmental effects?

The setting of a long term standard for all properties in Scotland is expected to make a significant contribution to Scotland's commitment to greenhouse gas emissions reduction. This contribution will come from significant improvements to the energy efficiency standards of properties across all sectors. The timeline for improvements will be gradual in line with the phased nature of the implementation of the standard. It will see individual properties improved over a long term but phased programme based on incentives and regulations, combined to achieve the Programme's vision. This will hold true for the introduction of standards and timelines for social housing through the EESSH programme.

On a wider scale, the introduction of local heat and energy efficiency strategies and a framework for wider use of district heating across all local authority areas in Scotland will provide a framework for improvements and investment, all working towards the same environmental goals.

Previous Consultation on the Programme

In the autumn of 2016 the Scottish Government undertook a period of pre-consultation scoping work on scenarios for the whole programme. In addition to this scoping work, the following consultations have fed into the development of the current work: These consultations were not subject to SEA.

[2] The Assessment of Energy Performance of Non-domestic Buildings (Scotland) Regulations 2016

- Scotland's Energy Efficiency Programme[3]
- Scottish Energy Strategy: The Future of Energy in Scotland[4]
- Consultation On Heat & Energy Efficiency Strategies, and Regulation of District Heating[5]
- Energy efficiency and condition standards in private rented housing[6]
- Fuel Poverty Strategy Consultation[7]
- Second Consultation on Local Heat & Energy Efficiency Strategies, and Regulation of District and Communal Heating[8]

Summary of impacts measured against SEA topics

SEA Issues	SEA Objectives	Summary of impacts
Biodiversity, Flora, Fauna	• Conserve, protect and enhance Scotland's diversity of species, habitats and the natural heritage. • Protect and enhance of important habitats and connectivity. • Maintain and protect populations of European Protected Species, including their functioning habitat	At a national level, it is noteworthy that whilst there are a wide range of pressures on biodiversity, climate change in particular has the potential to greatly impact[9]. The impact of the proposals at a national level is generally considered to be positive. However, at a local level, it is recognised that the installation of energy efficiency technologies has the potential to disturb some species, particularly those using roofs and wall cavities to nest or shelter. In the assessment the ability to mitigate has been included.
Soil	• Maintain, protect and where possible enhance soil quality, geodiversity and carbon rich soils.	As soils play a significant role in terms of storing carbon and therefore help to regulate GHG emissions the impact of the proposals on existing resources has been undertaken. While Scotland's soils are considered to generally be in good health, there are a range of pressures on them. Climate change and loss of organic matter pose the most significant threat. At a national level this can only be done at a strategic level and it is considered that the overall impact of the programme and its constituent parts will be broadly positive. However, in certain assessments the need for a more local solution has been considered, particularly where there is a known likely impact at a localised level.
Water	• To protect maintain and where possible and enhance the ecological status of the water environment.	Scotland's water resources are generally considered to be in good condition[10]. However the localised impact of proposals on water quality and quantity must be assessed. This is particularly the case with local installation of

[3] https://consult.gov.scot/energy-and-climate-change-directorate/scotlands-energy-efficiency-programme/
[4] http://www.gov.scot/Publications/2017/12/5661/downloads
[5] http://www.gov.scot/Publications/2017/01/9139
[6] http://www.gov.scot/Publications/2017/04/2510
[7] http://www.gov.scot/Publications/2017/11/6179
[8] http://www.gov.scot/Publications/2017/11/6232
[9] http://www.cbd.int/climate/intro.shtml
[10] https://www.sepa.org.uk/media/320703/state-of-scotlands-water-environment-summary-report.pdf

		energy efficiency schemes which use water as a resource directly through extraction and heat extraction. The impact at this level may therefore considered to be mixed.
Population and Human health	• Work to eradicate fuel poverty • Work to reduce GHG which are harmful to human health • Reduce other environmental impacts which are harmful to human health	The key consideration is the impact of the programme and its constituent parts to GHG emissions and the impact this has on human health. At both a national and local level this is likely to be positive and will, over time, have significant impact on the quality of lives across Scotland.
Air	• Protect and improve, where possible, air quality across Scotland	Air pollution can result in adverse impacts on both human health and can significantly affect many aspects of quality of life. Air pollution can also cause adverse effects in the wider environment[11]. Air quality is important for both short and long-term human health, and poor air quality can have impacts on people with existing health issues. At a national level the proposals are likely to have positive impacts primarily due to the reducing in GHG emissions and a reduction in reliance on fossil fuels. At a local level however, the installation of specific projects may have localised and short term imapcts caused through dust. There will be a need to consider this on a site by site basis and review the need for local solutions.
Climatic Factors	• Contribute to formal targets to reduce Green House Gas Emissions across Scotland	Climate change is considered to be one of the most serious environmental threats to sustainable development, with adverse impacts expected on human health, food security, economic activity, natural resources and physical infrastructure[12]. Adaptation to the effects of climate change is now acknowledged as being necessary to respond effectively and equitably to the impacts of climate change. The proposals under this programme are all designed to address this and have the need to make a positive contribution at their heart. This is at both a national and local level and are principally associated with reductions in GHG emissions.
Cultural Heritage	• To protect and where appropriate enhance the historic, built and cultural heritage.	Scotland's many and varied historical sites are unique and irreplaceable. These sites and features are regarded as making a valuable contribution to our quality of life, cultural identity,

[11] https://www.environment.gov.scot/our-environment/air/air-quality/
[12] http://www.icao.int/environmental-protection/Pages/adaptation.aspx

		education and economy. While the proposals are likely to have a positive impact on these properties by way of their energy efficiency standards, this may have mixed impact by way of the visual impact associated with the installation of measures. The impact at a national level is likely to be negligible, but at a local level, localised solutions will be required to mitigate.
Material Assets	• Promote the sustainable use/reuse of all properties across Scotland to support sustainable development, reduce GHG emissions and make best use of this valuable resource	The building stock across Scotland is a valuable resource and should be treated as such. The proposals aim to improve the energy efficiency of all buildings and as such will have a positive impact. The option to prioritise retrofitting and reuse of properties rather than demolition is positive both in terms of the impact on local communities and also on the stock as a source of captured carbon.
Landscape	• Protect our most scenic areas, reflect the importance of the interaction between people and the land, and aim to enhance areas where landscape qualities have been eroded over time	Land use change, incremental and on-going development such as infrastructure projects, and design all impact on the quality of Scotland's valuable landscape. The proposals, at a local scale, could have a mixed impact, depending on the measures being installed. Local solutions will be required to ensure that the impact is appropriate and that proposals contribute to the aim of making all of Scotland's local environments valued as attractive and healthy places to live[13].

How have alternatives been considered in the assessment and what environmental effects have been identified?

The development of targets, milestones and policy under the Programme umbrella are all influenced by a huge raft of research and a suite of critical success factors which assist in programme development and the direction of travel:

Success factor	Description
Strategic fit and economic growth	Supports Scottish Government objectives to: - meet Climate Change targets - promotes and supports growth and development of the Scottish economy in a controlled and sustained manner.
Deliverability and quality	Delivers in a way which: - matches the supply chain's ability to deliver the required technologies and works to a set standard and by an appropriately skilled workforce - makes an improvement to Scotland's built estate to a defined level of quality, and provides protection for the consumer.

[13] https://www.nature.scot/professional-advice/planning-and-development/general-advice-planners-and-developers/planning-and-development-landscape

Affordability and Value for money	Allows a range of finance options to be used and has the potential to attract significant levels of private sector capital. Realises value for money for Scottish Government
Fuel Poverty reduction	Promotes achievement of fuel poverty reduction targets through the programme life.

These success factors have been combined with environmental criteria to carry out initial consideration of alternatives for each proposals.

What mitigation and monitoring is proposed?

In order to ensure we are on track to achieve the Programme vision, aims and objectives a formal monitoring and evaluation framework will be used. This will be developed over the next two years and will then begin in April 2020. During the intervening period a baseline will be established. The details of this monitoring work is set out in the Routemap.

This monitoring and evaluation will allow us to adapt and flex the programme where necessary. As well as looking at outputs we will be monitoring and measuring outcomes, capturing the impact the programme has on people and communities.

At a more local level, mitigation is recommended associated with the careful environmental management of projects on a site by site basis.

What were the conclusions and recommendations of the SEA?

The assessment set out the following conclusions and recommendations:

- The proposals are likely to lead to significant GHG emissions reductions and the SEA supports the view that the underpinning objectives of these proposals will be met in this regard. The impacts on climate factors assessed in this SEA are all positive, and this is particularly true when considering the long term impact on demands on energy from traditional and finite fossil fuel.
- Significant benefits in terms of air quality and population and human health were identified; in particular, through proposals which make a direct impact on the living standards of the population. The SEA notes the particular focus on those in fuel poverty and the likely positive impacts.
- The SEA supports the potential secondary impacts associated with increased flexibility of supply through energy efficiency measures, and at a national level this will make a positive contribution to the Programme aims to target GHG emissions and fuel poverty.
- The SEA identified that consideration will need to be given at a localised level to ensure that appropriate measures are in place to mitigate any potential negative impacts. Having identified impacts as mixed since they have the potential to be both positive and negative, mitigation is important to ensure appropriate impacts. The use of environmental management plans is identified as a solution to this.
- The improved clarity provided by the implementation of the proposals, particularly in regard to the speed of implementation for improvements is recognised by the SEA, and whilst this may have a neutral effect, it does provide a clear statement of intent, which will support and underpin the primary effects.
- The Programme as a whole recognises the importance of robust baseline and monitoring to ascertain the effectiveness of proposals, and this will be done through the monitoring and evaluation framework which is identified as a formal commitment in the Routemap. This assessment recognises that framework and the commitment to baseline data. As such it concludes this as the most appropriate way to monitor the environmental impacts of the proposals considered here.

How can I comment on this Environmental Report?

Public views and comments are invited on the environmental impacts of the proposed setting of a long terms standard, energy efficiency standards for social housing, Local Heat & Energy Efficiency strategies (LHEES) and the regulation of district and communal heating as set out in this Environmental Report. Should a respondent wish to make a joint response on the Environmental Report for some, or all, of these proposals, we ask that respondents clearly indicate to which proposal the comments relate to.

Providing comments on this Environmental Report

Respondents are asked to submit responses on the Environmental Report by **27th July 2018** to

Energy Efficient Scotland Consultation

Energy Efficient Scotland Programme Management Office

Scottish Government

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Edinburgh EH6 6QQ

Email: EnergyEfficientScotland@gov.scot.

Respondents may find the following questions helpful to provide a focus for their responses on this Environmental Report. Please note that responses do not need to be confined to these questions, and more general comments on this Environmental Report, and the proposals are also invited.

What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)

What are your views on the predicted environmental effects as set out in the Environmental Report?

What are your views on the findings of the SEA, and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?

The responses received on this Environmental Report will be collated, analysed and reported. Key messages and findings of the responses received will be taken into account in the finalisation of each of the proposals.

Post-adoption SEA Statements will be prepared and published for each proposal. These statements will reflect on the findings of the assessment and consultation, and will explain how the issues raised have been considered and addressed in the preparation of the finalised proposals.

1 Introduction

1.1.1 Energy Efficient Scotland Energy Efficient Scotland (the Programme) is a 15 to 20 year programme aimed at driving energy efficiency and a low carbon energy system in Scotland's homes and buildings.

1.1.2 The Programme will be instrumental in tackling fuel poverty and, in developing the Programme, we will reflect the aims of our new Fuel Poverty Strategy taking account of recommendations made by the Fuel Poverty Strategic Working Group and Rural Fuel Poverty Task Force. A collaborative approach will be critical to delivering our ambitions on fuel poverty and the Programme is paving the way for innovation and coordinated efforts across sectors to find the most effective solutions for households no matter where they live in Scotland.

1.1.3 The Programme for Government commits to investing more than half a billion pounds to the Programme over the four years to 2020/21 setting out a clear commitment to develop this programme with substantial annual funding.

1.1.4 The Programme brings to life one of the six energy priorities as set out by our Scottish Energy Strategy: that of improving energy efficiency. This strategy, published in December 2017 is a ground breaking first energy strategy for Scotland and sets out the Scottish Government's vision for the future energy system in Scotland. This strategy sets a vision to achieve by 2050 'A flourishing competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses'.

This strategy recognises that we cannot be entirely certain what our energy system will look like by 2050, so sets ambitious targets for 2030 which supports the principle of the pursuit of low or no regrets options to set us on the right path to the low carbon future:

- The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources;
- An increase by 30% in the productivity of energy use across the Scottish economy.

The targets set by the Programme feed into our Climate Change commitments. The Scottish Government's world-leading climate change targets require emissions from across Scotland to be reduced by 42% by 2020 and at least 80% by 2050. The Climate Change Plan outlines the steps needed to reduce emissions across the economy, including in the residential and services sectors, which will see their emissions reduced by 23% and 59% respectively by 2032 on 2015 levels.

1.1.5 Achieving these targets will mean that to be fit for the future Scotland's homes, commercial properties and public sector estate will need to be near zero carbon by the middle of this century. Scottish Ministers announced in June 2015 that they would take long term action to reduce building energy demand and remove carbon from (decarbonise) heat supply; designating energy efficiency as a national infrastructure priority. The Programme is the culmination of this thinking.

1.1.6 We recognise that the lowest rates of fuel poverty are associated with higher energy efficiency standards, and underpinning the overarching statutory target we will set ambitious targets that will help us achieve our aim to remove poor energy efficiency as a driver for fuel poverty.

1.1.7 We have also committed to develop, if appropriate, a wider Bill to support the Programme for later in this Parliament. We recognise that for a programme as ambitious as the Programme, it will be necessary to review our existing legislation and to consider what new or amended powers or duties may be needed to underpin the programme. Stakeholders told us in our high level scoping Programme consultation during 2017 that there could be an important role for regulation and standards, supported by legislation.

1.1.8 Once fully operational, the Programme will be a whole system approach to delivering energy efficiency improvements and the provision of low carbon heat. A framework of energy efficiency standards, advice and funding will help create long-term consistency and confidence for consumers and industry, backed up by legislation where needed. The programme will also help support skills and supply chains across Scotland with appropriate protections for consumers.

1.1.9 During the initial phases of the Programme, we are focusing on delivering existing programmes more effectively and developing new pilot schemes to test delivery mechanisms for residential and non-domestic buildings. By 2050, through the Programme, aims to transform the energy efficiency and heating of our buildings so that wherever feasible, buildings will have near zero carbon emissions.

Phase 1: Design	Drafting of Climate Change Plan and the Energy Efficiency Strategy The evaluation of Delivery Scenarios Publication of the Routemap in 2018
Phase 2: Development	Design and development of standards for the energy efficiency of buildings across all sectors and tenures with clear timescales Delivery/funding mechanisms – including a range of funding including grants and loan schemes Advice and information to ensure that both domestic and business customers are able to access appropriate, clear and up to date advice on both their requirements, the options open to them and the potential benefits Phased deployment (including optional and compulsory modifications to standards, funding/delivery mechanisms and advice)
Phase 3: Deployment	Monitored and evaluated on a five year cycle

1.1.10 To move from design to development phase, the Programme now frames its work around a number of key areas:

The setting and implementation of **long term standards** for both domestic and non-domestic sectors, introduced using a phased approach, with a backstop date of 2040 for all buildings in Scotland;

As part of the broader work on long term standards, the setting of a revised **Energy Efficiency Standard for Social Housing** (**EESSH**);

Local Heat & Energy Efficiency Strategies (**LHEES**) to provide a strategic framework for delivery of the Programme at a local level, and a **new approach to regulation of district heating** that creates a more attractive climate for investors and consumers with the intention of further expanding this source of heating across Scotland;

A revised approach to **heating systems in existing buildings**, with the phased removal of support for high carbon forms of fossil fuel heating from 2020;

An Offer to all which will provide a variable rate of advice, information, support and direct delivery for everyone in Scotland. The Offer will be fully mobilised by 2020;

1.1.11 The way in which these are considered by this SEA follows:

Proposal	SEA requirement under The 2005 Act	Reason
Long term standards	✓	This is a proposal to improve energy efficiency and is intended to result in the installation of measures with resultant potential to have significant environmental effects.
EESSH	✓	This is a proposal to improve energy efficiency and is intended to result in the installation of measures with resultant potential to have significant environmental effects.
Local Heat & Energy Efficiency Strategies and regulation of District Heating (LHEES and DHR)	✓	This is a proposal to improve energy efficiency and heat decarbonisation at local level, and will result in measures being installed on the ground and has the potential to have significant environmental effects.
Heating in existing buildings	✘	Comprises two aspects of work: the first is a policy position to vary Scottish Government financial support for heating systems installed in existing buildings which will not have a significant environmental effect in itself, the second is associated with a move to low carbon heating sources, and considered as part of the long term standard, and LHEES and DHR above.
The Offer	✘	Is an advice and financial package of work, and does not create a framework for future development consent
Monitoring and Evaluation	✘	Is a package of work to monitor progress of a wider programme of work and does not create a framework for future development consent

1.1.12 These projects are set out in the suite of documents which accompany this SEA, launched in May 2018, including a Routemap which provides the current position statement on previously consulted on and agreed policy direction and a timeframe for the delivery of the programme as a whole, and a suite of consultation documents which engage on specific aspects of policy and delivery.

1.1.13 Supporting the Programme will also be new legislative provision. Later this year we will introduce a Fuel Poverty Bill (which has already been the subject of SEA pre-screening[14]) that will set a target relating to the eradication of fuel poverty. We are also consulting on the need for further legislation to support other aspects of the Programme beyond fuel poverty, and have committed to introducing a Bill to support the Programme if needed later in this Parliament, which would provide for the regulatory elements required to deliver the Programme. This is subject of further consultation accompanying the Routemap. As a minimum, as outlined in previous consultations that ran during 2017-18, we are considering the potential for legal provision to create :

- a statutory duty on local authorities to develop a LHEES, setting out how they will deliver the Programme over a 15-20 year period

[14] http://www.gov.scot/Topics/Environment/environmental-assessment/sea/SEAG

- wider regulations on the district heating sector, including requirements for licensing of district heating operators, and consenting of district heating projects.

1.1.14 Following conclusion of the consultation accompanying the Routemap, the overall need for legislation will be considered in the light of responses to this and to the earlier LHEES and district heating consultation. If needed, this Bill will be subject to further SEA screening as required once the content is agreed.

1.2 Strategic Environmental Assessment (SEA)

1.2.1 Strategic Environmental Assessment (SEA) is the assessment of the likely significant environmental effects that a public plan, programme or strategy will have on the environment if implemented.

1.2.2 The Scottish Government has undertaken a SEA of those aspects of the Programme set out at 1.1.11 which are subject to engagement and consultation, and its findings are set out in this Environmental Report. specifically:

- Proposals regarding the setting of a long tern standard;
- The review of the Energy Efficiency Standard for Social Housing (EESSH);
- Local Heat & Energy Efficiency Strategies; and
- A new approach to regulation of district heating.

1.2.3 The SEA was undertaken in accordance with the Environmental Assessment (Scotland) Act 2005 (the '2005 Act') and in parallel with the development of these proposals. This iterative process enabled the SEA to inform and influence the development of the documents by considering how the adoption of the policies, policy development milestones and proposals they set out may impact on the environment.

1.2.4 The Scottish Government has undertaken a SEA of those aspects of the Programme set out above, which are subject to engagement and consultation, and its findings are set out in this Environmental Report. The SEA was undertaken in accordance with the Environmental Assessment (Scotland) Act 2005 (the '2005 Act') and in parallel with the development of these proposals. This iterative process enabled the SEA to inform and influence the development of the documents by considering how the adoption of the policies, policy development milestones and proposals they set out may impact on the environment.

1.3 Report Structure

1.3.1 This Environmental Report is set out as follows:

Section 1 – Provides an **introduction** to assessment and an overview of the SEA process.

Section 2 – Provides background information on the setting and implementation of **long term standards** for both domestic and non-domestic sectors.

Section 3 – Provides background information on the review of the **Energy Efficiency Standard for Social Housing** (**EESSH**).

Section 4 – Sets out information on the proposed establishment of requirements for **Local Heat & Energy Efficiency Strategies** and a **new approach to regulation of district heating**.

Section 5 – Sets out the **approach taken for the SEA** of the relevant parts of the Programme, and the consideration of **reasonable alternatives**.

Section 6 – Provides an overview of the **wider policy context and environmental objectives** for the 3 proposals described above, including relevant plans, programmes and strategies set out at EU, UK and Scottish levels.

Section 7 – Presents the **findings of the assessment** including the consideration of potential cumulative and in-combination effects from the draft Plan and 3 proposals described above and proposed mitigation measures.

Section 8 – Sets out how the proposals and their effects will be **monitored**.

Section 9 – Presents the **conclusions and recommendations** of the assessment.

Section 10 – Sets out **information on the consultation** including how to provide views on the Environmental Report and how these responses will be taken into account in the finalisation of the 3 proposals described above.

Appendix A - Details the **Environmental Baseline** used to inform the SEA, including a summary of relevant environmental protection objectives.

Appendix B - Provides background information on Energy Efficient Scotland

Appendix C - Sets out **assessment tables** prepared in considering the potential for environmental effects arising from the setting and implementation of **long term standards** for both domestic and non-domestic sectors

Appendix D - Sets out **assessment tables** prepared in considering the potential for environmental effects arising from on the establishment of requirements for **Local Heat & Energy Efficiency Strategies** and a **new approach to regulation of district heating**

Appendix E - Presents a list of **abbreviations** used in this Report.

Appendix F - Presents a **compliance checklist** setting out the sections of this Report that address the requirements of the 2005 Act.

2 Background to Setting a Long Term Standard

2.1 Background - Domestic

2.1.1 In 2016 there were 2.45 million residential properties in Scotland and it is likely that over 80% of them will still be in use in 2050. Three quarters of our homes were built before 1982. A fifth were built before 1919 using traditional methods of construction. The research and development of new approaches for the energy efficiency of these pre 1919 buildings is overseen by Historic Environment Scotland. Approximately 61% of occupied homes are owner occupied, 15% are privately rented, and 23% are socially rented[15].

2.1.2 The energy efficiency of Scotland's homes has been improving in recent years. In 2016, 39% of homes achieved an Energy Performance Certificate (EPC) band[16] of C or above. Social housing is generally more energy efficient with 53% rated EPC band C or better. This compares to private rented where 35% achieve a similar rating.

2.1.3 Heating our homes and the water we use accounts for over three-quarters of the energy we use in our homes. The majority of households use mains gas for their heating, with smaller proportions using electric and oil as their main fuel source[17].

2.1.4 To deliver our vision, we need to see improvements across our residential buildings. By 2040, where technically feasible and cost effective, the Programme's aspiration is that all Scottish homes achieve Energy Performance Certificate (EPC) band C, and the homes of fuel poor households achieve EPC band B.

2.1.5 When we consulted on the Programme in January 2017 there was a clear consensus around setting long term targets, providing certainty and a clear direction of travel. To give that certainty and clarity we are setting the long term standard for all residential properties at EPC band C. To support our statutory target on fuel poverty we are setting a more ambitious target for those households in fuel poverty. All households in fuel poverty will live in homes that are EPC band C by 2030 and EPC band B by 2040.

2.1.6 We have chosen to use EPCs to set the standard as the consultation in 2017 showed that EPCs were well known and provide a clear way to model and understand the energy efficiency performance of a building. The consultation also raised some issues with EPCs. We have listened and have already commissioned research to find ways to address the issues raised. We will also do further work to make sure EPCs more accurately record the energy efficiency of buildings.

2.1.7 We know that not all buildings will be able to achieve this standard, nor do we expect people to undertake work that is expensive and provides little return in energy savings. We will work with partners over the next two years to identify those buildings that may be exempt from the standard, how properties will be assessed, and to define what is meant by technically feasible and cost effective. We are seeking your views on some of these issues in the consultation on the setting of a long term standard as part of the consultation which accompanies the Routemap.

