



Belfast Local Development Plan