2.1.8 At present energy efficiency measures are assessed through building standards applied across Scotland. These standards do not, however, require that any particular standard be met by all buildings. The work currently being proposed under the Programme reflects a step change in this approach, with phased implementation of a standard to be met by all, and that this standard should be measurable under a common rating, in the case of domestic properties, the EPC rating. The implementation of this standard is likely to speed the installation of improved energy efficiency measures. The assessment of this is reflected in the assessment tables (Appendix C).

[15] http://www.gov.scot/Topics/Statistics/16002/PublicationAnnual
[16] See Appendix B
[17] http://www.gov.scot/Topics/Statistics/16002/PublicationAnnual

2.2 Background - Non-domestic

2.2.1 There are around 200,000 non-domestic premises in Scotland, including around 20,000 public sector building. Our non-domestic buildings are hugely diverse in terms of construction, size and in particular their use, ranging from shops and offices to factories, warehouses and hotels. Given the wide variety of building size and use we are proposing to move to a benchmarking system for assessing energy efficiency and we are seeking your views on this in the consultation on Energy Efficient Scotland.

2.2.2 We know less about the energy performance of the non-domestic sector compared to the domestic sector. This is largely due to the diverse nature of non-domestic buildings. In addition, far more homes have registered their Energy Performance Certificate (EPC) and we also undertake a large scale annual survey on housing that includes energy efficiency[18]. As of July 2017, there were around 30,000 non-domestic buildings that have an EPC assessment.[19] Of these, 30,000 non-domestic buildings, just five per cent have a rating of EPC band B or better; with 22 per cent being rated C or D, and the remaining 73 per cent rated E or worse.

2.2.3 We are currently developing our understanding of the energy efficiency performance of Scotland's non-domestic building stock, which will be used to inform the development of the Programme.

2.2.4 EPCs in the non-domestic sector are partly determined by how buildings are used, i.e. type of business, and as a result don't always directly reflect the actual energy efficiency of buildings. We will be considering this issue as part of our planned work on the Programme.

2.2.5 We propose to build on the current regulations under the Climate Change (Scotland) Act[20]. These currently only apply to buildings over 1,000 m² and buildings can defer improvement by reporting their energy use.

2.2.6 We aim, by 2040, to have extended the regulations to all non-domestic buildings. We will phase the introduction of regulations using triggers such as sale or rental but also setting backstop dates by which buildings of a certain size must be assessed and improved, with the size of the buildings decreasing over time.

2.2.7 We will consult on detailed proposals in 2019 and have a fully developed plan for the non-domestic sector by 2020, ahead of new regulations commencing in 2021.

2.2.8 We currently offer low interest or no interest loans to SMEs, through the Resource Efficient Scotland SME Loan scheme (including the current Cashback offer), to install energy efficiency measures and low carbon heat. We also provide businesses with free, bespoke advice through Resource Efficient Scotland. We will continue with this support and are also working with local authorities to develop area based or sectoral programmes that would provide an end-to-end service covering advice through to quality assured installation of measures. The range of available financing products will be kept under review, and further opportunities for helping businesses to meet the cost of investment which reduces carbon consumption will be looked for.

2.2.9 We will have a fully developed plan for the non-domestic sector by 2020, ahead of new regulations commencing in 2021. We are also committing to working with industry on the work being taken forward via the Manufacturing Action Plan to align our offers of advice and support to consider energy use in its entirety, recognising that reducing the energy used for manufacturing is just as important as ensuring the energy efficiency of the building.

[18] SHCS annually surveys a nationally representative sample of around 3,000 homes
[19] EPC Register (based on EPCs lodged 29 January 2013 to 31 July 2017)
[20] The Assessment of Energy Performance of Non-domestic Buildings (Scotland) Regulations 2016

3 Background to Energy Efficiency Standard for Social Housing (EESSH)

3.1 Background - Social Housing

3.1.1 The Energy Efficiency Standard for Social Housing (EESSH) was introduced in 2014 to encourage social landlords to improve the energy efficiency of their stock. It sets a minimum EE rating – SAP2009 60-69 (EPC band D or C) – for landlords to achieve by 2020, depending on fuel and dwelling type. EESSH compliance is part of the Scottish Social Housing Charter, with the Scottish Housing Regulator (SHR) responsible for monitoring performance. Encouraging progress has been made to date, with three quarters of the social housing stock already meeting the EESSH (2016/17). A variety of funding sources are available to landlords to help them attain the EESSH, however the majority of investment has been from landlords' own resources (roughly 80%).[21]

3.1.2 When EESSH was introduced, a review was agreed with social landlords for 2017 to assess progress towards the 2020 target and to consider future milestones beyond 2020. The EESSH Review Group was established in March 2017, it is chaired by Scottish Government officials membership includes representation from: Local Authorities; Registered Social Landlords (RSLs); Historic Environment Scotland (HES); the Scottish Federation of Housing Associations (SFHA); the Glasgow and West of Scotland Forum of Housing Associations (GWSF); the Convention of Scottish Local Authorities (CoSLA); and the (SHR)[22]. Following conclusion of the EESSH2 consultation and confirmation of its outcomes, the EESSH Review will be completed and finalised.

3.1.3 Following agreement through the EESSH Review Group, we are proposing a new EESSH2 milestone. Aligning with our wider ambitions for the Programme, emissions reductions and domestic heat, we are proposing a new milestone to maximise the number of social rented homes meeting EPC Band B by 2032. This will be supported by: an opportunity for review in 2025 (to confirm progress and finalise the detail of future milestones, and which will be able to account of the development of decarbonisation and forthcoming policy announcements on hydrogen from the UKG); and by a visionary standard for 2040. This vision will look to realise the removal of poor energy inefficiency as a driver of fuel poverty in social housing, and for all social housing to be carbon neutral as far as reasonably practical.

[21] https://beta.gov.scot/publications/energy-efficiency-standard-social-housing-eessh-scottish-government-guidance-social/

[22] https://beta.gov.scot/policies/home-energy-and-fuel-poverty/energy-efficiency-in-social-housing/

4 Background to Local Heat & Energy Efficiency Strategies and a new approach to district heating

4.1 Background - delivering in partnership with local government

4.1.1 The Programme will be a strategic partnership with local government. Throughout its development we have consulted and discussed the design with our partners in COSLA and across local authorities, so that we can, jointly, build upon the successful components of existing programmes. From the start in our initial pre-consultation discussions with stakeholders, they identified the importance of strategic planning for the Programme at local and national levels across the 20 years of the programme.

4.1.2 Given the need for this strategic planning to take place from the outset of the programme, we have already consulted in detail twice during 2017-18 on proposals for Local Heat & Energy Efficiency Strategies (link). We propose that a LHESS would be the foundation on which the Programme is delivered over the twenty year cycle of the programme. Their purpose would be to :

- provide the evidence base to guide the Programme, locally and nationally over its 20 years. Each local authority would assess its building stock, and identify the potential for improvement of their energy performance and heat supply in order to meet long term Programme standards. This would allow it to set objectives to deliver this improvement, and the scale of the investment needed to meet this. Looking at all of the LHEES together across Scotland, will give a comprehensive picture of the building stock, and levels of improvement needed for the whole of the Programme;
- act as the guiding framework for developing and funding of future investment strategies. The strategic analysis that each local authority undertakes in preparing its LHEES would help it to prioritise and cost local delivery programmes. These would be submitted to the Scottish Government for approval and funding. The LHEES analysis will also help the Scottish Government to design and support national investment programmes (where needed) that can complement local authority activities;
- provide an investment prospectus for developers and the supply chain in the energy efficiency and heat sectors. The data underpinning each LHEES, and the objectives that they set, would provide valuable market information for investors (from both the private and public sectors), on potential new investment opportunities. The prioritisation and costing of local delivery programmes and national investment programmes would help to give investors and the supply chain certainty to help them plan for long term delivery across the 20 years of the programme.

4.1.3 Given that we envisage that LHEES would be central to informing and shaping the overall delivery of the Programme, we are proposing that there should be a statutory duty on local authorities to prepare and deliver them. We recognise that there are resource implications for this and that additional support may be required.

4.1.4 We have therefore consulted twice during 2017 and 2018 on the purpose, scope, and content of LHEES, and on the powers and resources needed to deliver them. In parallel, we have been working with COSLA and with 12 local authorities to pilot the preparation of LHEES. This is allowing us to understand the processes of data gathering, objective-setting, and design and prioritisation of local delivery programmes. The pilots are testing different methodologies and providing evidence on the resources needed to prepare LHEES.

4.1.5 We are now committing to providing support to all remaining local authorities in Scotland over the next two years, to pilot development of LHEES in their areas as part of the Programme Transition Programme. During 2018 we will also establish a working group with COSLA and representative local authorities to develop and agree guidance and supporting materials for LHEES, in preparation for roll-out of the Programme from 2020, and in advance of any proposed statutory duty.

4.1.6 We are considering the evidence from the second consultation alongside the ongoing findings from the pilots. Following conclusion of the consultation accompanying the Routemap, we will consider the overall need for legislation, in the light of responses to this and to the earlier LHEES and district heating consultation, before setting out our final position.

4.2 Background information on the Programme goals for regulating District Heating

4.2.1 In parallel to consulting on Local Heat & Energy Efficiency Strategies, we have consulted twice during 2017 and 2018 on the potential for regulation of district heating. We consulted on the creation of a regulatory framework that would provide confidence for investors and would ensure protection for district heating consumers. We also proposed that the public sector could take a leading role in the development of district heating where LHEES identified it was appropriate to do so. Further development of district heating could play an important role in helping local authorities meet their objectives set out in their LHEES for the Programme.

4.2.2 We are considering the evidence from this consultation. Following conclusion of the consultation accompanying the Routemap, we will consider the overall need for legislation, in the light of responses to this and to the earlier LHEES and district heating consultation, before setting out our final position.

5 The Approach to the Assessment

5.1 Common Themes and combined assessment

5.1.1 The potential to combine the assessments of the proposals was discussed in the Scoping Report submitted to the SEA Gateway on 6th February 2018. The setting of a **long term standard**, the review of **Energy Efficiency Standard for Social Housing** (EESSH), and options to create a statutory framework for **Local Heat & Energy Efficiency Strategies (LHEES**) and framework for District Heating regulation (DHR) all fall under Section 5(4) of the 2005 Act and could have significant environmental effects.

5.1.2 The Scoping Report set out initial information on the likelihood of significant effects arising from the various proposals and the proposed evidence base to inform the assessment. It also confirmed that all environmental topic areas would be scoped into the assessment[23]. The report also set out a proposed methodology for undertaking a combined assessment of the proposals as described above.

5.1.3 The development of the Long Term Standards, EESSH, and the LHEES and DHR proposals will be closely linked under the Programme umbrella, and is likely to be an iterative process. As such, a flexible approach to the SEA will be required to ensure that the assessment of both contribute to their development, whilst ensuring compliance with the 2005 Act.

5.1.4 Early engagement with Scottish Government teams, and key delivery partners has taken place. Further work to develop the content of the Routemap, mentioned above, has clarified the links under the Programme, of all aspects of the wider proposals and it is clear that there are common themes throughout, for example common environmental baseline information and consideration of the potential environmental impacts associated with energy efficiency measures.

5.1.5 We have also received and taken into account, the responses from the consultation authorities to the Scoping Report, and included additional information to that set out in the Scoping Report as a result.

5.1.6 We have taken every opportunity to combine the assessment process where possible to produce this joint Environmental Report for these proposals, all of which reflects the Programme being a single programme comprising a number of strands. We have however been cognisant of the need to ensure that SEA of these programmes of work is undertaken in accordance with the requirements of the 2005 Act.

5.1.7 The following sections clarify the common areas which have allowed for a combined assessment process. We have used a narrative format, accompanied by tables and figures to help illustrate key findings where appropriate. Key questions have also been developed to help to frame the assessment discussion of key environmental issues that have been identified.

5.2 The Long Term Standard and EESSH

5.2.1 The Vision of Energy Efficient Scotland is that by 2040, our homes and buildings are warmer, greener and more efficient. This vision forms the foundation of all work carried out under the Programme banner. This reduction in energy use and carbon, the affordability of that energy and its green credentials is therefore common throughout the three proposals.

[23] Biodiversity, Flora, Fauna, Soil, Water, Population, Human Health, Air, Climatic factors, Cultural Heritage, Material Assets, Landscape

5.2.2 Work to achieve this vision therefore contains common elements which apply to all buildings across Scotland, and therefore all sectors, which can most simply be divided by domestic and non-domestic use, and further into sub categories of Owner Occupier (OO), Private Rented Sector (PRS), Social Housing (SH), Small and Medium businesses (SME), other businesses (other non-dom) and the publicly owned commercial stock (non-dom public). In the longer term, the Programme will also consider the broader topic of energy supply to all sectors, but this is a longer term aspiration and not, therefore, part of this assessment.

5.2.3 Specific to individual buildings, work is already underway on the development of a **Long Term Standard**, with a consultation on standards for private rented housing taking place in 2017 and a review of EESSH nearing completion. Consultation is now launched to expand the use of long term and minimum standards to all buildings and the setting of such standards across all building stock clarifying the scale of work, the speed of change, the long term goal and any interim measures to phase implementation. The **Energy Efficiency Standard for Social Housing** (EESSH) was introduced in 2014 requiring social landlords to meet energy efficiency standards by 2020 (effectively EPC Band D or C depending on building type and fuel supply). A review of EESSH was undertaken in 2017/18 as part of the current proposals under the Programme, it considered EESSH milestones post 2020 and a vision for social housing to be carbon neutral by 2040. In common the setting of standards allows common assessments irrespective of sector.

5.2.4 Work to produce a long term standard for all building stock is based on two key themes. The first, in no particular order, is the introduction of a phased standard for all domestic properties which meets the end target in a way which does not create bottlenecks in the supply chain, and does not result in excessive need for compliance arrangements. The second is the development and implementation of a common standard to be used for all non-domestic properties. Both have the Programme end target at their heart.

5.2.5 We have considered domestic and non-domestic sectors separately within this assessment, since information available for the domestic sector is at a more advanced stage. The assessment has considered the potential for environmental effects relevant to each sector that may arise from the setting of a standard, and also the impact of the standard to be used, and the speed of change (owner occupier, private rented sector, and social housing, and separately non domestic properties). This has allowed for the potential impacts against each environmental topic area to be considered for each sector and has helped inform proposed policy development which is not the necessarily the same.

5.2.6 Following this sectoral approach to the assessment, an overall assessment has been undertaken to consider the impacts on a broader scale. This second tier of the assessment process has highlighted potential cumulative and in-combination effect.

5.3 LHEES and District Heating regulation

5.3.1 At a strategic level, and to support a coordinated approach to the local planning and delivery of energy efficiency and heat decarbonisation programmes within the Programme, we have consulted upon proposals to create a statutory framework for **Local Heat & Energy Efficiency Strategies (LHEES)** which will:

- help to drive the Programme across all local authorities, and will act as the foundation for 20 years of delivery programmes to meet our fuel poverty, energy efficiency and heat decarbonisation ambitions;
- send clear investment signals to develop a strong and sustainable energy efficiency and heat decarbonisation supply chain for Scottish business; and
- enhance Scotland's strategic capacity and expertise in the delivery of energy efficiency and heat decarbonisation.

5.3.2 Similarly, to support appropriately-sited, low carbon, affordable **district heating**, we are also considering the development of a policy and regulatory system which will see district heating develop in a strategic manner, and provide appropriate conditions on the ground to accelerate delivery of district heating and to grow this market. In order to achieve this we have consulted further on a proposed regulatory framework in which:

- district heating and communal heating providers will serve their customers well;
- district heating and communal heating providers will deliver affordable and low carbon heat;
- there is increased confidence in the investment in new and expanded district heating; and
- wherever possible, Scotland secures the economic opportunity presented by both reducing costs to customers and, infrastructure investment opportunities for the Scottish supply chain.

5.3.3 Therefore we are considering the impact of these proposals on energy use, their local application and options for delivery together..

5.3.4 The assessment has focused on the policy backdrop to LHEES and the work to consider regulation of the district heating sector, and assess the impact of that on the environmental topics. While each LHEES will establish an authority-wide approach to energy efficiency and heat decarbonisation at local level, in line with national frameworks and guidance, the approach taken by each authority to its local delivery programmes will vary according to local geographies and to impacts identified in local socio-economic and environmental assessments of the LHEES.

5.3.5 The cumulative and in-combination impact of the roll-out of this approach across Scotland has also been assessed against the environmental topic areas, and also assessed against the potential impacts caused as a result of the long term standards.

5.4 Consideration of Previous SEA Work

5.4.1 This SEA has reviewed and taken account of previous SEA work associated with work influencing or delivering the Programme. Included are the SEA of EESSH phase 1 undertaken in 2012[24], and the SEA undertaken in support of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and the Draft Scottish Energy Strategy: The Future of Energy in Scotland published 27 January 2017[25] which supported and assessed the final contents of the published energy strategy, The Future of Energy in Scotland: Scottish energy strategy, published in December 2017.

5.4.2 It is our view that the policy objectives underpinning the work assessed in this SEA are a continuation of those previously outlined in the documents above, and remain relevant to this assessment.

[24] http://www.gov.scot/Topics/Environment/environmental-assessment/sea/SEAG
[25] http://www.gov.scot/Publications/2017/01/9030

5.5 A Staged Approach to the Assessment

5.5.1 A staged and iterative approach has been used to undertaken the assessment. The assessment involved a three-stage process.

5.5.2 **Stage 1** - Assessment tables were developed for each sector[26] impacted by the setting and implementation of **long term standards** which set out the potential for impacts across a range of environmental receptors as affecting each sector (Appendix C). Tables were also developed for each sector impacted by the proposed establishment of a requirement for **Local Heat & Energy Efficiency Strategies** and for the creation of a framework for **district heating**. These also considered the potential impacts across the same environmental receptors against the implantation of the requirement and framework (see Appendix D).

5.5.3 **Stage 2** - Drawing on the Stage 1 findings, summary tables show the combined effect of the individual standards, polices and proposals. Findings are displayed for each sector affected.

5.5.4 **Stage 3** - The information from the previous two stages was consolidated. This stage provided an overarching and strategic level analysis of the likely significant environmental impacts of the proposal launched at this time and the potential for cumulative and in-combination effects. Information on the management and mitigation of the identified environmental effects, proposals for monitoring, and the conclusions and recommendations of the assessment are also included.

5.6 The Assessment Stages

5.6.1 This stage is written in a narrative format, and includes the consideration of primary and secondary effects. A series of questions were devised to focus on potential environmental effects of the 3 proposals. These questions were used to focus the assessment on the primary environmental issues that were identified as the assessment was undertaken, and covered all environmental topic areas scoped into the assessment. These questions also aided the consideration of potential cumulative and in-combination effects likely to arise from both policies and proposals, and the wider policy context.

Key Questions for the Assessment

1. Will the proposal contribute to meeting Scotland's climate change commitments?
2. Will the proposal contribute to the reduction in carbon generated as a result of energy use?
3. Is the proposal likely to improve air quality and human health?
4. Will the work proposal have implications on infrastructure ?
5. Is the proposal likely to have indirect or secondary environmental effects?
6. Can these potential effects be effectively managed, mitigated or enhanced?
7. Have alternatives to the proposal been considered in this assessment?

[26] Owner Occupier, Private Rented Sector, Social Housing, Small and Medium Enterprises, other non-domestic private enterprises, and the publicly owned non-domestic stock

5.7 Consideration of Reasonable Alternatives

5.7.1 The 2005 Act requires that the potential for significant environmental effects of reasonable alternatives of a plan, programme or strategy are assessed as part of the SEA process. The following outlines the reasonable alternatives that have been considered both in the 3 proposals.

5.7.2 The development of targets, milestones and policy under the Programme umbrella are all influenced by a huge raft of research and the number of drivers, and the TIMES model has and will continue to play a fundamental role in their development. The TIMES model has, and will continue to be used to consider scenarios to meet climate change targets. The TIMES model has been pivotal in the development of the Energy Strategy and Climate Change Plan and now, this Programme. The continuity provided by this across all documents allows a robust assessment of the impacts of the various scenarios proposed in each. At this stage the end targets are known, and the consideration of reasonable alternatives has therefore focused on what paths exist to reach those targets.

WHAT IS THE TIMES MODEL?

TIMES is a Whole System Energy Model. These models aim to capture the main characteristics of an energy system and are particularly useful for understanding the strategic choices that are required to decarbonise an economy.

The Scottish TIMES model is a high-level strategic model covering the entire Scottish energy system and containing many thousands of variables covering existing and future technologies and processes.

The model can be used to identify the effectiveness of carbon reduction measures in order to provide a consistent comparison of the costs of action across all sectors.

5.7.3 Through TIMES, options surrounding development in technology will also be considered, including the impact this may have on the speed of change proposed and the potential environmental impacts associated with that has also assessed.

5.7.4 Further, at the heart of the Programme sits a suite of critical success factors which assist in programme development and the direction of travel. The assessment of reasonable alternatives has therefore been undertaken in a way which combines the impact on environmental criteria and programme criteria. This has allowed an initial assessment of the likelihood of success of options based on, not only environmental impacts, but those factors which may make an option unrealistic which viewed from a wider perspective.

Critical success factor	Description
Strategic fit and economic growth	Supports Scottish Government objectives to: - meet Climate Change targets - promotes and supports growth and development of the Scottish economy in a controlled and sustained manner.
Deliverability and quality	Delivers in a way which: - matches the supply chain's ability to deliver the required technologies and works to a set standard and by an appropriately skilled workforce - makes an improvement to Scotland's built estate to a defined level of quality, and provides protection for the consumer.

Affordability and Value for money	Allows a range of finance options to be used and has the potential to attract significant levels of private sector capital. Realises value for money for Scottish Government
Fuel Poverty reduction	Promotes achievement of fuel poverty reduction targets through the programme life.
Environmental factor	**Description**
Biodiversity	Conserve, protect and enhance Scotland's diversity of species, habitats and the natural heritage. Protect and enhance of important habitats and connectivity. Maintain and protect populations of European Protected Species, including their functioning habitat
Soil	Maintain, protect and where possible enhance soil quality, geodiversity and carbon rich soils.
Water	To protect maintain and where possible and enhance the ecological status of the water environment.
Population and Human health	Work to eradicate fuel poverty Work to reduce GHG which are harmful to human health Reduce other environmental impacts which are harmful to human health
Air	Protect and improve, where possible, air quality across Scotland
Climatic Factors	Contribute to formal targets to reduce Green House Gas Emissions across Scotland
Cultural Heritage	To protect and where appropriate enhance the historic, built and cultural heritage.
Material Assets	Promote the sustainable use/reuse of all properties across Scotland to support sustainable development, reduce GHG emissions and make best use of this valuable resource
Landscape	Protect our most scenic areas, reflect the importance of the interaction between people and the land, and aim to enhance areas where landscape qualities have been eroded over time

5.8 Consideration of reasonable alternatives - Long Term Standards – all sectors including EESSH

5.8.1 In the consideration of the setting of any long term standard, applicable to all buildings in Scotland, the findings of the consultation in January 2017 on Scotland's Energy Efficiency Programme, launched in parallel with the Draft Scottish Energy Strategy, supported such an approach, with responders keen that this provide clarity and the direction and speed of travel. Taking this and experience from work already undertaken on social housing, the consideration of alternatives has been undertaken against a set of key delivery options.

	Big Bang' Delivery	Phased sectoral delivery	Promote behavioural change	Regulatory requirements	A blend of regulatory, economic and behavioural change
	Standard set immediately and delivered in a short timescale (next 10 years)	Standard is delivered over a phased timescale out to 2040	Provide information on energy efficiency / use to consumers to promote behavioural change	New regulatory intervention focused on meeting climate change targets	A blend that combines behavioural, economic and regulatory options
Strategic fit and economic growth	✓	✓	✗	✗	✓✓
Deliverability and quality	✗	✓✓	✗	✓	✓✓
Affordability and Value for money	✗	✓✓	✓✓	✗	✓✓
Fuel Poverty reduction	✓✓	✓✓	✗	✗	✓✓
Biodiversity	✗	✓	✓	✓	✓
Soil	✓	✓	✓	✓	✓
Water	✓	✓	✓	✓	✓
Population and Human health	✓✓	✓	✗	✓	✓✓
Air	✓✓	✓	✗	✓✓	✓
Climatic Factors	✓✓	✓✓	✗	✓✓	✓✓
Cultural Heritage	✗	✓	✓	✓	✓
Material Assets	✓	✓✓	✓	✓	✓✓
Landscape	✓	✓	✓	✓	✓
Conclusion	Discount	Proposed way forward	Discount	Discount	Proposed way forward

5.9 Consideration of reasonable alternatives - Local Heat & Energy Efficiency Strategies and a framework for district heating regulation

5.9.1 In the consideration of a national roll out of Local Heat & Energy Efficiency Strategies (LHEES), under the control of local authorities, recent consultation (during 2017 and 2017-188) has provided direction on the consideration of alternatives. This has also been combined with experience taken from the LHEES pilots which have been undertaken during 2017 and 2018 and which are on-going. Further, recent consultation on the implementation of a regulatory system on district heating during 2017 and 2017-188 has also provided information to allow the consideration of alternatives.

Option – Local Heat and Energy Efficiency Strategies	Non-statutory LHEES	Statutory LHEES	National Programme – no LHEES
	Local authorities are free to develop LHEES as they see fit, following non-statutory guidance issued by Scottish Government, or using existing powers such as for housing and planning.	Local authorities have a statutory duty to develop and deliver an LHEES, as set out in legislation and statutory guidance	Heat and Energy Efficiency Strategy is developed nationally and delivered by the Scottish Government or national delivery mechanisms
Strategic fit and economic growth	✗	✓	✓
Deliverability and quality	✓	✓✓	✗
Affordability and Value for money	✓	✓	✓
Fuel Poverty reduction	✓	✓✓	✓
Biodiversity	✓	✓	✓
Soil	✓	✓	✓
Water	✓	✓	✓
Population and Human health	✓✓	✓✓	✓✓
Air	✓	✓	✓
Climatic Factors	✓✓	✓✓	✓✓
Cultural Heritage	✓	✓	✓
Material Assets	✓	✓	✓
Landscape	✓	✓	✓
Conclusion	Discount	Proposed way forward	Discount

Option – District Heating Regulation	No regulation	Non-statutory guidance and support	Regulation of District Heating	Incentives - Combined Public & Private sector financing
	Leave the implementation of district heating services to the market supported by research and information.	Provide non-statutory guidance and support to local authorities to encourage development of district heating at local level.	New regulatory intervention focused on meeting climate change targets	Public sector funding used to support local authorities implement LHEES. Public sector financing used to lever in private sector finance to support the growth of DH schemes
Strategic fit and economic growth	✓	✓	✓✓	✓
Deliverability and quality	✗	✗	✓	✓
Affordability and Value for money	✗	✓	✓✓	✓
Fuel Poverty reduction	✗	✗	✓	✗
Biodiversity	✓	✓	✓	✓
Soil	✓	✓	✓	✓
Water	✓	✓	✓	✓
Population and Human health	✓	✓	✓✓	✓✓
Air	✓	✓	✓	✓
Climatic Factors	✓	✓	✓✓	✓
Cultural Heritage	✓	✓	✓	✓
Material Assets	✓	✓	✓	✓
Landscape	✓	✓	✓	✓
Conclusion	Discount	Discount	Proposed way forward	Discount

5.9.2 Final decisions on our preferred approach to LHEES and district heating regulation have not yet been taken, and will form part of the Scottish Government's wider response on potential legislative provision, following the related consultation accompanying the Routemap.

6 Environmental Objectives

6.1 Review of the Baseline information

Biodiversity, Flora and Fauna

6.1.1 At a national level, it is noteworthy that whilst there are a wide range of pressures on biodiversity, climate change in particular has the potential to greatly impact[27]. The impact of the proposals at a national level is generally considered to be positive. However, at a local level, it is recognised that the installation of energy efficiency technologies has the potential to disturb some species, particularly those using roofs and wall cavities to nest or shelter. In the assessment the ability to mitigate has been included.

Soil

6.1.2 As soils play a significant role in terms of storing carbon and therefore help to regulate GHG emissions the impact of the proposals on existing resources has been undertaken. While Scotland's soils are considered to generally be in good health, there are a range of pressures on them. Climate change and loss of organic matter pose the most significant threat. At a national level this can only be done at a strategic level and it is considered that the overall impact of the programme and its constituent parts will be broadly positive. However, in certain assessments the need for a more local solution has been considered, particularly where there is a known likely impact at a localised level.

Water

6.1.3 Scotland's water resources are generally considered to be in good condition[28]. However the localised impact of proposals on water quality and quantity must be assessed. This is particularly the case with local installation of energy efficiency schemes which use water as a resource directly through extraction and heat extraction. The impact at this level may therefore considered to be mixed.

Population and Human Health

6.1.4 The key consideration is the impact of the programme and its constituent parts to GHG emissions and the impact this has on human health. At both a national and local level this is likely to be positive and will, over time, have significant impact on the quality of lives across Scotland.

Air

6.1.5 Air pollution can result in adverse impacts on both human health and can significantly affect many aspects of quality of life. Air pollution can also cause adverse effects in the wider environment[29]. Air quality is important for both short and long-term human health, and poor air quality can have impacts on people with existing health issues. At a national level the proposals are likely to have positive impacts primarily due to the reducing in GHG emissions and a reduction in reliance on fossil fuels. At a local level however, the installation of specific projects may have localised and short term imapcts caused through dust. There will be a need to consider this on a site by site basis and review the need for local solutions.

Climatic Factors

6.1.6 Climate change is considered to be one of the most serious environmental threats to sustainable development, with adverse impacts expected on human health, food

[27] http://www.cbd.int/climate/intro.shtml
[28] https://www.sepa.org.uk/media/320703/state-of-scotlands-water-environment-summary-report.pdf
[29] https://www.environment.gov.scot/our-environment/air/air-quality/

security, economic activity, natural resources and physical infrastructure[30]. Adaptation to the effects of climate change is now acknowledged as being necessary to respond effectively and equitably to the impacts of climate change. The proposals under this programme are all designed to address this and have the need to make a positive contribution at their heart. This is at both a national and local level and are principally associated with reductions in GHG emissions.

Cultural Heritage and the Historic Environment

6.1.7 Scotland's many and varied historical sites are unique and irreplaceable. These sites and features are regarded as making a valuable contribution to our quality of life, cultural identity, education and economy. While the proposals are likely to have a positive impact on these properties by way of their energy efficiency standards, this may have mixed impact by way of the visual impact associated with the installation of measures. The impact at a national level is likely to be negligible, but at a local level, localised solutions will be required to mitigate.

Material Assets

6.1.8 The building stock across Scotland is a valuable resource and should be treated as such. The proposals aim to improve the energy efficiency of all buildings and as such will have a positive impact. The option to prioritise retrofitting and reuse of properties rather than demolition is positive both in terms of the impact on local communities and also on the stock as a source of captured carbon.

Landscape and Visual Impact

6.1.9 Land use change, incremental and on-going development such as infrastructure projects, and design all impact on the quality of Scotland's valuable landscape. The proposals, at a local scale, could have a mixed impact, depending on the measures being installed. Local solutions will be required to ensure that the impact is appropriate and that proposals contribute to the aim of making all of Scotland's local environments valued as attractive and healthy places to live[31].

Summary

6.1.10 At a national level, Energy Efficient Scotland has at its heart the need to make a significant contribution to the meeting of climate change targets. As such it will, together with its constituent proposals, make a net positive contribution to the environment. Without the programme it is likely that the speed of travel will slow, and the opportunity to create a co-ordinated approach across Scotland will be lost.

6.2 Relationship with other Plans, Programmes and Strategies and Environmental Objectives

6.2.1 The Programme is one which is founded in making positive contributions to the environment through energy efficiency measures. As such, a wide range of environmental protection and improvement objectives are set out within existing legislation, policies, plans, programmes and strategies set at the EU, UK and Scottish levels. The following sections of this report provide an overview of the overarching objectives considered most relevant in the context for the preparation of the Programme and its delivery mechanisms. This wider policy context also demonstrates the close links between their development for example, their common ambitions and drivers.

[30] http://www.icao.int/environmental-protection/Pages/adaptation.aspx
[31] https://www.nature.scot/professional-advice/planning-and-development/general-advice-planners-and-developers/planning-and-development-landscape

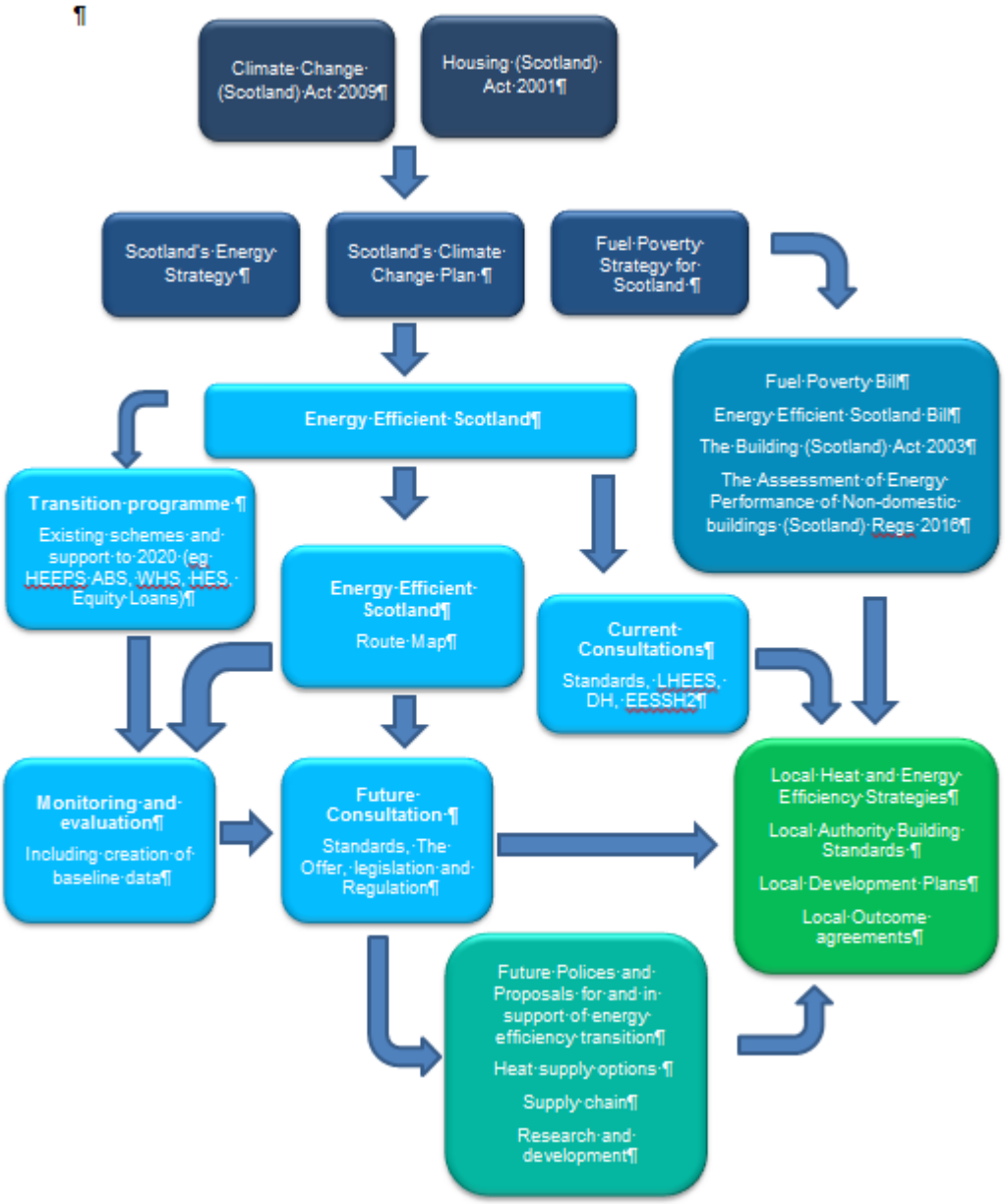


Figure 2: The relationship of the Programme with other plans, programmes and policies

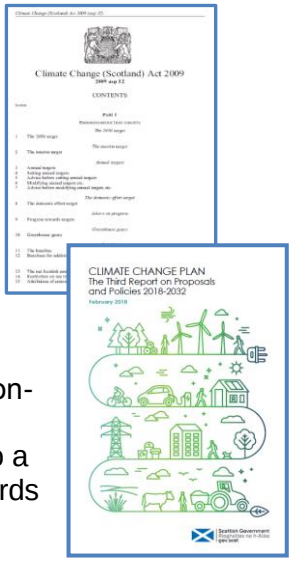
6.2.2 A further overview of selected key plans, programmes and strategies and their objectives is set out in the environmental baseline section of this report. This has been developed to ensure that the objectives and ambitions are set out at an early stage in the development of the Programme and its delivery mechanisms and ensure they are appropriately reflected in the SEA process.

6.3 The Policy Context

6.3.1 The policy context for the delivery of the Programme and its package of projects is founded in two key pieces of legislation. The Climate Change (Scotland) Act 2009 (the 2009 Act) [32] (section 2.1.1) set the statutory framework for GHG emissions reductions in Scotland, with targets for reductions by 80% in 2050, with an interim 2020 target of 42%. These targets are more ambitious than those for the UK as a whole, or the EU. The

[32] http://www.gov.scot/Topics/Environment/climatechange/scotlands-action/climatechangeact

Housing (Scotland) Act 2001[33] required the Scottish Executive to publish its first Poverty statement[34] which provided the first definition of fuel poverty. This statement, backed by the 2001 Act set a target to ensure, so far as reasonably practicable, that people are not living in fuel poverty in Scotland by November 2016.



6.3.2 The Climate Change Delivery Plan[35], developed in 2009, set out the high level measures required in each sector to meet Scotland's statutory climate change targets, looking both up to 2020 and beyond.

6.3.3 The Committee on Climate Change provides independent, expert advice to Scottish and UK Governments about all aspects of climate change. In July 2016, the Committee provided advice to Scottish Ministers on setting annual emission reduction targets for the years 2028-2032 [36].

6.3.4 The Climate Change Plan[37] commits the Programme to the transformation of Scotland's building stock, with policy outcome 1 - 4 seeking radical improvements to the fabric of Scotland's domestic and non-domestic buildings resulting in a 30% reduction in energy intensity and emissions intensity of all buildings by 2032. It commits the Programme to a number of milestones which include the creation of regulation and standards and the supply of an offer of support for all building owners.

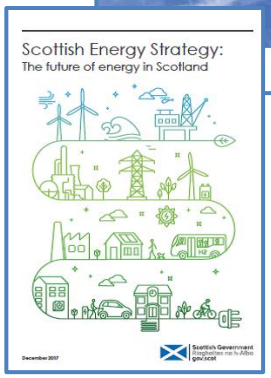
6.3.5 Section 53 of the 2009 Act placed a duty on Ministers to produce an adaptation programme to address the risks identified for Scotland in the UK Climate Change Risk Assessment[38]. The Climate Ready Scotland: Scottish Climate Change Adaptation Programme[39] was published in 2014 and outlined Scottish Ministers objectives. It also included a series of policies and proposals aimed at mainstreaming climate change adaptation across sectors and Scottish Government portfolios, with the aim of achieving measured reduction in climate change risks. The programme was structured into three themes, comprising adaptation in the natural environment, buildings and infrastructure networks and a climate ready society. The programme has had a focus of identifying and engaging key partners within business, communities and organisations, delivering case study successes, and in the dissemination of information.

6.3.6 The Infrastructure Investment Plan 2015[40] set out priorities for investment and a long term strategy for the development of public infrastructure in Scotland. It outlined why and how the Scottish Government invests, and what it intends to invest in up to 2035 by sector. The Plan reflected upon the clear strategic direction for our infrastructure investment decisions set out in the Programme for Government and Scotland's Economic Strategy. This identifed the Programme as a national infrastructure investment priority, and as the cornerstone to achieving a substantive improvement to the energy and heat efficienty of our building stock, investing in the majority of our buildings to make them fit for Scotland's low carbon future. It has also committed multi-year funding which will give our delivery partners the certainty they need to deliver ambitious energy efficiency projects

[33] http://www.legislation.gov.uk/asp/2001/10/contents
[34] http://www.gov.scot/Publications/2002/08/15258/9951
[35] http://www.gov.scot/Publications/2009/06/18103720/0
[36] http://www.gov.scot/topics/environment/climatechange/legislation/ccc-updated-advice
[37] http://www.gov.scot/Resource/0053/00532096.pdf
[38] https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report
[39] http://www.gov.scot/Publications/2014/05/4669
[40] http://www.gov.scot/Publications/2015/12/5962

6.3.7 The Plan also reiterated Scotland's commitment to overarching objectives of decarbonisation of electricity generation and the heat sector by 2030 and 2050 respectively. It discussed investment aimed at improving energy efficiency in domestic and business context. It built upon Scotland's commitment to meeting targets of achieving 100% of energy demand and 11% of heat demand from renewables by 2020, and reducing end use energy consumption by 12% over the same period. The development of these targets took forward commitments for the promotion of renewable energy generation at the European level, principally in the Directive on Electricity Production from Renewable Energy Sources (2001/77/EC)[41].

6.3.8 The Conserve and Save: Energy Efficiency Action Plan[42] set out a range of supporting actions for the Scottish Government's commitment to reduce total final energy consumption by 12% by 2020. It was largely focused on reducing the amount of energy needed to heat and cool our homes, our workplaces and the energy consumed in industrial processes; principally by encouraging behavioural change and low carbon practices.



6.3.9 Most recently published, Scottish Energy Strategy: The future of energy in Scotland [43] commits the Scottish Government to the launch of a full Routemap for the Programme and to the introduction of the Transition Programme. It highlights the way in which the Programme will build on existing successful programmes such as Energy Efficiency Standards for Social Housing, Home Energy Efficiency Programmes Area Based Schemes and the Public Sector Non-domestic Energy Efficiency Framework and Project Development Unit, this strategy clarifies the Programme's focus to the mid-2020s to reduce energy demand in all buildings across Scotland, establishing solutions for switching heating supplies from high to low regrets lower carbon or renewable sources for properties off the mains gas grid. It will also encourage appropriately-sited low carbon district heating, where that is the most low regrets heat decarbonisation technology.

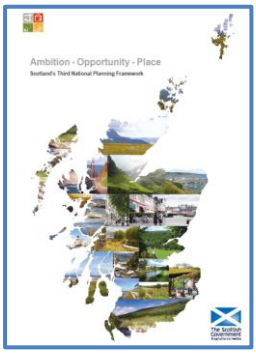
6.3.10 The Housing (Scotland) Act 2001[44] set the first requirement for Scottish Ministers to publish a statement setting out the measures they have taken and intend to take for the purposes of ensuring, so far as reasonably practicable, that persons do not live in fuel poverty. This was first published by the Scottish Executive in 2002 and set out Scotland's definition of fuel poverty, i.e. that a household was fuel poor if energy costs to keep their home sufficiently warm were not less than 10% of their income (informally known as the '10% definition'). Backed by legislation, the statement also set a target to ensure, so far as reasonably practicable, that people are not living in fuel poverty in Scotland by November 2016. A review of the Fuel Poverty Strategy for Scotland is currently ongoing[45] and the Programme plays an integral part of that strategy. Following this review, we are committed to bringing forward a Fuel Poverty Bill in due course which will provide the required regulatory framework for the implementation of the review findings.

6.3.11 National Planning Framework (NPF3)[46] was published alongside Scottish Planning Policy (SPP)[47] in June 2014. These set out context for development planning in Scotland, providing a framework for the spatial development of Scotland as a whole. They focus on four principle themes: a successful, sustainable place; a low carbon place; a

[41] http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32001L0077&from=EN
[42] http://www.gov.scot/Publications/2010/10/07142301/0
[43] http://www.gov.scot/Resource/0052/00529523.pdf
[44] http://www.legislation.gov.uk/asp/2001/10/pdfs/asp_20010010_en.pdf
[45] https://beta.gov.scot/publications/consultation-fuel-poverty-strategy-scotland/pages/3/
[46] http://www.gov.scot/Topics/Built-Environment/planning/National-Planning-Framework
[47] http://www.gov.scot/Topics/Built-Environment/planning/Policy

natural, resilient place; and a connected place; all of which share an overarching theme of sustainability and protecting natural and cultural assets.

6.3.12 NPF3 brought together plans and strategies in economic development, regeneration, energy, environment, climate change, transport and digital infrastructure, to provide a coherent vision of how Scotland should evolve over the next 20 to 30 years. NPF3 is clear that planning must facilitate the transition to a low carbon economy, and should help to deliver the aims of the Scottish Government's low carbon ambitions and the RPP programme. In particular, it noted that the energy sector accounts for a significant share of Scotland's GHG emissions, and highlighted the potential for opportunities in this sector, and others, to contribute towards these aims. The importance of strengthening infrastructure, such as the electricity transmission grid, was also noted alongside the overarching need to protect the natural environment and ensure that natural assets are used sustainably.



6.3.13 Developed alongside NPF3, SPP was based around the same four themes. The SPP sets out the national planning policies for Scotland which reflect Scottish Ministers' priorities for operation of the planning system, and the development and use of land. It also set out policy principles for supporting low carbon transition that are consistent with national objectives and targets, supporting the development of a diverse range of energy generation options including the expansion of renewables and district heating, and reduction in GHG emissions and energy consumption. These policies also set out how the visions presented in NPF3 should be delivered on the ground. The SPP further noted the role of planning in protecting and making efficient use of Scotland's existing resources and environmental assets.

7 Findings of the Assessment

7.1 Introduction

7.1.1 As discussed in Section 2, the assessment of the proposals involved three-stages. A detailed assessment of the individual policies and proposals (Stage 1) was initially undertaken and is set out in appendix C and D. This included an assessment of the milestones included with the proposal. This assessment was based on an assessment of the SEA objectives and criteria set out below (both positive and negative) of each policy and linked to the baseline data contained in Appendix A.

SEA Issues	SEA Objectives	Assessment Criteria
Biodiversity, Flora, Fauna	Conserve, protect and enhance Scotland's diversity of species, habitats and the natural heritage. Protect and enhance of important habitats and connectivity. Maintain and protect populations of European Protected Species, including their functioning habitat	Impact on diversity of species and habitats and their connectivity? Impact on Designated Sites including Natura sites? Protect or enhance green networks?
Soil	Maintain, protect and where possible enhance soil quality, geodiversity and carbon rich soils.	Impact on Carbon Rich Soils, Deep Peat and Priority Peatland Habitats? Impact on the loss of prime agricultural areas (Class 1; 2 and 3.1)? Impact on geologically designated features? Impact on the carbon function of soils?
Water	To protect maintain and where possible and enhance the ecological status of the water environment.	Impact on the water environment? Impact on potable water supply? Potential flood impact?
Population and Human health	Work to eradicate fuel poverty Work to reduce GHG which are harmful to human health Reduce other environmental impacts which are harmful to human health	Impact on fuel poverty Reductions in GHG as a result of the proposal Impact on other environmental factors which impact human health
Air	Protect and improve, where possible, air quality across Scotland	Impact on national and local air quality requirements
Climatic Factors	Contribute to formal targets to reduce Green House Gas Emissions across Scotland	Reductions in GHG as a result of the proposal at both a national and local level
Cultural Heritage	To protect and where appropriate enhance the historic, built and cultural heritage.	Impact on loss of/ adverse impact on Scheduled Monuments and their setting and other archaeological sites? Impact on Historic Gardens and

		Designed Landscapes? Impact on Listed Buildings, Conservation Areas and other buildings of cultural significance?
Material Assets	Promote the sustainable use/reuse of all properties across Scotland to support sustainable development, reduce GHG emissions and make best use of this valuable resource	Impact on natural resources and material assets? Minimise waste? Mitigate impact on material assets?
Landscape	Protect our most scenic areas, reflect the importance of the interaction between people and the land, and aim to enhance areas where landscape qualities have been eroded over time	Impact on townscape features/setting. Impact on Scotland's important landscapes, special qualities and character? Impact on wild land?

7.1.2 The combined environmental effects were then considered (Stage 2)and the findings of this assessment stage are set out in the Summary Table below. The following key has been used:

Effects are positive overall for that environmental topic

Effects are mixed overall for that environmental topic

Effects are negative overall for that environmental topic

7.1.3 The accompanying narrative provides an over-arching and strategic analysis of the likely significant environmental impacts of each proposal. This includes the potential for cumulative and in-combination effects. (Stage 3).

SETTING A LONG TERM STANDARD

Overall Significant Impacts

Population and Human Health	Biodiversity	Cultural heritage
Climatic Factors	Air	Landscape
Material Assets		

Objectives of the Proposal

Improving energy efficiency in all buildings in Scotland

Support our work on eradicating fuel poverty

Reduce greenhouse gas emissions

Provide certainty and a clear direction of travel for building owners and business

Opportunities:

Opportunity to focus on households in fuel poverty who are some of our most vulnerable people

Build on the methodology underlying EPCs which provide a generally well understood model

Phasing in implementation to allow development in supply chain and skills development

Constraints:

Scale of task to target all properties in Scotland

Lack of baseline data on current energy efficiency of non-domestic sector

Effective communication will be required to demonstrate benefits of the proposal.

'Buy in' will be required to realise benefits.

Uncertainty in supply chain to meet early demand if high% take-up

Summary of findings

There is potential for broadly positive environmental effects. In particular, the setting of a long term standard could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in buildings across Scotland, and thus reducing demand for fuel. The proposal aims to set milestones and end dates for compliance (subject to a review of progress) which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population and human health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and human health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**). The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on **material assets**.

There is potential for mixed or adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity** and **air** from construction activities and siting of developments, and visual impacts associated with retrofitting of measures to existing building stock. This is also the case with traditional and culturally significant properties (**cultural heritage**). In the case of the former, specific environmental effects will be considered through the planning process such as Listed Buildings consent, and on a site by site basis, and the use of appropriate construction management measures such as Environmental Management Plans. In the case of the latter, the clarity provided regarding exceptions allows suitable mitigation.

Key findings

The introduction of a long term standard for all properties in Scotland is likely to have overall positive effects in contributing to meeting GHG emissions reduction targets. The extent of these benefits will depend on the level of take up of the measures. Directly linked to this, positive effects are therefore likely to air quality and population and human health.

Adverse effects on biodiversity are possible to be at a local level and will therefore require a local solution

EESSH

Overall Significant Impacts

Population and Human Health	Biodiversity	Cultural heritage
Climatic Factors	Air	Landscape
Material Assets		

Objectives of the Proposal

Improving energy efficiency in all social housing in Scotland

Support our work on eradicating fuel poverty

Reduce greenhouse gas emissions

Provide certainty and a clear direction of travel

Opportunities:

Opportunity to focus on households in fuel poverty who are some of our most vulnerable people

Roll out experience gained from EESSH work already undertaken with some local authorities

Support for local authorities to allow public sector to act as exemplar

Constraints:

On-going concerns regarding some harder to treat properties and works in mixed tenure blocks Budgetary constraints over the life of the project

Requirement for Scottish Government's on-going role to drive this scheme

Summary of findings

There is potential for positive environmental effects. In particular, the setting of a 2032 standard and long term vision for 2040 could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in the social rented sector across Scotland. The proposal aims to set milestones and end dates for implementation which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population and human health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and human health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**). The ability to priortise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. The accelerated timeline for social housing (in comparison to other tenures) is also likely to have **population and human health** benefits, as it will improve the living conditions of those whose homes are affected.

There is potential for mixed or adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity and air** from construction activities and siting of developments, and visual impacts associated with the retrofitting of measures to existing building stock. This is also the case with traditional and culturally significant properties. In the case of the former, specific environmental effects will be considered through the planning process such as Listed Building consent, and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans. In the case of the latter, the clarity provided regarding exceptions allows suitable mitigation.

Key findings

The roll out of the standard for social housing across Scotland is likely to have overall positive effects in contributing to meeting GHG emissions reduction targets. Directly linked to this, positive effects are therefore likely to air quality and population and human health.

Adverse effects on biodiversity are likely to be at a local level and will therefore require a local solution

LHEES

Objectives of the Proposal

Create a localised approach to the implementation of energy efficiency and heat decarbonisation measures on a local authority scale across Scotland

Support our work on eradicating fuel poverty

Reduce greenhouse gas emissions

Provide certainty and a clear direction of travel

Opportunities:

Opportunity to focus on households in fuel poverty who are some of our most vulnerable people

Build on pilots undertaken across Scotland

Create clarity in delivery timelines

Support investment in the Scottish supply chain

Constraints:

Ensuring local authorities have adequate resource

Consistency of approach across different local authorities.

Ensuring local supply chain remain involved and are appropriately skilled.

Effective communication required throughout.

Guarantee that minimum standards apply in terms of work carried out.

Adequate consumer protection framework in place (within context of Consumer Protection as a reserved issue)

Overall Significant Impacts

Population and Human Health	Biodiversity	Cultural heritage
Climatic Factors	Air	Landscape
Material Assets		

Summary of findings

The impact of regulations to require the role out of LHEES is likely to have broadly positive with an acceleration of improvement in energy efficiency across Scotland, with particular focus likely on larger projects. This should result in a reduction in GHG emissions(**climatic factors**) with secondary benefits through improved human health, and air quality.

The roll out of LHEES is likely to have a mixed impact on **material assets** affected by the strategies and the installation of energy efficiency measures is recognised as having an impact on some **biodiversity**, Further, at a local scale, the installation works may have impacts associated with nuisance, including noise, dust, and visual impact. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning.

Similarly, provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of **cultural significance** and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building.

Key findings

The roll out of the requirement for a LHEES is likely to have overall positive effects in contributing to meeting GHG emissions reduction targets.

Positive effects are also likely for population and human health and climatic factors

Adverse effects at a local level will require a local solution

District Heating Regulation

Overall Significant Impacts

Population and Human Health	Biodiversity	Cultural heritage
Climatic Factors	Air	Landscape
Material Assets	Soil	Water

Objectives of the Proposal

Reduce greenhouse gas emissions

Provide certainty and a clear direction of travel

Create a clear regulatory framework to manage the growth of district heating

Opportunities:

Provide clarity in requirements to allow development in supply chain

Confirm Scottish Government support for growth in the district heating sector

Constraints:

Ensuring local authorities have adequate resource

Consistency of approach across different local authorities.

Ensuring local supply chain remain involved and are appropriately skilled.

Effective communication required throughout.

Guarantee that minimum standards apply in terms of work carried out.

Adequate consumer protection framework in place (within context of Consumer Protection as a reserved issue)

Summary of findings

There is potential for broadly positive environmental effects from the creation of a regulation to manage district heating across Scotland. In particular, the creation of a regulatory system and the resulting growth in installation of district heating across new and existing developments in Scotland will reduce reliance on the existing heating supply network which relies on diminishing fossil fuels. Further, this will contribute to further reductions in GHG emissions (**climatic factors**) by installation of improved energy efficient heating systems. Appropriate siting of district heating systems could have local environmental benefits where heat is supplied from a low or zero emission source that replaces fossil fuel generation, with the potential to improve air quality.

The proposal aims to grow this part of the energy generating supply chain, reducing reliance on centralised systems. thus having a likely beneficial impact (**climatic factors, air, population health**). There is also potential for further benefits in improving flexibility of supply through district heating (**material assets, population and health**).

There is potential for adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of district heating network infrastructure such as pipes could result in environmental effects, including impacts to **biodiversity, soil, and material assets** from construction activities and siting of developments.

The long term operation of district heating schemes, at a local level, may also have a mixed impact. Supply of sustainable materials to be used in biomass systems may have negative impacts, and must be sourced sustainably. This may also be the case with those systems using **water** as an operating resource. Specific environmental effects will be considered through the planning process, Environmental Impact Assessment (EIA) and Habitats Regulations Appraisal (HRA) and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans.

Key findings

The regulation of district heating is likely to have overall positive effects in contributing to meeting GHG emissions reduction targets when heat is generated from low or zero emissions sources. Positive effects are also likely for air quality and climatic factors. The reduction in reliance on fossil fuel for heating will have multiple benefits

Adverse effects at a local level will require a local solution

7.2 Summary of Likely Environmental Impacts – Long Term Standards (including social housing - EESSH)

Primary Environmental Effects

7.2.1 The proposal of setting a long term standard for all properties across Scotland is likely to reduce GHG emissions and have positive impacts on climate change objectives. As the basis for this proposal relates directly to improving energy efficiency it is expected to have significant benefits for climatic factors given the contribution energy production and use makes to Scotland's GHG emissions[48].

7.2.2 The proposal aims to set milestones and end dates for compliance (subject to review) which are expected to have direct positive impacts on the take up of energy efficiency measures, and so, for climatic factors, air quality and population and human health.

7.2.3 As part of the wider programme, this proposal in combination with the other parts of the Programme provides a significant opportunity to generate cross-cutting benefits across sectors. For example, investment, regulations and incentives through the Programme as a whole should help to reduce demand for energy and improve energy productivity. This could lead to a significant reduction in GHG emissions across the services, residential and industry sectors.

7.2.4 Localised adverse effects associated with the setting of a standard could be felt by biodiversity and air factors, primarily through construction phases. However the short term nature of these impacts is considered acceptable when compared to the overall benefits achieved.

7.2.5 Direct adverse effects may also result in traditional and culturally significant buildings, but the proposal does seek to identify and recommend suitable measures for this building stock. Further details would also be required on a site by site basis, through normal planning process.

Secondary Environmental Effects

7.2.6 Potentially secondary impacts have been identified from the proposal including further benefits in improving flexibility of supply through energy efficiency measures to meet the standard and reduce reliance on fossil fuel energy sources. The displacement or reduction of energy generated from traditional energy sources, and the provision of warmer, more energy efficient and energy secure housing stock will have positive effects including significant health benefits, and the Programme aims to target those in fuel poverty as a priority[49].

7.3 Summary of Likely Environmental Impacts – LHEES

7.3.1 Primary environmental effects The strategic nature of LHEES to energy efficiency provides an opportunity to maximise benefits that may not be realised by a piecemeal incremental approach. This local approach builds on experience found in recent pilots and has been informed by recent consultation on the approach.

7.3.2 Improving the energy efficiency of Scotland's homes and buildings in the commercial, public and industrial sectors was recognised as a National Infrastructure Priority

[48] https://beta.gov.scot/news/scottish-greenhouse-gas-emissions-2017-06-13/
[49] http://www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_15-40_Good_for_climate_good_for_health.pdf

in 2015[50]. Many of the benefits of a local authority scale approach gives focus to pragmatic installation and investment decisions, which will ensure the achievement of the objectives of the Programme.

7.3.3 At a local level, It is expected that the roll out of LHEES across Scotland is likely to have mixed impacts. In particular the installation of energy efficiency measures is recognised as having an impact on some biodiversity which can be managed or mitigated through licensing processes or site specific environmental management measures.

7.3.4 The installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours.

7.3.5 Further, there is potential for adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to biodiversity and material assets from construction activities and siting of developments. Supply of sustainable materials to be used in biomass systems may also have negative impacts, and must be sourced sustainably. Specific environmental effects will be considered through the planning process, and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans.

Secondary Impacts

7.3.6 As above, benefits are expected in improving flexibility of supply through energy efficiency measures and reduce reliance on fossil fuel energy sources. The displacement or reduction of energy generated from traditional energy sources, and the provision of warmer, more energy efficient and energy secure housing stock will have positive effects including significant health benefits, and the Programme aims to target those in fuel poverty as a priority improving flexibility of supply through energy efficiency measures to meet the standard and reduce reliance on fossil fuel energy sources.

7.4 Summary of Likely Environmental Impacts – District Heating regulation

Primary environmental effects

7.4.1 It is expected that the introduction of regulations to manage district heating will have broadly positive environmental effects. In particular, the creation of a regulatory system and the resulting growth in installation of district heating across new and existing developments in Scotland will reduce reliance on the existing heating supply network which relies on diminishing fossil fuels. Further, this will contribute to further reductions in GHG emissions (climatic factors) by installation of improved energy efficient heating systems and of low and zero emissions heating sources.

7.4.2 There may be some localised adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of district heating network infrastructure such as pipes could result in environmental effects, including impacts to biodiversity, material assets and soil from construction activities and siting of developments. Supply of sustainable materials to be used in biomass systems may also have negative impacts, and must be sourced sustainably. Specific environmental effects will be considered through the planning process and proposed district heating consenting framework, and on a site by site basis, the use of

[50] http://www.gov.scot/Resource/0049/00491180.pdf

appropriate construction management measures such as Environmental Management Plans. It is also noted that, at this level, every opportunity should be made to develop district heating schemes in combination with other major infrastructure projects.

7.4.3 As heat represents over half of all energy use in Scotland, heat efficiency measures will play a significant role in the reduction of energy use. Heat is integral to many industrial processes and there is potential for significant carbon savings from employing technologies and systems that recover excess heat from industrial processes[51].

7.4.4 It could also help to incorporate energy storage within community and local energy generation projects to optimise local energy systems[52]. The delivery of smart local energy systems, focused on local needs should therefore help to optimise demand and increase energy efficiency across the network, and so secondary environmental benefits could be expected.

7.4.5 There is an opportunity to explore the potential deployment of new emerging energy sources and technologies, some of which have the potential to make a significant contribution to reducing GHG emissions. By supporting and exploring opportunities for new energy sources and technologies, including through demonstration projects, the growth of district heating has the potential to aid their future deployment and use, with likely reductions in GHG emissions. These may have mixed impacts on water resources and in particular emerging technology associated with the use of minewater is significant. Whilst embryonic, this uses of underground water resources, both as a low carbon source of heat, and also as a heat store from alternative sources of heat production, for example, heat from waste, are noteworthy. These will require detailed assessment at a project level but this assessment recognises the potential impacts.

Secondary Impacts

7.4.6 District heating projects will have some level of infrastructure requirements, whether for large-scale deployment or for local generation. In some instances, existing infrastructure may be reused. New infrastructure is also likely to be required. There is potential for environmental impacts associated with many such works that will require careful planning and management through applicable consenting regimes.

[51] http://www.gov.scot/Publications/2014/03/7673
[52] https://www.gov.uk/government/publications/electricity-system-assessment-of-future-challenges

7.5 Summary of the Assessment Findings

7.5.1 The following sets out potential cumulative and in-combination effects likely to arise from the proposal. The findings have been informed by the previous stages of the assessment process.

	Potential for positive environmental effects
	Potential for negative environmental effects
	Potential for mixed environmental effects
	Potential for environmental effects has not been identified

Assessment question	LTS	EESSH	LHEES	DH	cumulative	In combination
Will the proposal contribute to meeting Scotland's climate change commitments?						
Will the proposal contribute to the reduction in carbon generated as a result of energy use?						
Is the proposal likely to improve air quality and human health?						
Will the proposal have implications on infrastructure?						
Is the proposal likely to have indirect or secondary environmental effects?						
Can these potential effects be effectively managed, mitigated or enhanced?						
Have alternatives to the proposal been considered in this assessment?						

7.5.2 Regarding the impact the proposals will have on **contributing to meeting Scotland's climate change commitments**, all are expected to make a significant contribution to the reduction in GHG emissions. The proposals will work in combination and in a cumulative way to optimise their effects. For example measures to promote energy efficiency in residential and business sectors will be complemented by work on heating systems, and by work being carried out by local authorities to take a strategic view of emissions and efficiency measures within their geographical boundaries.

7.5.3 Regarding the impact the proposals will have on **reducing carbon generated as a result of energy use**, all are expected to make a contribution to reducing demand for energy through improved efficiency measures. Individually the setting of standards will drive improvements in efficiency in individual properties, setting milestones for compliance. Combined with this, work to promote and regulate district heating will improve efficiencies on a community wide scale, while the role out of LHEES will ensure local authority wide strategic decisions drive larger scale decisions on efficiency and emissions. Measures to promote district wide measures will help displace energy generated from traditional sources, reduce demand and pressure on existing networks and ensure greater flexibility, thus

improving security of supply. In combination improvements in energy efficiency of housing stock, reducing energy demand and consumption and improving the resilience of energy infrastructure will all contribute to this.

7.5.4 Regarding the likely **improvements in air quality and human health** the proposals are likely to have a significant benefit to air quality in Scotland, with resultant benefits for human health. Air pollution often originates from activities that contribute to climate change, notably energy generation, and poor air quality can have implications for human health. Reducing emissions from energy generation is therefore likely to improve the air quality at a local and national level and proposals to promote the decentralisation of energy are likely to have overall benefits. All proposals have, at their heart, an objective to improve energy efficiency and this should be beneficial to human health at a local and national level, and could be particularly significant for vulnerable members of society with existing health complications such as respiratory issues. Further benefits are also likely through increasing energy efficiency in housing stock, making buildings more resilient to predicted effects of climate change

7.5.5 Regarding the likely **impacts of the proposals on infrastructure**, construction activities arising from improvements to existing building fabric may result in short term negative effects, most likely related to nuisance such as noise, dust, vibration, or visual impact. These are, however, likely to be localised and temporary. In many instances any adverse impacts may be mitigated through a combination of appropriate siting and design, local consultation and engagement, and on-site management measures. The overarching ambition of the proposals is to improve energy efficiency at the point of use and to reduce overall energy demand. If widely implemented, this should reduce pressure on existing energy infrastructure and help to optimise the use of energy resources. There will be a need for greater flexibility and appropriate infrastructure to facilitate a transition to a decarbonised energy sector.

7.5.6 Regarding the likely **indirect or secondary environmental effects** resultant from the proposals, there are a number of potential negative impacts that may arise as a result of construction and development work, and physical works to infrastructure. In some circumstances operational activities such as those resulting from noise disturbance arising from heat pumps, may be long term[53]. The installation of energy efficiency measures on existing domestic and non-domestic building stock could also have adverse effects. For example, where this involves work to the fabric of buildings there is potential for impacts on buildings of historic and cultural significance. In some circumstances, this could also have visual, landscape and/or townscape effects. Specific works, such as those on roofs or in roof cavities, may also have the potential for negative effects on biodiversity. Secondary benefits are also likely to arise on a range of environmental topics through the predicted reduction in GHG emissions. Climate change has been identified as a primary pressure on many environmental receptors including water and biodiversity. As such, it is likely that the implementation of the draft Plan and draft Strategy will help to reduce the pressures of a changing climate.

7.5.7 Regarding the means by which **potential effects can be of effectively managed, mitigated or enhanced**, the ambitions of the proposals are to meet Scotland's climate change commitments whilst improving energy efficiency and reduce GHG emissions. They are also likely to have beneficial impacts for adapting to and improving resilience to the predicted effects of climate change. Reducing demand for energy is a key component of both, and if widely implemented, should help to manage Scotland's energy systems more effectively, and reduce the need for additional energy and associated infrastructure. While there will be clear benefits, the potential for adverse environmental effects were also noted. In particular, adverse effects could arise from the development of

[53] http://www.gov.scot/Publications/2014/03/7673

new, or the upgrade of existing infrastructure. The potential for negative impacts on some aspects of the built environment was also noted. In particular, specific impacts will arise from retrofitting older buildings to improve energy efficiency, including undertaking works in roof spaces and attics. Existing mechanisms such as the planning process, EIA, HRA, and regulations relating to the management of protected species, will manage the potential for environmental effects prior to works commencing.

7.5.8 The area based nature of aspects of the Programme such as LHEES will also help to mitigate this potential impact through the consideration of cumulative impacts. This will be particularly relevant in areas that are designated for their cultural heritage. The potential for adverse impacts from the construction and operation of new energy developments will be further managed through the use of appropriate design and construction management measures at the project level. This should include, where appropriate, Environmental Management Plans. Existing regulatory regimes should ensure that any development projects will be subject to appropriate controls, minimising the potential impacts of activities and infrastructure. The assessment also identified a need for consideration to be given to the sources of heat used in district heating systems, and that some technologies can have negative implications at both the point of use and in the supply chain. For example, care should be taken in ensuring that the production of feed stocks for biomass is able to meet demand, and that the sourcing and management of any feedstocks used is undertaken sustainably, and that wherever possible, low or zero emission sources of heat are used.

7.5.9 Regarding the **consideration of alternatives**, a suite of critical success factors have been established for all aspects of the Programme, and all individual proposals and projects are assessed against these to quantify alternatives and score those accordingly. Set out in 5.7, this assessment has refined the options and come to a proposed way forward.

8 Proposals for Monitoring

8.1.1 The importance of monitoring is set out in the Routemap where it is made clear that to ensure we are on track to achieve the Programme vision, aims and objectives we will be monitoring and evaluating the programme throughout its lifetime which will allow us to adapt and flex the programme where necessary. As well as looking at outputs we will be monitoring and measuring outcomes, capturing the impact the programme has on people and communities.

8.1.2 We will be publishing a monitoring and evaluation framework by April 2020 which sets out:

- A comprehensive framework covering both the domestic and non-domestic sectors;
- A range of output and outcome indicators to inform an annual statement of progress, taking account of the Climate Change Plan monitoring framework, monitoring and evaluation requirements for Fuel Poverty as set out in the Fuel Poverty Bill and other appropriate policies; and
- A commitment to regular, multi-year review (anticipated to be every 4 years) and evaluation of the programme, aligned where appropriate with reporting processes for key policy areas such as Fuel Poverty and the Climate Change Plan. This will include the commissioning of external evaluation of key elements of the Programme at key points across the 20 year period.

8.1.3 As part of this work we will be reviewing the available data, identifying where any gaps exist and where we can draw on existing evidence, ensuring we have the most accurate possible baseline for our domestic and non-domestic building stock. We are committed to working with relevant bodies to collect good quality data to support the monitoring of the programme. We will also be engaging with stakeholders on the development of our monitoring and evaluation framework to ensure that it meets a range of needs.

8.1.4 In 2020 we will also publish a baseline setting out the state of the stock against which we will track improvements over the duration of the Programme.

8.1.5 A wide range of existing programmes are also in place at the national and local level aim to monitor environmental status and assess performance against established environmental indicators; many of which may help to inform the monitoring and evaluation work outlined above and this environmental assessment. The Key Scottish Environment Statistics 2016 Report provides information on a wide range of environmental topics and indicators, including indicators for GHG emissions and climate, air quality, land use, water, waste and biodiversity. It also includes key datasets on the state of the environment in Scotland, with an emphasis on the trends over time where possible[54].

8.1.6 Recommendations on the setting of annual targets and annual monitoring and reporting of Scotland's overall GHG emission abatement is undertaken by the Committee on Climate Change[55]. This process involves reporting emissions trends and performance against these targets at both the sectoral and national levels.

8.1.7 Changes to national levels of biodiversity are also monitored, with a focus on the status of valued and designated biodiversity features, for example, Special Areas of Conservation and Special Protected Areas[56]. Additionally, the monitoring and reporting of

[54] http://www.gov.scot/Publications/2016/10/7565

[55] https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/carbon-budgets-and-targets/

[56] http://gateway.snh.gov.uk/sitelink/index.jsp

air quality currently takes place at 95 sites located in urban areas throughout Scotland[57], and key performance indicators from the development of the Cleaner Air for Scotland: The Road to a Healthier Future[58] are also monitored. Many of these programmes will also help to identify effects arising from the delivery of the Programme and its projects which have been covered in this assessment.

[57] http://www.scottishairquality.co.uk/
[58] http://www.gov.scot/Resource/0048/00488493.pdf

9 Conclusions and Recommendations

9.1.1 The proposals are likely to lead to significant GHG emissions reductions and the SEA supports the view that the underpinning objectives of these proposals will be met in this regard. The impacts on climate factors assessed in this SEA are all positive, and this is particularly true when considering the long term impact on demands on energy from traditional and finite fossil fuel.

9.1.2 Significant benefits in terms of air quality and population and human health were identified; in particular, through proposals which make a direct impact on the living standards of the population. The SEA notes the particular focus on those in fuel poverty and the likely positive impacts.

9.1.3 The SEA supports the potential secondary impacts associated with increased flexibility of supply through energy efficiency measures, and at a national level this will make a positive contribution to the Programme aims to target GHG emissions and fuel poverty.

9.1.4 The SEA identified that consideration will need to be given at a localised level to ensure that appropriate measures are in place to mitigate any potential negative impacts. Having identified impacts as mixed since they have the potential to be both positive and negative, mitigation is important to ensure appropriate impacts. The use of environmental management plans is identified as a solution to this.

9.1.5 The improved clarity provided by the implementation of the proposals, particularly in regard to the speed of implementation for improvements is recognised by the SEA, and whilst this may have a neutral effect, it does provide a clear statement of intent, which will support and underpin the primary effects.

9.1.6 The Programme as a whole recognises the importance of robust baseline and monitoring to ascertain the effectiveness of proposals, and this will be done through the monitoring and evaluation framework which is identified as a formal commitment in the Routemap. This assessment recognises that framework and the commitment to baseline data. As such it concludes this as the most appropriate way to monitor the environmental impacts of the proposals considered here.

10 Next Steps

10.1 Notes for Respondents

10.1.1 Public views and comments are invited on the environmental impacts of the proposed setting of a long terms standard, energy efficiency standards for social housing, Local Heat & Energy Efficiency strategies (LHEES) and the regulation of district and communal heating as set out in this Environmental Report. Should a respondent wish to make a joint response on the Environmental Report for some, or all, of these proposals, we ask that respondents clearly indicate to which proposal the comments relate to.

Providing comments on this Environmental Report

Respondents are asked to submit responses on the Environmental Report by **27th July 2018** to

Energy Efficient Scotland Consultation

Energy Efficient Scotland Programme Management Office

Scottish Government

1H South

Victoria Quay

Edinburgh EH6 6QQ

Email: EnergyEfficientScotland@gov.scot.

10.1.2 Respondents may find the following questions helpful to provide a focus for their responses on this Environmental Report. Please note that responses do not need to be confined to these questions, and more general comments on this Environmental Report, and the proposals are also invited.

What are your views on the accuracy and scope of the information used to describe the SEA environmental baseline set out in the Environmental Report? (Please give details of additional relevant sources)

What are your views on the predicted environmental effects as set out in the Environmental Report?

What are your views on the findings of the SEA, and the proposals for mitigation and monitoring of the environmental effects set out in the Environmental Report?

10.1.3 The responses received on this Environmental Report will be collated, analysed and reported. Key messages and findings of the responses received will be taken into account in the finalisation of each of the proposals.

10.1.4 Post-adoption SEA Statements will be prepared and published for each proposal. These statements will reflect on the findings of the assessment and consultation, and will explain how the issues raised have been considered and addressed in the preparation of the finalised proposals.

10.2 Next steps for the Programme

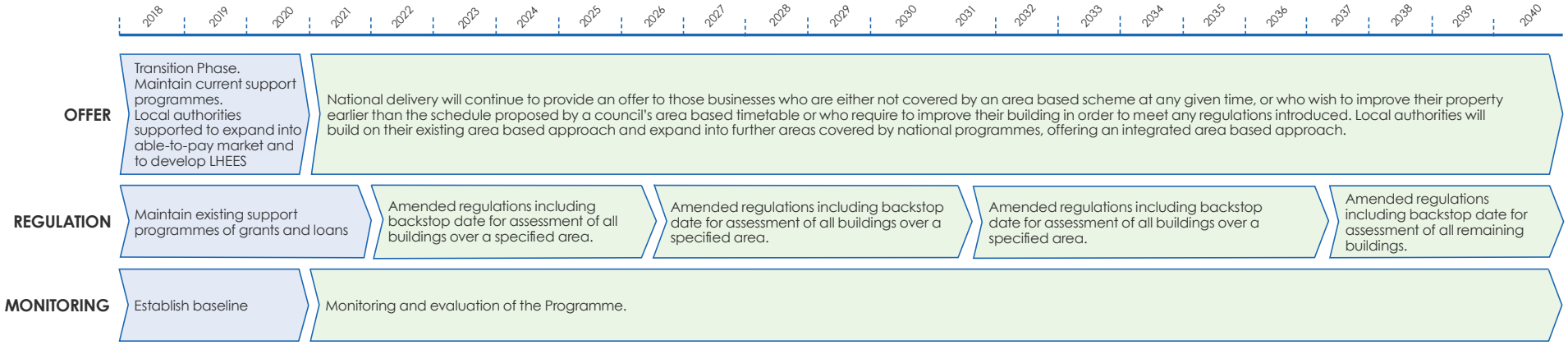
10.2.1 Details of the timeline for the development of future projects under the banner of the Programme is set out in the Routemap. Aspects of these projects will require SEA and screening will therefore be undertaken at the earliest opportunity to assess the requirements.

10.2.2 A summary for each sector is as follows:

NON-DOMESTIC

	• Transition	• General	• Advice	• Delivery		• Finance	• Service
OFFER	In the Transition Phase we will expand current local delivery programmes into able-to-pay households and businesses, drawing on national advice and financial support.		The foundation of the Programme offer is that all businesses will be able to access good quality, independent advice and information on improving the energy efficiency of their building(s) and reducing their fuel bills.	*National Delivery* - continue to be offered to those businesses who are either not covered by an area based scheme at any given time, or who wish to improve their property earlier than backstop date.	*Local authorities* expand their current approach to delivery by developing a Local Heat and Energy Efficiency Strategy (LHEES) setting out a costed delivery plan for its area.	Subsidise cost of interest free loans for SME sector. As non-domestic baseline developed there is potential to consider a more targeted approach to certain businesses (in terms of size or sector). Large businesses and public sector have ready access to finance resources.	
REGULATION	The scenario proposes the use of building floor area to bring a roughly equal proportion of buildings under regulation within a five yearly review of regulations.	The Assessment of Energy Performance of Non-domestic Buildings (Scotland) Regulations 2016 introduced a requirement for owners of larger non-domestic buildings (>1,000 m²) to assess and improve the emissions and energy performance of their buildings. The requirement is triggered by sale or rental.	The output of an assessment is an 'Action Plan' that records both the improvement targets and the measures that will be undertaken to meet them, based upon advice from a registered Advisor.				Energy and emissions improvement targets will be set at a level that will pay back investment over an appropriate timescale. This will reinforce the message that 'simple improvements make sound business sense'.

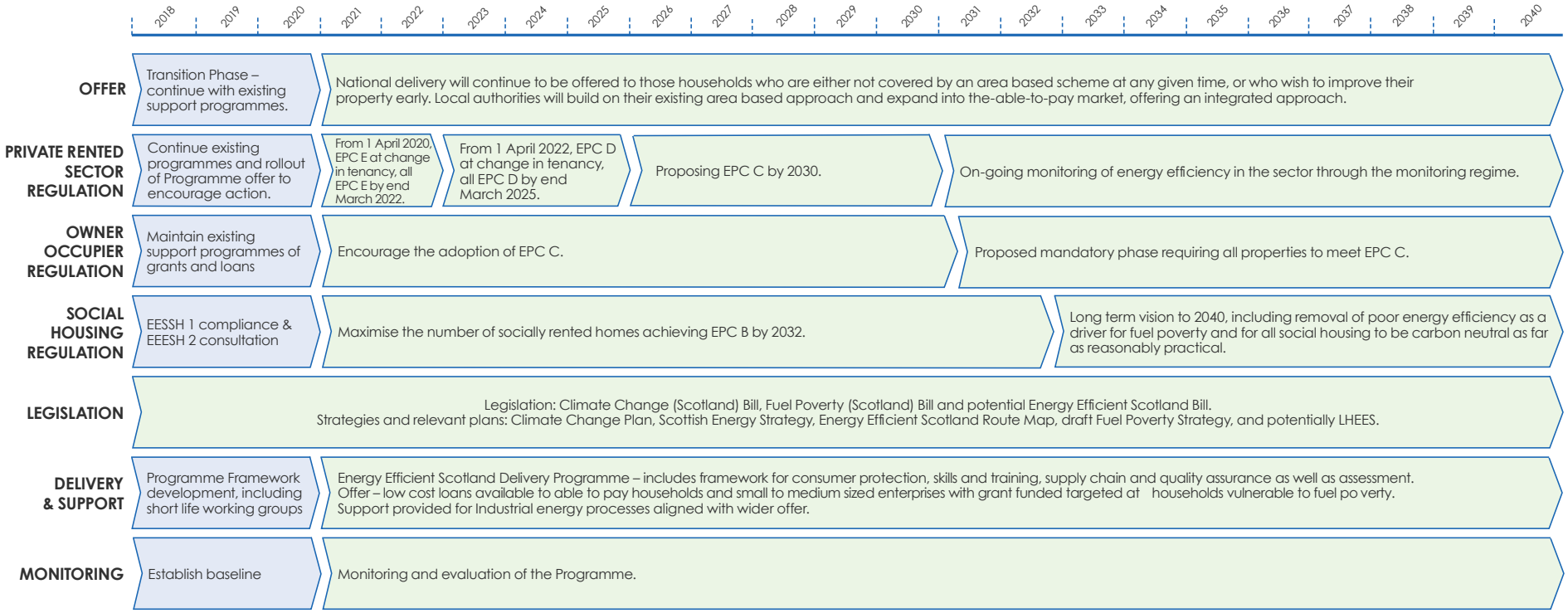
NON DOMESTIC PROGRAMME OVERVIEW



DOMESTIC

	• Transition	• General	• Advice	• Delivery		• Finance	• Service
OFFER	In the Transition Phase we will expand current local delivery programmes into able-to-pay households and businesses, drawing on national advice and financial support. The two year programme will incrementally offer local authorities greater opportunities to plan and deliver integrated energy efficiency projects.	The Programme offer will consist of a universal end-to-end offer made by either a local authority or the Scottish Government.	The foundation of the Programme offer is that all households will be able to access good quality, independent advice and information on improving the energy efficiency of their property and reducing their fuel bills.	*Tackling fuel poverty* – Area based schemes and Warmer Homes Scotland. *National delivery* - continue to be offered to provide those households who are either not covered by an area based scheme at any given time, or who wish to improve their property earlier than any proposed backstop date.	*Local delivery* - Local authorities expand their current approach to delivery by developing a Local Heat and Energy Efficiency Strategy (LHEES) setting out a costed delivery plan for its area.	A mixture of grant and loan funding across different tenure and sectors to tackle fuel poverty and enable achievement of standards.	The Programme customers should be offered a consistent, quality level of service at each stage of the process. Independent advice will be the bedrock, advising property owners on the standards they will be expected to achieve, deadlines, trigger points, programmes and funding.

DOMESTIC PROGRAMME SUMMARY



Appendix A - Relevant Environmental Protection Objectives and Environmental Baseline Information

Overview of Environmental Protection Objectives

A number of environmental protection objectives are detailed within existing legislation, policies, strategies and plans. In addition to forming the context for the Programme, these also form the context for this Strategic Environmental Assessment (SEA).

For each environmental topic area scoped into the assessment, an overview of relevant existing environmental protection objectives has been developed. This information is set out in the following sections of this Appendix.

Developing the Environmental Baseline

Schedule 3 of the Environmental Assessment (Scotland) Act 2005 (the 2005 Act) requires that the following be identified when undertaking an SEA:

- Relevant aspects of the current state of the environment and its likely evolution without implementation of the plan or programme.
- Environmental characteristics of areas likely to be affected.
- Relevant existing environmental problems.
- Relevant environmental protection objectives at the international, European or national level.

Biodiversity, Flora and Fauna

SEA Objectives

Conserve, protect and enhance Scotland's diversity of species, habitats and natural heritage

Protect and enhance important habitats

Maintain and protect populations of protected species including their functioning habitat

Overview of Environmental Protection Objectives

Nature is essential for human life and provides us with water, clean air, food and raw materials. Crops rely on insect pollination and the complex biological processes that create soil. Enjoying nature also improves our health and wellbeing. All these benefits, sometimes known as ecosystem services depend on a healthy environment. If we are to look after nature we must work with nature across all sectors as all parts of nature are connected. Following an ecosystems approach means understanding the connections and taking account of the ecosystem services in how we manage nature.[59]

Existing environmental protection objectives relating to the protection of biodiversity, flora and fauna are set out through legislation and policy at the international, European, and national levels. These are largely aimed at protecting habitats and species from damage and disturbance; principally through the identification and conservation of areas of particular value. The policies define a hierarchy of protection and include a range of international conventions, including the Aichi Targets for 2020[60] and the Convention on Biological Diversity (CBD)[61] which came into force in 1993 and has at its heart 3 main objectives:

- The conservation of biological diversity;
- The sustainable use of the components of biological diversity;
- The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

At European level, the Natura 2000 network of sites affords protection to key natural assets under the European Commission (EC) Habitats and Birds Directives[62,63]; both of which have been transposed into UK and Scottish regulations. The Natura 2000 network is made up of Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The majority of SPAs and SACs are also underpinned by Site of Special Scientific Interest (SSSI) legislation[64].

The designation of European protected species and identification of species and habitats as being the most threatened and requiring conservation action in the UK also demonstrates the prioritisation of conservation ambitions at European and national levels. The 2020 Challenge for Scotland's Biodiversity[65] is Scotland's response to the 20 Aichi Targets set by the United Nations Convention on Biological Diversity, and the European Union's Biodiversity Strategy for 2020. The 2020 Challenge supplements the 2004 Scottish Biodiversity Strategy[66] and focuses

[59] https://www.nature.scot/professional-advice/land-and-sea-management
[60] https://www.cbd.int/sp/targets/default.shtml
[61] https://www.cbd.int/convention/text/
[62] http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm
[63] http://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm
[64] http://www.gov.scot/Topics/Environment/Wildlife-Habitats/protectedareas/NATURA
[65] http://www.scotland.gov.uk/Publications/2013/06/5538
[66] http://www.scotland.gov.uk/Publications/2004/05/19366/37239

on the importance of healthy ecosystems and an outcome that "Scotland's ecosystems are restored to good ecological health so that they provide robust ecosystem services and build on our natural capital".

Beyond site and species designations there are also longer term aspirations for enhancing biodiversity, improving landscape-scale ecological networks and addressing the impacts of climate change on the natural environment.

Current Environmental Baseline

Scotland's protected areas included 239 SACs, 153 SPAs, 51 Ramsar sites and 2 Biosphere reserves, amongst other internationally designated sites. There are further national level designations such as 1,423 SSSIs, 2 National Parks and a network of Marine Protected Areas (MPAs) consisting of more than 180 designated areas[67].

The UK Biodiversity Action Plan (BAP) identified 39 priority habitats and 197 priority species either occurring, or known to have occurred until recently, in Scotland[68]. By March 2017, 80.3 % of natural features on nationally protected nature sites were reported as being in a "favourable" condition; a decrease of 0.1% from 2016 and an increase of 4.3% from 76.0 in 2007[69].

Areas of biodiversity value are not only contained within this network of designated sites. Many undesignated areas of Scotland also contain a wide range of habitats and species that have important functions and roles. For example, urban greenspace such as public and private gardens, parks, woodlands, recreational grounds, green corridors, allotments and community growing spaces can provide habitats and ecosystems which are valuable to wildlife[70].

While there are a wide range of pressures on biodiversity, climate change in particular has the potential to greatly impact on biodiversity on a global scale[71]. The establishment and spread of invasive non-native species are also a known pressure on local biodiversity, and one that is expected to be exacerbated by a changing climate[72]. Indirect impacts may also arise through climate change adaptation and the action taken in sectors such as agriculture, forestry, planning, water and coastal management in the face of a changing climate[73]. Habitat change, due mainly to increased and more intensive land management, urban development, pollution, nutrient enrichment, and over exploitation of natural resources are other known pressures.

At a local level, it is recognised that the installation of energy efficiency technologies has the potential to disturb some species, particularly those using roofs and wall cavities to nest or shelter.

Bats are commonly found in buildings, often unknown to residents and users. All bats found in Scotland are classed as European Protected Species and are fully protected under the Habitats Regulations. Licences[74] are available to allow specified people to carry out actions that could otherwise constitute an offence, if installers find signs that indicate the presence of bats, work must be halted and a licence obtained from SNH which allows actions to be carried out in relation to this protected species that might otherwise be against the law.

[67] http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/international-designations/
[68] http://www.gov.scot/Topics/Statistics/Browse/Environment/TrendBAP
[69] http://www.gov.scot/About/Performance/scotPerforms/indicator/naturesites
[70] http://www.snh.gov.uk/about-scotlands-nature/habitats-and-ecosystems/greenspaces-and-gardens/
[71] http://www.cbd.int/climate/intro.shtml
[72] http://www.biodiversityscotland.gov.uk/biodiversity/pressures/
[73] http://www.academia.edu/27987626/MONARCH_Modelling_Natural_Resource_Responses_to_Climate_Change_a_synthesis_for_biodiversity_conservation
[74] https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/licensing/species-licensing-z-guide/bats-and-licensing

Occasionally pine martens can use houses (generally the roof-space) as a den, although they generally prefer native woodlands, conifer plantations and rocky hillsides. Whilst a licence is not necessarily required, this can change if young are present. [75]

Energy efficiency measures may also impact certain species of bird, particularly their nest sites. No licensing process exists for their disturbance and building owners must therefore take responsibility to ensure action is taken to limit any impact, including carrying out work outside breeding seasons.

In the assessment of impacts from the proposals on biodiversity, the broader scale impacts at a national level must be considered in conjunction with the localised impacts on particular species. The means by which adequate protect exists, or means of mitigation must also be assessed.

Population and Human Health

SEA Objectives

Work to eradicate fuel poverty

Work to reduce GHG which are harmful to human health

Reduce other environmental impacts which are harmful to human health

Overview of Environmental Protection Objectives

Many existing environmental protection objectives are relevant to population and human health, either directly or indirectly. For example, the Air Quality Standards (Scotland) Regulations 2010[76], the Air Quality (Scotland) Regulations 2000[77], the Air Quality (Scotland) Amendment Regulations 2002 and the Air Quality (Scotland) Amendment Regulations 2016[78] help set out current objectives and requirements for air quality with clear relevance for human health. Protection is also afforded through existing legislation against noise and vibration nuisance at the both the European level through the Environmental Noise Directive (2002/49/EC)[79] and national level through regulations such as the Environmental Noise (Scotland) Regulations 2006[80].

The Pollution Prevention and Control (Scotland) Regulations 2012[81] (PPC Regulations) also seek to provide protection for human health. The PPC Regulations introduce a consistent and integrated approach to environmental protection to ensure that industrial activities that may have a significant impact on the environment are strictly regulated. The regulations were designed to eliminate or minimise emissions to air, water and land and extended pollution controls to previously unregulated sectors.

[75] https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/licensing/species-licensing-z-guide/pine-martens-and-licensing
[76] http://www.legislation.gov.uk/ssi/2010/204/pdfs/ssi_20100204_en.pdf
[77] http://www.legislation.gov.uk/ssi/2000/97/contents/made
[78] http://www.legislation.gov.uk/sdsi/2016/9780111030837/contents
[79] http://ec.europa.eu/environment/noise/directive_en.htm
[80] http://www.legislation.gov.uk/ssi/2006/465/made
[81] http://www.gov.scot/Topics/Environment/waste-and-pollution/Pollution-1/Industrial-Pollution/PPC

Current Environmental Baseline

The estimated **population** of Scotland in 2016 was 5.40 million, the highest ever and an increase of over 31,700 from the previous year[82]. Projections forecast that the population will continue to rise to around 5.7 million in 2026[83].

The Scottish Index of Multiple Deprivation ranks small areas (data zones) in Scotland from the most deprived to the least deprived. It analyses data from a number of indicators across the domains of income, employment, health, education, skills and training, housing, geographic access and crime. Key findings from the 2016 Index[84] show that 14 areas have been consistently among the 5% most deprived in Scotland since the 2004 Index. Of these, half were in located in Glasgow City with a further four located in Inverclyde, Renfrewshire, North Lanarkshire and East Ayrshire. Eleven council areas now have a larger share of the 20% most deprived data zones in Scotland compared to four years ago, with the largest increases observed in West Dunbartonshire, Midlothian, North Ayrshire and South Ayrshire.

In 2015[85] **fuel poverty** declined by about 4% compared to 2014. 30.7% or around 748,000 households were fuel poor and 8.3% (or 203,000 households) were living in extreme fuel poverty. This is a reduction in 97,000 households compared to 2014 when 34.9% or 845,000 households were fuel poor.

Work to eradicate fuel poverty is an directly linked part of the Scottish Government's work to improve housing standards, and the results of a recent consultation on a draft fuel poverty strategy[86] are currently being assessed to inform future policy direction.

Transport accounts for just under a quarter of Scotland's greenhouse gas emissions under the definition set out in the Climate Change (Scotland) Act. Road transport makes up 72% of those emissions. For the first time, in the most recent statistics there was a 70% increase (totalling 1050 vehicles) in the number of ultra-low emission vehicles registers in Scotland compared to the corresponding period in 2014[87].

In addition to helping to reduce GHG emissions, active travel such as cycling or walking, can provide access to the outdoors with additional benefits for physical and mental health and well-being, including reducing obesity and stress. The Scottish Government's Cycling Action Plan[88] commits to drive forward active travel and seek to reduce car use for local trips.

Flooding can have significant environmental impacts and also affect people, communities and businesses. When floods occur, they disrupt day-to-day lives and their impacts can be long lasting, and climate change is expected to increase the risk of flooding in coming years[89].

The potential risks and benefits of climate change on population and health will not be evenly spread. Pockets of dense urban development, for example, will be more at risk of surface water flooding and summer heat stress. In addition, the effects to human health from climate change may have the greatest impact on vulnerable people. The negative health effects are likely to be disproportionately severe in areas of high deprivation because of the ability of individuals and communities to prepare, respond and recover[90].

In the assessment of impacts from the proposals on the population and on human health, the broader scale impacts at a national level must be considered in conjunction with the localised

[82] https://www.nrscotland.gov.uk/files//statistics/nrs-visual/mid-year-16/16mype-cahb-info.pdf
[83] https://www.nrscotland.gov.uk/files//statistics/nrs-visual/prog-pop-16/pop-proj-2016-scot-nat-pop-pro-info.pdf
[84] http://www.gov.scot/Resource/0050/00504809.pdf
[85] http://www.gov.scot/Resource/0051/00511081.pdf
[86] https://consult.gov.scot/better-homes-division/fuel-poverty/?_ga=2.140353200.2010583576.1519313269-192555388.1498729915
[87] https://www.transport.gov.scot/publication/scottish-transport-statistics-no-35-2016-edition/SCT01171871341-16
[88] https://www.transport.gov.scot/media/10311/transport-scotland-policy-cycling-action-plan-for-scotland-january-2017.pdf
[89] https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/
[90] http://www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_12-26rev.pdf

impacts as a result of project level installations and interventions. The means by which adequate protect exists, or means of mitigation must also be assessed.

Soil

SEA Objectives

Maintain, protect and, where possible, enhance soil quality, geodiversity and carbon rich soils

Overview of Environmental Protection Objectives

Soil is a non-renewable resource and is fundamentally one of Scotland's most important assets[91]. It supports a wide range of natural processes and underpins much of our natural environment, and through this important role, helps to provide a wide range of environmental, economic and societal benefits. For example, soil provides the basis for food, controls and regulates environmental interactions such as regulating water flow and quality and provides a platform for buildings and roads[92].

There is an intrinsic relationship between soil health and other environmental topics; biodiversity, water and air quality in particular. For example, soil erosion is one of the main contributors to diffuse water pollution[93].

Current Environmental Baseline

Soils play a significant role in terms of storing carbon and therefore help to regulate GHG emissions. It is estimated that Scotland's soils contain 3,200 million tonnes of carbon, making up over 50% of the UK's soil carbon[94]. The importance of soil as a resource is recognised internationally through the European Commission's Thematic Strategy for Soil Protection[95]. Nationally, the protection of prime quality agricultural land and peatlands is set out in the Scottish Soil Framework[96], Scotland's National Peatland Plan[97] and the Scottish Government's Draft Peatland and Energy Policy Statement[98]

Geological sites receive protection through the designation of geological Sites of Special Scientific Interest at the national level and at the international recognition through establishment of a network of Geoparks[99].

Peatlands are of particular importance for mitigating climate change by acting as carbon sinks'. These important areas store carbon in peat deposits and continually sequester new carbon in peat-forming vegetation. They are particularly abundant in Scotland, occupying around 23% of the land area[100], and extend over large areas of the Scottish uplands and extensively in the north and west of the country in areas with gentle slopes and poor drainage. As with all soils, peats are at risk from land use change and the effects of climate change, and

[91] http://www.scotland.gov.uk/publications/2006/09/21115639/7
[92] http://www.scotland.gov.uk/Publications/2009/05/20145602/0
[93] https://www.sepa.org.uk/environment/land/soil/#effect
[94] http://soils.environment.gov.scot/soils-in-scotland/state-of-scotlands-soils/
[95] http://ec.europa.eu/environment/soil/three_en.htm
[96] http://www.gov.scot/Publications/2009/05/20145602/0
[97] https://www.nature.scot/sites/default/files/2017-07/A1697542%20-%20150730%20-%20peatland_plan.pdf
[98] http://www.gov.scot/Resource/0050/00502389.pdf
[99] https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/international-designations/geopark
[100] https://www.sepa.org.uk/media/138741/state-of-soil-report-final.pdf

their loss or degradation (and the associated loss of carbon) has the potential to be a significant contributor to Scotland's GHG emissions[101].

While Scotland's soils are considered to generally be in good health, there are a range of pressures on them. Climate change and loss of organic matter pose the most significant threat to Scottish soils, with both likely to affect soil function, including loss of soil carbon. The loss of valued soils in particular has the potential for national impacts which will be difficult to reverse. In the case of GHG emissions, impacts are expected to be felt globally[102]. As such, the management and use of these resources can affect the amount of CO_2 that is held or released[103].

In the assessment of impacts from the proposals on soil and goediversity, the broader scale impacts at a national level must be considered in conjunction with the localised impacts as a result of project level installations. The means by which adequate protect exists, or means of mitigation must also be assessed.

Water

SEA Objectives

Protect, maintain and, where possible, enhance the ecological status of the water environment

Overview of Environmental Protection Objectives

Objectives relating to the condition of all water bodies are set through the Water Framework Directive[104], which governs objectives for rivers, lochs, transitional waters, coastal waters and groundwater resources. The Directive sets out the requirement for an assessment of both chemical and ecological status, alongside the requirement to consider the status of biodiversity as an indicator in determining water quality.

These objectives are set in the Scottish context in a range of water, coastal and marine policies. Scotland's River Basin Management Plans[105] aim to improve the overall condition of water bodies. The protection of Scotland's water resources has also been translated through the establishment of legislation and regulations such as the Water Environment and Water Services (Scotland) Act 2003[106] and the Water Environment (Controlled Activities) (Scotland) Regulations 2011[107] . These complement the role of others such as the Pollution Prevention and Control (Scotland) Regulations 2012[108], developed to specifically control pollution relating to industry discharges.

The Flood Risk Management (Scotland) Act 2009[109] provides for the management of flood risk, and translates the EU Floods Directive[110] into the national context.

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[101] http://www.hutton.ac.uk/sites/default/files/files/publications/Ecosystem%20Services_web.pdf
[102] http://www.gov.scot/Publications/2009/05/20145602/0
[103] https://royalsociety.org/~/media/Royal_Society_Content/policy/publications/2001/9996.pdf
[104] http://ec.europa.eu/environment/water/water-framework/index_en.html
[105] https://www.sepa.org.uk/environment/water/river-basin-management-planning/the-current-plans/
[106] http://www.legislation.gov.uk/asp/2003/3/contents
[107] http://www.legislation.gov.uk/ssi/2011/209/contents/made
[108] http://www.legislation.gov.uk/ssi/2012/360/contents/made
[109] http://www.legislation.gov.uk/asp/2009/6/contents
[110] http://ec.europa.eu/environment/water/flood_risk/

From a broader perspective, at the heart of Land Use Strategy[111] is the need for responsible stewardship of Scotland's natural resources delivering more benefits to Scotland's people.

Water quantity is also relevant to the assessment as the abstraction of water can have impacts on geology, habitats, wildlife and biodiversity[112].

Current Environmental Baseline

Scotland's water resources help to support health and prosperity through the provision of potable water for drinking and domestic use, and as a resource used by sectors such as agriculture, aquaculture and industry. These important resources also support a rich diversity of habitats and species, play a key role in attracting tourism, and support a wide range of recreation activities.

Scotland's water resources are generally considered to be in good condition. There have been significant reductions in pollution over the last 25 years and in 2016, 64% of Scotland's groundwater and surface water bodies were classified as being in good or excellent condition[113]. However, rivers across Scotland's central belt and east coast in particular, require additional work to achieve Scotland's overarching target of all water bodies achieving 'good or better' for overall status[114]. Similarly, the overall status of 97% of Scottish coastal waters is 'high' or 'good' with only 3% rated as 'moderate'[115].

The River Basin Management Plan for the Scotland river basin district 2015 – 2027[116] is Scotland's route map for protecting and improving the water environment in Scotland's river basin districts. Monitoring for the Plan shows that 66% of water bodies are currently in good or better condition with a further 22% expected to achieve good status by 2027. Some 83% of protected areas are currently classed as being in good or better condition with a further 16% expected to achieve good status by 2027[117].

Regarding water quantity, between 2002 and 2009, and between 2010 and 2015 estimated raw water abstractions have decreased. Between 2004/05 and 2015/16 treated water produced also fell to a new of 1,780 Ml/d. The decrease in treated water is almost entirely due to a reduction in leakage. The increase in domestic water consumption partly reflects an increase in the number of households and the decrease in non-domestic water consumption partly reflects the introduction of the market changes to assist customers[118].

Increasing information is being gathered regarding mine water which captures geothermal energy from old coal mines across the central belt. This low carbon resource could be used as a heat source, and is of particular relevance when considering district heating projects. Whilst still embryonic in terms of baseline data, studies do point to the potential of this resource, and the opportunity therefore presents itself through this assessment to highlight the potential which exists[119] both as a heat source and also heat storage.

In the assessment of impacts from the proposals on water, the broader scale impacts at a national level must be considered in conjunction with the localised impacts as a result of, in particular project level installations such as water sourced heating systems which could have

[111] http://www.gov.scot/Resource/0050/00505253.pdf
[112] http://www.gov.scot/Resource/0050/00508344.pdf
[113] https://www.sepa.org.uk/media/320703/state-of-scotlands-water-environment-summary-report.pdf
[114] https://www.environment.gov.scot/media/1172/water.pdf
[115] https://www.environment.gov.scot/media/1174/water-coastal-waters.pdf
[116] https://www.sepa.org.uk/environment/water/river-basin-management-planning/the-current-plans/
[117] https://www.sepa.org.uk/media/163445/the-river-basin-management-plan-for-the-scotland-river-basin-district-2015-2027.pdf
[118] http://www.gov.scot/Resource/0050/00508344.pdf
[119] https://www.geothermal-energy.org/pdf/IGAstandard/WGC/2005/0254.pdf

an impact through water extraction and heat extraction, or increased or retained heat in groundwater The means by which adequate protect exists, or means of mitigation must also be assessed.

Landscape and Visual Impact

SEA Objectives

Protect our most scenic areas, reflect the importance of the interaction between people and the land, and aim to enhance areas where landscape qualities have been eroded over time

Overview of Environmental Protection Objectives

The EC Landscape Convention[120] lays the foundation for landscape objectives and programmes. The establishment of key national programmes including the National Scenic Areas (NSA) Programme[121] demonstrate a continuing commitment to protect the special qualities of nationally important landscapes and seascapes. The protection and enhancement of Scotland's landscapes are set out at the national level in SPP[122] and are also referenced in relation to several national developments and under a natural, resilient place in NPF3[123].

SNH has undertaken research on areas which are viewed as wild land[124]. This has been based on four attributes: perceived naturalness of land cover; ruggedness of the terrain; remoteness from public roads or ferries; and lack of buildings, roads, pylons and modern artefacts. Areas with stronger wild land characteristics are more commonly found in the north and west, and in particularly areas of higher ground; although additional areas of wild land are present in other areas of Scotland. The SPP reflects and protects areas of wild land identified in the SNH 2014 map of wild land areas from inappropriate development.

Current Environmental Baseline

Over 13% of Scotland's land area has been classified as a NSA, recognised for their outstanding scenery and regarded as representing Scotland's finest landscapes. These areas are located predominantly across the north west of Scotland, and are largely focused on upland and coastal landscapes. However, they also include other features including lochs, estuaries and river valleys[125].

Many local authorities have also developed local designations to identify valued landscapes, seascapes and townscapes considered important at the local or regional level. These areas have largely been designated for conservation purposes and protection from inappropriate development[126].

Land use change and intensification present a direct man-made pressure to many landscapes and seascapes, particularly the potential to significantly influence their character. Incremental and on-going development such as infrastructure projects, housing, expansion of towns and

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120120 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/236096/8413.pdf
121 https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/national-designations/national-scenic-areas
122 http://www.gov.scot/Topics/Built-Environment/planning/Policy
123 http://www.gov.scot/Topics/Built-Environment/planning/National-Planning-Framework
124 https://www.nature.scot/professional-advice/landscape-change/landscape-policy-and-guidance/landscape-policy-wild-land
125 https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/national-designations/national-scenic-areas
126 https://www.nature.scot/professional-advice/safeguarding-protected-areas-and-species/protected-areas/local-designations

villages, and renewable energy schemes are examples of changes that can take place of over a period of decades.

Built development such as house building can have significant impacts on Scotland's urban and rural landscapes, the design of which can have a direct impact on both energy efficiency and contribute to the enhancement of the local environment, providing attractive and healthy places to live[127]. Attractive, accessible landscapes, including green spaces in urban environments, invite and encourage physical activity.

As referenced above priority should be given to refurbishment of the existing built stock over demolition[128] in an effort to minimise the need for new development, save the need for energy locked in building materials and construction, maximise the use of existing infrastructure and maximise the use of energy embodied within that stock.

Air

SEA Objectives

Protect and improve, where possible, air quality across Scotland

Overview of Environmental Protection Objectives

Scotland's air quality environmental protection objectives are largely derived from the EC Air Quality Directive (2008/50/EC)[129] and the 4th Air Quality Daughter Directive (2004/107/EC)[130], via the Air Quality Standards (Scotland) Regulations 2010[131] which transposes these Directives into the Scottish context. There are also domestic objectives as part of the Local Air Quality Management system set under the Environment Act 1995 and associated regulations[132]. These objectives are largely aimed at reducing air emissions that are potentially harmful to human health and the environment, and together they set out the requirement for monitoring with a particular focus on areas where air pollution is concentrated.

Scotland's Pollution Prevention and Control (PPC) Regulations (2012)[133] allow for the regulation and monitoring of certain industrial activities in Scotland that can generate airborne pollution. Together with the Air Quality Standards (Scotland) Regulations 2010[134], the PPC Regulations enable regulators to monitor, manage and, ultimately, improve Scottish air quality. It also sets a requirement for monitoring of air quality with a particular focus on areas where air pollution is concentrated and seeks to identify the sources.

The Clean Air Act 1993[135] 1993. controls emissions of dark smoke, smoke, grit, dust, fumes from domestic, commercial and industrial premises and emissions from other activities which fall outside the PCC system. This legislation and changes in fuel usage over the past 30 years

[127] https://www.nature.scot/professional-advice/planning-and-development/general-advice-planners-and-developers/planning-and-development-landscape
[128] http://www.rtpi.org.uk/media/6308/Sustainable-Energy-in-the-Built-Environment-Best-Practice-for-Scottish-Planners-2010-.pdf
[129] http://www.epa.ie/pubs/legislation/air/quality/airqualitycleanairforeuropedirective200850ec.html
[130] http://www.epa.ie/pubs/legislation/air/quality/airquality4thdaughterdirective2004107ec.html
[131] http://www.legislation.gov.uk/ssi/2010/204/pdfs/ssi_20100204_en.pdf
[132] http://www.gov.scot/Publications/2016/03/9717
[133]: http://www.legislation.gov.uk/sdsi/2012/9780111018408/pdfs/sdsi_9780111018408_en.pdf
[134] http://www.legislation.gov.uk/ssi/2010/204/contents/made
[135] http://www.legislation.gov.uk/ukpga/1993/11/contents

have helped the UK to meet air quality standards for sulphur dioxide and particulate set by EU Directive 80/779/EEC[136].

The United Nations Economic Commission for Europe (UNECE) Gothenburg Protocol[137] sets national emission 'ceilings' for countries to meet for 2010 and up to 2020 for Sulphur dioxide (SO_2), Nitrogen oxides (NO_X), Ammonia (NH_3) and volatile organic compounds (VOCs). This Protocol is part of the Convention on Long-Range Transboundary Air Pollution (CLRTAP)[138]. Similar ceilings have since been set in European law under the 2001 National Emission Ceilings Directive (2001/81/EC),[139] which was subsequently made into UK law as the National Emission Ceilings Regulations 2002 [140]. The European Clean Air Package[141] was published in December 2013, and this included ratification of the May 2012 Gothenburg targets.

Current Environmental Baseline

Air pollution can result in adverse impacts on both human health and can significantly affect many aspects of quality of life. Air pollution can also cause adverse effects in the wider environment. For example, it can add nutrients to water bodies and soils and contribute to acidification, both of which can impact on plant and animal life, and can also damage the fabric of buildings and monuments[142].

Air quality is important for both short and long-term human health, and poor air quality can have impacts on people with existing health issues. In general, healthy people may not suffer from any serious health effects from exposure to the levels of pollution commonly experienced in urban environments. However, continual exposure can cause harm over the long term, and those with pre-existing health conditions such as heart disease, lung conditions and asthma can be adversely impacted by daily exposure to air pollutants[143]. Research has shown that air pollution reduces average life expectancy and often leads to premature deaths[144]. Activities that generate air pollutants have been considered under the topic of Air Quality.

The quality of the air around us is affected by the pollutants released into the atmosphere through human activities, such as transport and industry (including agriculture), as well as from natural sources. The pollutants generally considered as being of most importance in relation to human health and the environment includes Sulphur Dioxide ($SO_{2)}$, Nitrogen dioxide (NO_2) and particulate emissions. Ammonia is also produced in many agricultural activities, including in emissions from livestock farming, manure handling and the use of nitrogen fertilisers.

Air quality in Scotland has improved considerably over the last few decades. Between 1990 and 2015 there were decreases of 83% for Carbon monoxide (CO), 71% for Nitrogen oxides (NO_x), 66% for non-methane volatile organic compounds , 63% for fine particulate matter (PM_{10}) and 92% for SO_2[145,146]. However, air pollution is still estimated to reduce the life expectancy of every person in the UK by an average of 7–8 months[147] and there are some towns and cities where air quality has been identified as a concern[148].

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[136] http://ec.europa.eu/environment/air/quality/existing_leg.htm
[137] http://www.unece.org/environmental-policy/conventions/envlrtapwelcome/guidance-documents-and-other-methodological-materials/gothenburg-protocol.html
[138] http://www.unece.org/env/lrtap/welcome.html
[139] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32001L0081
[140] http://www.legislation.gov.uk/uksi/2002/3118/made
[141] http://www.consilium.europa.eu/en/policies/clean-air/
[142] https://www.environment.gov.scot/our-environment/air/air-quality/
[143] https://www.environment.gov.scot/our-environment/air/air-quality-and-health/
[144] https://www.environment.gov.scot/media/1133/iom-seweb-aq-health-behaviour-review.pdf
[145] http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment/trendairpollutants
[146] https://uk-air.defra.gov.uk/assets/documents/reports/cat07/1710060932_DA_Air_Quality_Pollutant_Inventories_1990-2015_v01-01.pdf
[147] http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment/trendairpollutants
[148] http://www.scottishairquality.co.uk/laqm/

Section 83(1) of the Environmental Act 1995[149] sets out a requirement that where air quality objectives are not being met or are unlikely to be met within the relevant period, Local Authorities designate an Air Quality Management Areas (AQMAs)[150]. In Scotland, 38 AQMAs have currently been declared, with 14 of Scotland's 32 Local Authorities having declared at least one. The majority of these are declared in urban areas as a result of NO_x alone or in combination with PM_{10} levels, and primarily as a result of traffic emissions[151].

At a policy level, the Scottish Government's Cleaner Air for Scotland[152] (CAFS) policy document clarifies that commitments to decarbonise the Scottish economy, of which this programme plans a significant role, should help reduce air pollution, but the choices about the route to 2050 will influence the scale of additional improvements for air quality. This strategy directs the need for energy efficiency and demand management to create a shift towards low or zero emission energy sources, for example, which will provide mutual benefits for air quality and climate change, this being at a domestic and non-domestic level.

In the assessment of impacts from the proposals on air quality the broader scale impacts at a national level must be considered in conjunction with the localised impacts as a result of project level installations and interventions. The means by which adequate protect exists, or means of mitigation must also be assessed.

Climatic Factors

SEA Objectives

Contribute to formal targets to reduce Green House Gas Emissions across Scotland

Overview of Environmental Protection Objectives

Scotland's ambition on tackling climate change is set out in the Climate Change (Scotland) Act 2009 ("the 2009 Act")[153]. Through this legislation, Scotland contributes to international (EU and UN) efforts on climate change mitigation and adaptation. The 2009 Act creates the statutory framework for greenhouse gas (GHG) emissions reduction in Scotland, and set targets for reduction in emissions of the seven Kyoto Protocol GHG[154] by 80% by 2050, with an interim 2020 target of 42%, compared to the 1990/1995 baseline level.

The 2009 Act also requires that annual GHG emissions targets are set, by Order, for each year in the period 2010 – 2050. Following the initial phase of target-setting, the annual targets are set in five year batches, at least twelve years in advance. The third and most recent batch of annual targets, covering the years 2028 – 2032, was agreed by the Scottish Parliament in October 2016.

The Scottish Climate Change Adaptation Programme (the Adaptation Programme)[155] addresses the impacts identified for Scotland in the UK Climate Change Risk Assessment (CCRA)[156]. The Adaptation Programme sets out Scottish Ministers' objectives in relation to adaptation to climate change, their proposals and policies for meeting these objectives, and

[149] http://www.legislation.gov.uk/ukpga/1995/25/section/83
[150][150] http://www.scottishairquality.co.uk/laqm/
[151] http://www.scottishairquality.co.uk/laqm/aqma
[152] http://www.gov.scot/Resource/0048/00488493.pdf
[153] http://www.gov.scot/Topics/Environment/climatechange/scotlands-action/climatechangeact
[154] http://unfccc.int/kyoto_protocol/items/2830.php
[155] http://www.gov.scot/Publications/2014/05/4669
[156] https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-government-report

the period within which these proposals and policies will be introduced. The Programme also sets out the arrangements for wider engagement in meeting these objectives. The updated UK CCRA[157] sets out priorities for the next five years. The impacts identified for Scotland are expected to be addressed by the second iteration of the Adaptation Programme which is due in 2019[158].

At the Paris climate conference (COP 21) in December 2015, 195 countries adopted the first ever universal, legally binding global climate deal. The Paris Agreement is a bridge between today's policies and climate-neutrality before the end of the century. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C[159]. The deal also says countries should aim for the even more ambitious target of 1.5°C[160]. The Agreement entered into force on 4 November 2016.

The EU Emissions Trading System (EU ETS) is a key component of the EU's policy to combat climate change. In operation since 2005, it aims to reduce GHG emission from energy intensive industries, with emissions from within Europe aviation added in 2012. The EU ETS operates in 31 countries (all 28 EU countries plus Iceland, Liechtenstein and Norway) and covers 45% of the EU's emissions[161]. The EU ETS has emission reduction targets for 2020 of 20% on 2005 levels for industrial emissions. To achieve this, the system works on a "cap and trade" principle, requiring participants to obtain allowances to cover their annual emissions; the availability of which reduces annually. The allowances are issued through a combination of auction and free allocation, and participants can trade them on a secondary market; creating a market price for carbon. Negotiations on future participation in the EU ETS are ongoing as a result of the EU exit process.

Current Environmental Baseline

Over the last 50 years, it has become increasingly apparent that the world's climate is changing at an unprecedented rate. Evidence of an increase in average global temperatures and an increase in GHG in the atmosphere has led to the conclusion that human activities, including the use of carbon based fuels, is the main reason for this increase[162]. Other effects, such as air pollution, also often originate from the combustion of fossil fuels.

The extent of the effects of climate change will vary by location, but there is significant evidence supporting the belief that significant changes in precipitation, snowfall, seasonality, cloud cover, humidity, wind speeds, soil moisture, rising sea levels and extreme weather may occur[163]. Higher temperatures and changes in rainfall patterns have been exhibited since 1961. For example, some parts of north-west Scotland have become up to 45% drier in summer, while increases in as much as 60% of winter rainfall have been observed in northern and western regions[164]. Over this same period, average temperatures in all regions have risen every season and it is predicted under a high emissions scenario, summer and winter temperatures in 2080 may be 4.3°C and 3.1°C higher, respectively[165].

It is predicted that the greatest direct climate change-related threats for the UK are large increases in flood risk, exposure to high temperatures and heat waves, shortages in the public water supply and for agriculture, energy production and industry, substantial risks to UK wildlife and natural ecosystems risks to domestic and international food production and

[157] https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017
[158] https://www.theccc.org.uk/wp-content/uploads/2016/09/Scottish-Climate-Change-Adaptation-Programme-An-independent-assessment-CCC-September-2016.pdf
[159] http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm
[160] http://eciu.net/reports/2016/what-does-the-paris-agreement-mean-for-the-uk
[161] http://ec.europa.eu/clima/policies/ets/index_en.htm
[162] https://www.environment.gov.scot/our-environment/climate/changing-climate/
[163] http://ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf
[164] http://www.adaptationscotland.co.uk/why-adapt/climate-trends-and-projections
[165] http://ukclimateprojections.metoffice.gov.uk/22530

trade[166]. New and emerging pests and diseases, and invasive non-native species affecting people, plants and animals has also been noted as a research priority.

Climate change is considered to be one of the most serious environmental threats to sustainable development, with adverse impacts expected on human health, food security, economic activity, natural resources and physical infrastructure[167]. Adaptation to the effects of climate change is now acknowledged as being necessary to respond effectively and equitably to the impacts of climate change.

In 2015, Scottish emissions of the basket of seven greenhouse gases are estimated to be 48.1 million tonnes carbon dioxide equivalent ($MtCO_2e$). This is 3.0% lower than the 2014 figure of 49.5 $MtCO_2e$, a 1.5 $MtCO_2e$ decrease. The main contributor to this reduction between 2014 and 2015 was a fall in energy supply emissions (e.g. power stations) (1.7 $MtCO_2e$ 12.0% reduction). Between 1990 and 2015, there was a 37.6% reduction in estimated emissions, a 28.9 $MtCO_2e$ decrease. The three contributors to this reduction are a fall in energy supply emissions (eg power stations) (10.5 $MtCO_2e$, 46.4% reduction); a fall in business and industrial process (eg manufacturing) (5.8 $MtCO_2e$, 40.2% reduction); and a fall in waste management emissions (eg landfill) (4.2 , 74.9% reduction)[168].

At a local authority level, all of Scotland's 32 local authorities signed Scotland's Climate Change Declaration in 2007[169]. This is a public statement wherein local authorities acknowledge the reality and implications of climate change and their responsibility to respond effectively. The Declaration also welcomes the actions of the UK and Scottish governments and the opportunities for local authorities to work in partnership with others in responding to climate change. The annual reporting associated with this provides a useful benchmark to monitor the impact of the proposals at a local level.

The main contributors to Scotland's GHG emissions in 2015 were the energy supply sector (25.4%), transport (including international aviation and shipping) (27.4%), agriculture and related land uses (22.5%), business and industrial process (17.9%) and residential (12.7%). Forestry is a net carbon sink and from 2014 to 2015 this has reduced by 4.6% from -7.3 $MtCO_2e$ to -7.0 $MtCO_2e$[170].

In the assessment of impacts from the proposals on GHG emissions at a national and local level must be considered in addition to an assessment of adequate means to measure improvements.

[166] https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/
[167] http://www.icao.int/environmental-protection/Pages/adaptation.aspx
[168] http://www.gov.scot/Resource/0052/00520839.pdf
[169] https://www.keepscotlandbeautiful.org/sustainability-climate-change/sustainable-scotland-network/climate-change-reporting/scotlands-climate-change-declaration/
[170] http://www.gov.scot/Publications/2017/06/9986/342095

Cultural Heritage and the Historic Environment

SEA Objectives

Protect, and where appropriate enhance the historic, built and cultural heritage

Overview of Environmental Protection Objectives

Existing cultural heritage objectives are set out in legislation including the Historic Environment (Amendment) Scotland Act (2011)[171], Ancient Monuments and Archaeological Areas Act 1979 (as amended) [172] and Planning (Listed Buildings and Conservation Areas) (Scotland) Act (1997)[173]. These objectives are focused primarily on the protection of valued sites and features, including townscapes (i.e. places, buildings and open spaces), buildings, archaeological sites, battlefields, wrecks and landscapes that have been recognised at the international, national and local levels through a hierarchy of designations.

Policies such as National Planning Framework (NPF3)[174] and Scottish Planning Policy (SPP)[175] aim to improve the quality of our settlements and built environment with a national level focus. These are complemented by the Historic Environment Strategy for Scotland (2014)[176] and the Historic Environment Scotland (HES) Policy Statement[177] which provide an overarching framework for historic environment policy in Scotland. Together, they emphasise the importance of preserving recognised sites, avoiding negative impacts on them and their wider setting, and contributing to their enhancement where appropriate. These key objectives also extend to taking into accounting of, and avoiding damage to or loss of, currently unknown archaeology.

Current Environmental Baseline

Scotland's many and varied historical sites are unique and irreplaceable. These sites and features are regarded as making a valuable contribution to our quality of life, cultural identity, education and economy. While these assets are distributed widely throughout Scotland, there are clusters of sites in and around our settlements and also around our coastlines.

Some parts of Scotland's historic environment are protected through a process of designation. The process aims to identify parts of the historic environment for their significance and enhance their protection. Designated assets currently include world heritage sites, listed buildings, scheduled monuments conservation areas and historic marine protected areas[178].

Information on the condition of the historic environment is largely collated at a local level, making it difficult to assess changes and trends as a whole. Data collected through regular inspection regimes for many historic sites shows that the condition of A-listed buildings (nationally or internationally important) is stable. The condition of scheduled monuments is also generally stable, with some 87% of monuments visited in 2015/6 reported as being in an

[171] http://www.legislation.gov.uk/asp/2011/3/contents/enacted
[172] http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf
[173] http://www.legislation.gov.uk/ukpga/1997/9/contents
[174] http://www.gov.scot/Publications/2014/06/3539/0
[175] http://www.gov.scot/Publications/2014/06/5823
[176] http://www.gov.scot/Resource/0044/00445046.pdf
[177] https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/legislation-and-guidance/historic-environment-scotland-policy-statement/
[178] https://www.historicenvironment.scot/advice-and-support/listing-scheduling-and-designations/

optimal or satisfactory condition. However, older buildings (built pre-1919) are more likely than newer properties to have a need for basic and extensive repair[179].

Inappropriate development is a key pressure on the historic environment and cultural heritage, both directly in terms of damage to known and unknown features, and the potential for impacts to setting. Other known pressures include changing land use and land management, tourism/visitors, pollution and climate change.

Scotland's Historic Environment Audit[180] also projects that Scotland will become warmer and wetter as a result of climate change, resulting in the increased weathering of stone, rotting timbers and corrosion of metals. Reducing GHG emissions associated with the upkeep of buildings whilst maintaining their cultural significance can also present challenges. For example, improving energy efficiency by preventing heat loss in some older buildings can result in condensation and fungus growth due to reducing the air flow in the building. This can potentially have damaging effects on the fabric of buildings and the health of those using it.

At a local level, while a baseline is difficult to create for all of Scotland's vast range of traditional buildings which are not formally designated but remain of cultural significance, details information is constantly growing which assists in the assessment of individual projects and the impact this might have on buildings[181].

In the assessment of impacts from the proposals on cultural heritage and the historic environment, whilst a national view can be taken, it is likely that the assessment will need to focus on a more local scale. It will also consider in addition to an assessment of adequate means to mitigate physical impacts caused as a result of the proposals.

Material Assets

SEA Objectives

Promote the sustainable use/reuse of all properties across Scotland to support sustainable development, reduce GHG emissions and make best use of this valuable resource

Overview of Environmental Protection Objectives

While existing policies relating to domestic and non-domestic properties across Scotland are wide-ranging, they largely share the aims of contributing to core planning objectives and supporting sustainable development, reducing GHG emissions, and making the best use of Scotland's resources and existing infrastructure.

There is a wealth of existing protection objectives and policy at the national and international levels relating to these broad topic areas. These include existing and forthcoming energy policy and climate change commitments in addition to current objectives and commitments set

[179] https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/scotland-s-historic-environment-audit/#overview_tab
[180] https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/scotland-s-historic-environment-audit/#overview_tab
[181] https://www.historicenvironment.scot/archives-and-research/our-research/climate-change#publications-and-conferences_tab

out in relevant policies. For example, Scotland's Land Use Strategy 2016 – 2021[182], NPF3[183] and SPP[184], and Making Things Last: A Circular Economy Strategy for Scotland[185].

The retrofitting of energy efficiency measures to the existing built stock is an important part of the picture, and priority should be given to refurbishment over demolition[186]. This not only minimises the need for new development, but saves the need for energy locked in building materials and construction, maximises the use of existing infrastructure and maximises the use of energy embodied within that stock.

Current Environmental Baseline

Domestic

Energy use - Four out of five Scottish households use mains gas as their primary heating fuel. Consumption has however fallen by 30% since the 2006 average was established[187][188].

In 2016 39% of Scottish homes were rated as EPC band C or better and half had an energy efficiency rating of 66 or higher (SAP 2012). This is similar to 2015 but an increase from 35% in 2014, the first year in which data based on SAP 2012 is available. In the last year, the share of older properties (1919-1944) and properties built between 1965 and 1982 in band C or better increased by 8 percentage points to 31% and 37% respectively. Using SAP 2009 continues to show improvement in the energy efficiency profile of housing. The share of the most energy efficient dwellings (rated C or better) increased from 24% in 2010 to 43% in 2016. In the same period, the proportion of properties in the lowest EPC bands (E, F or G) has almost halved, reducing from 27% to 14%.[189]

The condition of the housing stock is measured by levels of disrepair which reduced by 5% in the last year. In 2016, 68% of all dwellings had some degree of disrepair, however minor it may be, down from 73% in 2015. Disrepair to critical elements stood at 48% while 28% of dwellings had some instances of urgent disrepair and 6% had some extensive disrepair. Levels of damp and condensation remained similar to 2015. Around 9 out of 10 (89%) properties were free from any damp or condensation. Compliance with the tolerable standard in 2016 also remained similar to 2015: 2% (or 39,000) of all dwellings fell below the tolerable standard. This represents an improvement of 2 percentage points since 2012. Across the stock as a whole, Scottish Housing Quality Standard (SHQS) compliance remained at 2015 levels. In 2016, 45% of Scottish homes failed to meet the SHQS. The SHQS failure rate in the social rented sector was 38%, not allowing for abeyances and exemptions. This has fallen from 60% in 2010. 26% of properties did not meet the Energy Efficient criterion. SHCS surveyors may not always be able to identify the presence of cavity wall insulation. The overall SHQS failure rate in the social rented sector would be 26% if it is assumed that all social dwellings have insulated cavity walls where this is technically feasible. The majority of dwellings falling below the SHQS failed on a single criterion: this accounts for more than 8 out of 10 failures in the social rented sector. For 7 out of 10 social homes which failed the SHQS this was due to falling short on a single one of the standard's 55 elements. Overcrowding levels in Scotland remain unchanged: 3% of all households (67,000) were living in overcrowded accommodation in 2016[190].

Non domestic

[182] http://www.gov.scot/Topics/Environment/Countryside/Landusestrategy
[183] http://www.gov.scot/Publications/2014/06/3539/0
[184] http://www.gov.scot/Publications/2014/06/5823
[185] http://www.gov.scot/Resource/0049/00494471.pdf
[186] http://www.rtpi.org.uk/media/6308/Sustainable-Energy-in-the-Built-Environment-Best-Practice-for-Scottish-Planners-2010-.pdf
[187] http://www.gov.scot/Resource/0053/00531699.pdf
[188] http://www.gov.scot/Resource/0053/00531701.pdf
[189] https://beta.gov.scot/publications/scottish-house-condition-survey-2016-key-findings/
[190] https://beta.gov.scot/publications/scottish-house-condition-survey-2016-key-findings/

58% of all energy consumed is done so by the industrial and commercial sectors. However, since the 2005-2007 baseline, this sector has experienced the largest decrease of 23%, with non domestic gas consumption falling by 21% in the last decade, to 19,136GWh[191][192].

Baseline data for the building condition of the non-domestic sector is less well developed than for residential properties. As of December 2017 there were approximately 35,000 non domestic EPCs held on the Scottish EPC register. Some sectors, however, publish information which will prove useful to the Programme and the assessment of improvements in the future. The NHS, for example, confirm that the physical condition of the assets has improved over the last three years which, coupled with improvements in energy efficiency and correlating reductions in energy costs highlight the NHS commitment to a more efficient building stock for the future.[193]

[191] http://www.gov.scot/Resource/0053/00531699.pdf
[192] http://www.gov.scot/Resource/0053/00531701.pdf
[193] http://www.gov.scot/Resource/0052/00522731.pdf

Appendix B - Background information on Energy Efficient Scotland and the use of EPC

Introduction

This appendix provides a broad overview of the Programme to provide context for the policies and proposals assessed here, and is intended to provide background information on the work carried out to date, and the long term aspirations of the programme.

The Programme is a 15 to 20 year programme aimed at driving energy efficiency and a low carbon energy system in Scotland's homes and buildings. This supports one of the six energy priorities as set out by our Energy Strategy: that of improving energy efficiency, which we published in December 2017.[194]

The Programme will be instrumental in tackling fuel poverty and, in developing it, we will reflect the aims of our new Fuel Poverty Strategy taking account of recommendations made by the Fuel Poverty Strategic Working Group and Rural Fuel Poverty Task Force. A collaborative approach will be critical to delivering our ambitions on fuel poverty and the Programme is paving the way for innovation and coordinated efforts across sectors to find the most effective solutions for households no matter where they live in Scotland.

The Programme for Government commits to investing more than half a billion pounds to the Programme over the four years to 2020/21 setting out a clear commitment to develop this programme with substantial annual funding.

The Programme targets feed into our Climate Change commitments. The Scottish Government's world-leading climate change targets require emissions from across Scotland to be reduced by 42% by 2020 and at least 80% by 2050. The Climate Change Plan outlines the steps we will take to reduce emissions across the economy, including in the residential and services sectors, which will see their emissions reduced by 23% and 59% respectively by 2032 on 2015 levels.

Achieving these targets will mean that to be fit for the future Scotland's homes, commercial properties and public sector estate will need to be near zero carbon where feasible by the middle of this century. Scottish Ministers announced in June 2015 that they would take long term action to reduce building energy demand and decarbonise heat supply; designating energy efficiency as a national infrastructure priority. The Programme is the culmination of this thinking.

Programme Development

The scale and scope of the Programme is such that a phased development approach over a number of years has been adopted to enable successful development of all elements (including incentives, standards, regulations, supply chain, skills development, advice and information). Initial phases have focused on delivering existing programmes more effectively and developing a suite of pilot projects. These pilots have delivered real measures on the ground to test innovative and co-ordinated approaches to energy demand reduction in domestic and non-domestic buildings. These pilots continue into 2018 and beyond.

Significant public consultation and stakeholder engagement with delivery partners has already been undertaken, including:

- Draft Energy Strategy[195]
- Scottish Energy Efficiency Programme consultation (annex to Energy Strategy)[196]

[194] http://www.gov.scot/Publications/2017/12/5661

[195] http://www.gov.scot/Resource/0051/00513466.pdf

- Local Heat & Energy Efficiency Strategies and Regulation of District Heating (annex to Energy Strategy)[197]
- Climate Change Plan[198]
- Regulations and standards in the private rented sector[199]
- Fuel Poverty Strategy for Scotland [200]
- Energy Efficiency Standard for Social Housing (EESSH) Review[201], the original standard being subject to SEA[202].

The draft Energy Strategy and Climate Change Plan were subject directly to strategic environmental assessment[203] and this assessment has helped inform subordinate policy development, including the development of the Programme.

In addition a second consultation considering the role of Local Heat & Energy Efficiency Strategies and the regulation of District and Communal Heating[204] within the Programme.

The Programme is now moving to its development phase, in which key elements of the programme will be developed and deployed over time to create the overall programme structure which is expected to be run through to circa 2020/2021. Thereafter full deployment of the programme will be subject to regular review, evaluation and refinement.

In the Autumn of 2016, the Scottish Government undertook a period of pre-consultation scoping work on scenarios for the whole programme with internal and external stakeholders.

Our initial high level scoping Consultation on Scotland's Energy Efficiency Programme in January 2017 set out the three key phases:

Early 2018: Design phase (now concluded) – including the setting of formal targets for the Programme through the Climate Change Plan and Energy Strategy –

2018 - 2020: Transitional development phase - which we are currently in, in which the key elements of the Programme are developed and deployed over time to create the overall programme structure. This programme is set out in the Route Map, which is published in parallel with this consultation.

2020 onwards: Implementation phase - of the Programme which would be subject to regular review, evaluation and refinement[205].

In addition the following consultations are also feeding into the development phase mentioned above:

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[196] https://consult.gov.scot/energy-and-climate-change-directorate/scotlands-energy-efficiency-programme/user_uploads/00513248.pdf-1

[197] http://www.gov.scot/Resource/0051/00513244.pdf

[198] http://www.gov.scot/Publications/2017/01/2768

[199] http://www.gov.scot/Resource/0051/00516474.pdf

[200] https://beta.gov.scot/publications/consultation-fuel-poverty-strategy-scotland/

[201] https://beta.gov.scot/policies/home-energy-and-fuel-poverty/energy-efficiency-in-social-housing/

[202] http://www.gov.scot/seag/details.aspx?id=SEA\00588&sid=2

[203] http://www.gov.scot/seag/details.aspx?id=SEA\01225&sid=2

[204] https://consult.gov.scot/energy-and-climate-change-directorate/lhees-and-dhr2/supporting_documents/LHEES%20%20DH%20Regs.pdf

[205] https://consult.gov.scot/energy-and-climate-change-directorate/scotlands-energy-efficiency-programme/user_uploads/00513248.pdf-1

Heat and Energy Efficiency Strategies and Regulation of District Housing (closed 24 Jan 2017)

Energy efficiency and condition standards in private rented housing: A Scotland's Energy Efficiency Programme Consultation (closed 30 Jun 2017)

Consultation on a Fuel Poverty Strategy for Scotland (closed 1 Feb 2018)

Scotland's Energy Efficiency Programme: Second Consultation on Local Heat and Energy Efficiency Strategies, and Regulation of District and Communal Heating (closed 20 Feb 2018)

The future of Energy Efficient Scotland

Later this year we will introduce a Fuel Poverty Bill that will set a target relating to the eradication of fuel poverty. We recognise that the lowest rates of fuel poverty are associated with higher energy efficiency standards, and underpinning the overarching statutory target we will set ambitious targets that will help us achieve our aim to eradicate poor energy efficiency as a driver of fuel poverty.

We have also committed to develop, if appropriate, a wider Bill to support the Programme for later in this Parliament. We recognise that for a programme as ambitious as this, it will be necessary to review our existing legislation and to consider what new powers or duties may be needed to underpin the programme. Stakeholders told us in our high level scoping consultation on Scotland's Energy Efficiency Programme during 2017 that there could be an important role for regulation and standards, supported by legislation.

The Routemap sets out that, as a minimum, we are considering the need for legislation to create a statutory duty for local authorities to develop Local Heat & Energy Efficiency Strategies (LHEES) and for regulation of district heating. We have previously consulted o these issues. We recognise that other new or revised powers or duties may be needed to ensure delivery and funding across all strands of the Programme over its lifetime, and are inviting comment within this consultation accompanying the Routemap on what these may be.

Once fully operational, the Programme will be a whole system approach to delivering energy efficiency improvements and the provision of low carbon heat. A framework of energy efficiency standards, advice and funding will help create long-term consistency and confidence for consumers and industry, backed up by legislation where needed. The programme will also help support skills and supply chains across Scotland with appropriate protections for consumers.

During the initial phases of the Programme, we are focusing on delivering existing programmes more effectively and developing new pilot schemes to test delivery mechanisms for residential and non-domestic buildings. By 2050, through the Programme, we will have transformed the energy efficiency and heating of our buildings so that wherever feasible, buildings will have near zero carbon emissions.

Full implementation of the Programme will commence from 2020. The move towards the new delivery model will be preceded by a transitional development phase which will incrementally offer local authorities greater opportunities to plan and deliver integrated energy efficiency projects.

What are Energy Performance Certificates?

Energy Performance Certificates (EPCs) provide information on how energy efficient your building is, and how it could be improved. Buildings are rated on a scale from **A-G**, with **A** being the most efficient. Information is also provided on measures which could be made to improve the energy efficiency and an indication of the cost for each improvement. An EPC must be produced when a new building has been constructed; and when a building is to be sold or rented to a new tenant[206]. An EPC must also be obtained and displayed in a building over 250 m^2 in area, which is occupied by a public authority and frequently visited by the public.

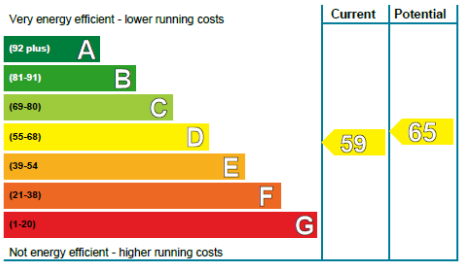
EPCs are valid for 10 years.[207] They are based on information such as the size and layout of a building, how it has been constructed and the way it is insulated, heated, ventilated, and lighted. Since people use buildings in different ways, the calculation is based on standardised assumptions of occupancy and use.

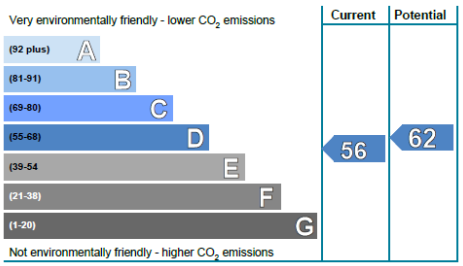
What do domestic EPCs show?

Domestic EPCs display an Energy Efficiency Rating (EER) and an Environmental Impact Rating (EIR). The EER is rated in terms of energy costs, while the EIR is rated in terms of carbon emissions.

Domestic EPCs also have numerical ratings, with a higher number suggesting greater energy efficiency.

On an EPC the numbered arrows show the current rating based on the existing energy performance of the property and the potential rating if the suggested improvements are implemented.



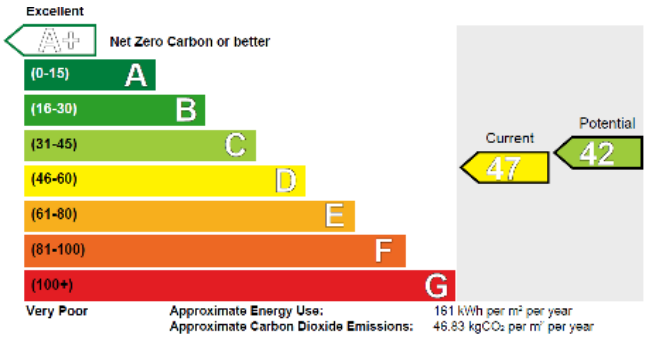


Responses to the Scotland's Energy Efficiency Programme consultation in 2017 showed that EPCs are well understood and provide a clear way to model and understand the energy efficiency performance of a building. There was a greater awareness of the EER measurement in the EPC compared to the EIR. This, as well as the existing use of the EER in the social housing sector, is why we will use the EER to set the long term standard.

How are non-domestic EPCs different?

The non-domestic EPC only contains one rating, which is based on projected carbon emissions rather than energy cost considerations. Therefore, in contrast to domestic ratings, a lower numerical rating for a non-domestic building suggests greater energy efficiency.

The approximate energy use for the non-domestic building (used to calculate emissions) is reported on an EPC but not expressed on a rating scale.



Non-domestic EPCs also differ from domestic ones because the standardised assumptions on occupancy and use which are used in the assessment vary by building type, resulting in wide variation in the average rating of different building types.

[206] Stand-alone non-domestic buildings below 50m^2, temporary buildings with planned use of no more than two years, non-domestic buildings whose function implies low energy demand and buildings sold for demolition are currently all exempt.
[207] Link to EPBD and further information on EPCs

Appendix C - Assessment Tables for Energy Efficient Scotland – Long Term standard

This Appendix contains the assessment tables developed for each sector affected by the proposed introduction of a long term standard. These tables set out the potential for positive and negative impacts across a range of environmental receptors for each proposed policy, policy development milestone, and proposal which form a part of the long term standard.

The environmental effects are presented in two formats within the tables:

- **A narrative describing the potential for environmental environment effects** – the 'Likely Environmental Effects' narrative sections broadly discuss the likely primary environmental impacts associated with the policy or proposal, whilst also identifying the potential for secondary or indirect impacts.
- **Colour-coded gradings assigned to the individual environmental topic areas scoped into the assessment** – the gradings reflect the likely primary impacts associated with the implementation of the policy/proposal against each environmental topic.

While this narrative also discusses the potential for secondary or indirect impacts, these effects have only been reflected in the gradings where it is considered that no mitigation is currently in place, and where these impacts are likely to be significant. This approach has been taken to enable the reader to readily identify the primary significant impacts associated with each policy and proposal.

The tables also outline any assumptions made in undertaking the assessment and where relevant, refer to previous SEA work that informed the assessment.

The gradings used are:

+	Potential for positive environmental effects
-	Potential for negative environmental effects
+/-	Potential for mixed environmental effects
0	Potential for environmental effects has not been identified

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Owner Occupier	**Use of EPC standards for all domestic properties as a recognisable and established metric**	0	0	0	0	0	0	0	0	0	This proposal seeks to use the EPC rating as the metric by which the energy efficiency of all owner occupier properties in Scotland will be measured. This includes the use of the current EPC measure and works to build on the methodology behind this metric. The standard, in itself will not have any significant environmental effects, but is pivotal in the work to apply the standard, once set. *Assumptions:* The setting of EPC as the metric will provide clarity in terms of expectations on the required standard for property owners *Previous SEA work* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030.
	Set an end date for compliance to meet EPC band C by 2040	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposal sets a target date for compliance to meet the standard set (EPC C) subject to review. This milestone gives clarity on the speed of travel required and will be matched with incentives for owner occupiers to meet the standard in advance of the end date. This will result in a gradual improvement in the energy efficiency of all owner occupier properties, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. . The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland *Assumptions* Incentives will be used to encourage owner occupiers to adopt the standard in advance of the backstop date The introduction of the end date will be matched with clarity on compliance measures. Work will continue to progress technological solutions for energy efficiency measures for hard to tackle properties.

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
											Previous SEA work Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
	Set non-statutory stretch targets for fuel poor: • EPC band C by 2030 • EPC band B by 2040	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposals seeks to support those in fuel poverty by introducing non-statutory targets to escalate improvements in the energy efficiency of residential properties occupied by that section of the population. The result will be as that for the setting of the backstop date (above), but the speed of travel will be swifter. *Assumptions:* Incentives will be used to support those in fuel poverty reach a higher standard than is applicable to other owner occupied properties. *Previous SEA work:* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030.
	Clarity on exemptions to the standard and the timeframes	0	0	0	0	0	0	0	+	+	This proposal will provide clarity to owner occupiers on any exceptions to the requirement to meet the standard. This will be particularly important when considering what is technically feasible on hard to tackle and historic properties. As a result this will have a direct impact on buildings of cultural significance and other material assets which may be identified as not requiring the application of energy efficiency measures to meet the standard. *Assumptions:* This proposal will be matched with work to support technological advances to reduce the number of properties to be exempt from the standard. *Previous SEA work:* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030.
	Introduction of mandatory action (compliance and enforcement) after 2030, subject to a review of progress	0	0	0	0	0	0	0	0	0	This proposal seeks to establish the principle of compliance and enforcement measures which will be introduced at the backstop date. The measures established, in themselves will not have any significant environmental effects, but will be pivotal in the work to apply the standard, once set. *Assumptions:* The establishment of compliance and enforcement measures will provide clarity in regulatory measures which will be introduced to match with the backstop date. *Previous SEA work:* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Summary of Overall Effects	There is potential for broadly positive environmental effects. In particular, the setting of a long term standard could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in buildings across Scotland, and thus reducing demand for fuel. The proposal aims to set milestones and end dates for compliance (subject to a review of progress) which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population and human health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**). The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on **material assets**. There is potential for mixed or adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity and air** from construction activities and siting of developments, and **visual** impacts associated with the retrofitting of measures to existing building stock. This is also the case with traditional and culturally significant properties. In the case of the former, specific environmental effects will be considered through the planning process such as Listed Building Consent, and on a site by site basis, and the use of appropriate construction management measures such as Environmental Management Plans. In the case of the latter, the clarity provided regarding exceptions allows suitable mitigation.										

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Private Rented Sector	**Use of EPC standards for all domestic properties as a recognisable and established metric**	0	0	0	0	0	0	0	0	0	This proposal seeks to use the EPC rating as the metric by which the energy efficiency of all privately rented properties in Scotland will be measured. This includes the use of the current EPC measure and works to build on the methodology behind this metric. The standard, in itself will not have any significant environmental effects, but is pivotal in the work to apply the standard, once set.
											Assumptions: The setting of EPC as the metric will provide clarity in terms of expectations on the required standard for property owners
											Previous SEA work Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
	Set mandatory compliance dates of EPC band D by early 2020s and that the long term standard be met by 2030 in all PRS EPC band C by 2030	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposal sets backstop dates for compliance to meet the standard set which are at an escalated timeframe to that for owner occupied properties. These milestone give clarity on the speed of travel required and give clarity on the Scottish Government's commitment to improve the quality of the private rented sector in Scotland. These dates will result in a gradual improvement in the energy efficiency of all privately rented properties, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species.
											Assumptions: Incentives will be used to encourage property owners to adopt the standard in advance of the backstop date The introduction of the end date will be matched with clarity on compliance measures. Work will continue to progress technological solutions for energy efficiency measures for hard to tackle properties.
											Previous SEA work Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
	Set non-statutory stretch targets for fuel poor: • **EPC band C by 2030** • **EPC band B by 2040**	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposals seeks to support those in fuel poverty by introducing non-statutory targets to escalate improvements in the energy efficiency of residential properties occupied by that section of the population. The result will be as that for the setting of the backstop date (above), but the speed of travel will be swifter. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland
											Assumptions: Incentives will be used to support those in fuel poverty reach a higher standard than is applicable to other private rented properties.
											Previous SEA work Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
	Clarity on any exemptions to the standard and the timeframes	0	0	0	0	0	0	0	+	+	This proposal will provide clarity to private rented property owners on any exceptions to the requirement to meet the standard. This will be particularly important when considering what is technically feasible on hard to tackle and historic properties. As a result this will have a direct impact on buildings of cultural significance and other material assets which may be identified as not requiring the application of energy efficiency measures to meet the standard.
											Assumptions: This proposal will be matched with work to support technological advances to reduce the number of properties to be exempt from the standard.
											Previous SEA work: Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
	Introduction of mandatory action (compliance and	0	0	0	0	0	0	0	0	0	This proposal seeks to establish the principle of compliance and enforcement measures which will be introduced at the backstop date. The measures established, in themselves will not have any significant environmental effects, but will be pivotal in the work to apply the standard, once set.

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
	enforcement) after 2030, subject to a review of progress										*Assumptions:* The establishment of compliance and enforcement measures will provide clarity in regulatory measures which will be introduced to match with the backstop date. *Previous SEA work:* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
Summary of Overall Effects	There is potential for broadly positive environmental effects. In particular, the setting of a long term standard could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in buildings across Scotland, and thus reducing demand for fuel. The proposal aims to set milestones and end dates for compliance (subject to a review of progress) which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population and human health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**). The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on **material assets**. There is potential for mixed or adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity and air** from construction activities and siting of developments, and **visual** impacts associated with the retrofitting of measures to existing building stock. This is also the case with traditional and culturally significant properties. In the case of the former, specific environmental effects will be considered through the planning process such as Listed Building Consent, and on a site by site basis, and the use of appropriate construction management measures such as Environmental Management Plans. In the case of the latter, the clarity provided regarding exceptions allows suitable mitigation.										

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Social Rented Housing (EESSH)	**2025 - soft milestone and review**	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposal sets a review point of 2025 (or possibly earlier, depending on any hydrogen policy announcements from the UK Government) to confirm progress towards meeting the 2032 milestone, and finalise its detail. This review point will give clarity on the speed and direction of travel required and on the Scottish Government's commitment to improve the quality and energy efficiency of the social rented sector in Scotland. To 2025 social landlords are expected to initially focus on brining rural/off gas grid properties as far as possible up to the 2020 standard (and where feasible, beyond to EESSH2 2032 target). This review point is expected to report a continued improvement in the energy efficiency of the social rented sector, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. At the 2025 review point, and following a period of data collection and analysis air, elements on ensuring no detriment to air quality and environmental impact will also be confirmed within the standard. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland
											Assumptions: The social rented sector will continue to receive support to allow it to act as an exemplar in residential energy efficiency across Scotland.
											Previous SEA work: SEA of policy on Climate Change Standard for Social Rented Housing (phase 1 of EESSH) available at http://www.gov.scot/Topics/Environment/environmental-assessment/sea/SEAG Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
	2032 - EESSH2 milestone	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposal sets a milestone 2032 for meeting the new EESSH2 standard (to maximise the number of homes meeting EPC Band B). This milestone gives clarity on the speed and direction of travel required and on the Scottish Government's commitment to improve the energy efficiency and quality of the social rented sector in Scotland. This milestone is expected to result in a continued improvement in the energy efficiency of the social rented sector, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland
											Assumptions: The social rented sector will continue to receive support to allow it to act as an exemplar in residential energy efficiency across Scotland.
											Previous SEA work: SEA of policy on Climate Change Standard for Social Housing (phase 1 of EESSH) available at http://www.gov.scot/Topics/Environment/environmental-assessment/sea/SEAG Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
	2040 - EESSH2 vision	+/-	+	0	0	+/-	+/-	+	+/-	+	This proposal clarifies the vision for social housing in Scotland, to meet a higher standard of energy efficiency than is required in other residential sectors. This vision gives clarity on the speed and direction of travel required and give clarity on the Scottish Government's commitment to improve the energy efficiency and quality of the social rented sector in Scotland. This vision and end date is expected to result in a continued improvement in the energy efficiency of the social rented sector, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The setting of standards and dates also supports the development of the supply chain which will be required to support the

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
											retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species.. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland
											Assumptions: The social rented sector will continue to receive support to allow it to act as an exemplar in residential energy efficiency across Scotland.
											Previous SEA work: SEA of policy on Climate Change Standard for Social Housing (phase 1 of EESSH) available at http://www.gov.scot/Topics/Environment/environmental-assessment/sea/SEAG Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030
Summary of overall effects	There is potential for positive environmental effects. In particular, the setting of a 2032 standard and long term vision for 2040 could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in the social rented sector across Scotland. The proposal aims to set milestones and end dates for implementation which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**). The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on **material assets**. The accelerated timeline for social housing (in comparison to other tenures) is also likely to have **population and health** benefits, as it will improve the living conditions of those whose homes are affected. There is potential for mixed or adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity and air** from construction activities and siting of developments, and **visual** impacts associated with the retrofitting of measures to existing building stock. This is also the case with traditional and culturally significant properties. In the case of the former, specific environmental effects will be considered through the planning process such as Listed Buildings consent, and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans. In the case of the latter, the clarity provided regarding exceptions allows suitable mitigation.										

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Non domestic	**A phased increase of regulation so that by 2040 all non-domestic buildings are mandated to reach the standard, where technically feasible and cost effective**	+/-	+	0	0	+/-	+/-	+	+/-	+/-	This proposal seeks the setting of a metric by which the energy efficiency of all non-domestic properties in Scotland will be measured and the introduction of regulation to mandate the meeting of that standard as far as is technically feasible and cost effective. It commits the Scottish Government to further work to develop the metric, but clarifies commitment to the need for improvements in energy efficiency across all sectors of buildings. The proposal gives clarity on the backstop date for compliance and so on the speed of travel.. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. The introduction of a date will result in a gradual improvement in the energy efficiency within the non-domestic sector, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland. Provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of cultural significance and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building
											Assumptions: That a common metric will be found to allow a phased introduction across the non-domestic sector That further consultation on that metric will be required and that this will be assessed at that time
											Previous SEA work: Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

Non domestic (public sector)	**Public sector commercial buildings to be an exemplar with all public sector buildings meeting the benchmark ahead 2040**	+/-	+	0	0	+/-	+/-	+	+/-	+/-	This proposal seeks the setting of a metric by which the energy efficiency of all non-domestic properties in Scotland will be measured and the introduction of regulation to mandate the meeting of that standard as far as is technically feasible and cost effective. It commits the Scottish Government to further work to develop the metric, but clarifies commitment to the need for improvements in energy efficiency across all sectors of buildings. The proposal focuses the Scottish Government's proposal that the public sector act as an exemplar in meeting that standard. It gives clarity on the backstop date for compliance and so on the speed of travel.. The proposal gives clarity on the backstop date for compliance and so on the speed of travel.. The setting of standards and dates also supports the development of the supply chain which will be required to support the retrofitting of existing stock. The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on material assets. Acting as an exemplar will result in the speed of implementation within the public sector being accelerated to the rest of the non-domestic sector. This will speed the gradual improvement in the energy efficiency within the publicly owned non-domestic sector, and consequential reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. At a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. Similarly, provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of cultural significance and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building The installation of energy efficiency measures may also have a mixed impact on traditional and culturally significant buildings. Other aspects of the setting of the proposal (see below), however provide mitigation through the identification of exemptions to the standard, which will allow targeted measures to be applied on a building by building basis. Installation of energy efficiency measures will still be subject to listing and conversation area controls reducing the likelihood of significant effects. Use will be made of measures appropriate for such buildings drawing on research undertaken by Historic Environment Scotland. Provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of cultural significance and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building.
											Assumptions: That a common metric will be found to allow a phased introduction across the non-domestic sector That further consultation on that metric will be required and that this will be assessed at that time That the public sector continue to be supported in their efforts to act as an exemplar
											Previous SEA work: Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

Summary of Overall Effects	There is potential for broadly positive environmental effects. In particular, the setting of a long term standard could contribute to further reductions in GHG emissions (**climatic factors**) by improving energy efficiency in the social rented sector across Scotland. The proposal aims to set milestones and end dates for implementation which will, in turn, drive the speed of works required by the standard, thus having a likely beneficial impact (**climatic factors, air, population health**). There is potential for further benefits in improving flexibility of supply through energy efficiency measures installed to meet the standard (**material assets, population and health**) and reduced reliance on existing fossil fuel energy sources (**climatic factors**).). The ability to prioritise refurbishment over demolition will support the continued use of the existing building stock, thus having a positive impact on **material assets**. The accelerated timeline for social housing is also likely to have **population and health** benefits, as it will improve the living conditions of those whose homes are affected. There is potential for adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of energy efficiency measures could result in environmental effects, including impacts to **biodiversity and air** from construction activities and siting of developments and **visual** impacts associated with the retrofitting of measures to existing building stock. Specific environmental effects will be considered through the planning process, Environmental Impact Assessment (EIA) and Habitats Regulations Appraisal (HRA) and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans. Similarly, the risk arising from inappropriate interventions in traditional buildings must be assessed and managed as part of measures introduced within the programme to avoid adverse impact on cultural heritage and material assets.

Appendix D - Assessment Tables for Energy Efficient Scotland – requirements for Local Heat & Energy Efficiency Strategies and a new approach to district heating

This Appendix contains the assessment tables developed for each sector affected by the proposed introduction of requirements for **Local Heat & Energy Efficiency Strategies** and a **new approach to district heating**

These tables set out the potential for positive and negative impacts across a range of environmental receptors for each proposed policy, policy development milestone, and proposal which form a part of the long term standard.

The environmental effects are presented in two formats within the tables:

A narrative describing the potential for environmental environment effects – the 'Likely Environmental Effects' narrative sections broadly discuss the likely primary environmental impacts associated with the policy or proposal, whilst also identifying the potential for secondary or indirect impacts.

Colour-coded gradings assigned to the individual environmental topic areas scoped into the assessment – the gradings reflect the likely primary impacts associated with the implementation of the policy/proposal against each environmental topic.

While this narrative also discusses the potential for secondary or indirect impacts, these effects have only been reflected in the gradings where it is considered that no mitigation is currently in place, and where these impacts are likely to be significant. This approach has been taken to enable the reader to readily identify the primary significant impacts associated with each policy and proposal.

The tables also outline any assumptions made in undertaking the assessment and where relevant, refer to previous SEA work that informed the assessment.

The gradings used are:

+	Potential for positive environmental effects
-	Potential for negative environmental effects
+/-	Potential for mixed environmental effects
0	Potential for environmental effects has not been identified

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
All properties	**Local authorities be given a statutory duty to prepare *Local Heat & Energy Efficiency Strategies* to guide investment in local delivery programmes, to help building owners meet the standards, alongside national programmes**	+/-	+	0	0	+/-	+/-	+	+/-	+/-	This proposal seeks the give all local authorities across Scotland a statutory duty to prepare a LHEES. This will guide investment decisions, delivery programmes and will sit alongside work being carried out at a national level. The proposal builds on pilot work carried out in a number of local authorities, and also takes into account recent consultation on the nature of LHEES during 2017-18, and on which final decisions have not yet been taken. A requirement to create a LHEES and deliver its contents will result in the speed of implementation of energy efficiency measures within the control of the public sector being accelerated. It will also create a common approach across Scotland which will ensure wide spread take up of the Scottish Government's objective to improve energy efficiency across the country. This will speed the gradual improvement in the energy efficiency across Scotland, particularly focused on larger projects, individual properties being dealt with through other aspects of the Programme. This should result in a reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for further improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The roll out of LHEES is likely to have a mixed impact on material assets affected by the strategies. The installation of energy efficiency measures is recognised as having an impact on some biodiversity, specifically those using roofs and wall cavities as nest sites. Licensing arrangements are already in place to protect these species and act as a deterrent to halt inappropriate actions which would adversely impact these species. As a result it is unlikely that the introduction of new or additional energy efficiency measures would have a significant effect on these species. Further, at a local scale, the installation of energy efficiency measures may have impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. They may also have localised visual impacts, which have the potential to have a mixed impact and will require local assessment to ensure use of measures is appropriate for the surroundings. Similarly, provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of cultural significance and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building. *Assumptions:* That lessons from the LHEES pilots will provide a backdrop to this proposal That local authorities will be supported in their efforts to produce and implement LHEES *Previous SEA work:* Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

	Policies and Proposals	Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
	Give local authorities powers to regulate the development of district heating in their areas, including powers to consent development, and powers to require public bodies to provide information regarding their heat supply with a view to connecting to district heating networks	+/-	+	+/-	+/-	+/-	+	+	0	+/-	This proposal seeks to create a regulatory system to promote and control district heating across Scotland. This is intended to escalate the speed of installation of such schemes, and promote their use in new and existing development. The proposal builds on consultation work already undertaken regarding district heating carried out in 2017-18, and on which final decisions have not yet been taken. The creation of a regime to promote and control the installation of district heating schemes may result in a speeding up of such heating schemes in new and existing developments, and will allow a common approach to their regulation. This may widen the appeal of such schemes and shows a commitment on the part of the Scottish Government to their proper regulation and control, thus building confidence in this section of the energy efficiency market. Use of low or zero emission sources of heat should result in a reduction in GHG emissions with secondary benefits for other associated topics through improved human health, air quality, and climatic factors. There is potential for improvements in air quality associated with the reduction in energy demand from traditional and finite fossil fuel sources. The roll out of district heating regulations is likely to have a mixed impact on biodiversity. Whilst there are likely to be positive impacts associated with GHG emission reductions, the use of certain district heating technologies, such as biomass may have mixed impacts, as sourcing and burning feedstocks will need to be matched with a sustainable supply. Mixed impacts may also affect material assets. The installation of district heating measures may require physical works on site, with potential for associated impacts associated with nuisance, including noise, dust, and visual. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning and dialogue with neighbours. At a local level, the creation of district heating scheme may require short term disturbance as a result of infrastructure installation. This may have mixed impact on local soil conditions, and a local solution will be required depending on the nature of the site. The operation of district heating schemes may use water as a resource and as such may have mixed impact. The recognition of this at a localised scale will require the use of environmental management plans, or similar, to assess, in detail, the impact. This will require to be done at project level.
											Assumptions: That lessons from the District Heating consultation recently undertaken will provide a backdrop to this proposal That the public sector continue to be supported in their efforts to manage district heating
											Previous SEA work: Joint SEA of the Draft Climate Change Plan: The Draft Third Report on Policies and Proposals 2017-2032 and Draft Scottish Energy Strategy: The Future of Energy in Scotland available at http://www.gov.scot/Publications/2017/01/9030

	Policies and Proposals			Biodiversity	Population and Human Health	Soil	Water	Landscape	Air	Climatic Factors	Cultural heritage	Material Assets	Likely Environmental Effects
Summary of overall effects													The impact of regulations to require the role out of LHEES is likely to have broadly positive with an acceleration of improvement in energy efficiency across Scotland, with particular focus likely on larger projects. This should result in a reduction in GHG emissions(**climatic factors**) with secondary benefits through improved human health, and air quality. The roll out of LHEES is likely to have a mixed impact on **material assets** affected by the strategies and the installation of energy efficiency measures is recognised as having an impact on some **biodiversity**, Further, at a local scale, the installation works may have impacts associated with nuisance, including noise, dust, and visual impact. However these are likely to be short term in nature, and can be mitigated with careful use of construction management planning. Similarly, provisions within regulations and guidance should recognise and respond to give assurance that interventions to buildings in general and particularly those of **cultural significance** and traditional buildings generally are only specified and undertaken after full consideration of the likely impact on the building. There is potential for broadly positive environmental effects from the creation of a regulation to manage district heating across Scotland. In particular, the creation of a regulatory system and the resulting growth in installation of district heating across new and existing developments in Scotland will reduce reliance on the existing heating supply network which relies on diminishing fossil fuels. Further, this will contribute to further reductions in GHG emissions (**climatic factors**) by installation of improved energy efficient heating systems. Appropriate siting of district heating systems could have local environmental benefits where heat is supplied from a low or zero emission source that replaces fossil fuel generation, with the potential to improve air quality. The proposal aims to grow this part of the energy generating supply chain, reducing reliance on centralised systems. thus having a likely beneficial impact (**climatic factors, air, population health**). There is also potential for further benefits in improving flexibility of supply through district heating (**material assets, population and health**). There is potential for adverse effects associated with some aspects of the proposal, particularly those associated with development at a local scale. For example, the installation of district heating network infrastructure such as pipes could result in environmental effects, including impacts to **biodiversity, soil, and material assets** from construction activities and siting of developments. The long term operation of district heating schemes, at a local level, may also have a mixed impact. Supply of sustainable materials to be used in biomass systems may have negative impacts, and must be sourced sustainably. This may also be the case with those systems using **water** as an operating resource. Specific environmental effects will be considered through the planning process, Environmental Impact Assessment (EIA) and Habitats Regulations Appraisal (HRA) and on a site by site basis, the use of appropriate construction management measures such as Environmental Management Plans.

Appendix E - Abbreviations

AQMA	Air Quality Management Area
BAP	Biodiversity Action Plan
CBD	Convention on Biological Diversity
CCRA	UK Climate Change Risk Assessment
CLRTAP	Convention on Long-Range Transboundary Air Pollution
DH	District Heating
EESSH	Energy Efficiency Standard for Social Housing
EPC	Energy Performance Certificate
EU	European Union
GHG	Greenhouse Gas
HES	Historic Environment Scotland
LHEES	Local Heat and Energy Efficiency Strategies
NH_3	Ammonia
NO_x	Nitrogen oxides
NPF3	National Planning Framework 3
PPC	Pollution Prevention and Control
RPP	Low Carbon Scotland: Meeting our Emissions Reduction Targets 2010 – 2022: Report on Proposals and Policies
SAC	Special Area(s) of Conservation
SEA	Strategic Environmental Assessment
SNH	Scottish Natural Heritage
SO_2	Sulphur dioxide
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site(s) of Special Scientific Interest
The 2001 Act	The Housing (Scotland) Act 2001

The 2005 Act	The Environmental Assessment (Scotland) Act 2005
The 2009 Act	Climate Change (Scotland) Act 2009
The Programme	Energy Efficient Scotland
UNECE	United Nations Economic Commission for Europe
VOC	Volatile Organic Compound

Appendix F - Compliance Checklist

Environmental Report Requirements	Section(s) of This Report
Relevant Sections of the Environmental Assessment Act	
14 (2) The report shall identify, describe and evaluate the likely significant effects on the environment of implementing—	
(a) the proposals in the plan or programme; and	Section 7 Appendices C and D
(b) reasonable alternatives to the plan or programme.	Section 5
14 (3) The report shall include such of the information specified in schedule 3 as may reasonably be required.	
Information referred to in schedule 3	
1. An outline of the contents and main objectives of the plan or programme, and of its relationship (if any) with other qualifying plans and programmes.	Sections 2 – 4, 6
2. The relevant aspects of the current state of the environment; and the likely evolution thereof without implementation of the plan or programme.	Section 6 Appendix A
3. The environmental characteristics of areas likely to be significantly affected.	Appendix A
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (as last amended by Council Directive 97/62/EC).	Sections 5 - 6 Appendix A
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant; and the way those objectives and any environmental considerations have been taken into account during its preparation.	Sections 6-7 Appendix A
6. The likely significant effects on the environment, including— a) on issues such as - i. biodiversity and natural heritage; ii. population; iii. human health;	Section 7 Appendices C and D

Environmental Report Requirements	Section(s) of This Report
iv. fauna; v. flora; vi. soil; vii. water; viii. air; ix. climatic factors; x. material assets; xi. cultural heritage and historic environment, including architectural and archaeological heritage; xii. landscape; xiii. the inter-relationship between the issues referred to in heads (i) to (xii). b) short, medium and long-term effects. c) permanent and temporary effects. d) positive and negative effects. e) secondary, cumulative and synergistic effects.	
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the marine spatial plan or programme.	Section 7 Appendices C and D
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of expertise) encountered in compiling the required information.	Sections 5 and 7
9. A description of the measures envisaged concerning monitoring in accordance with section 19.	Section 8
10. A non-technical summary	See accompanying Non-Technical Summary

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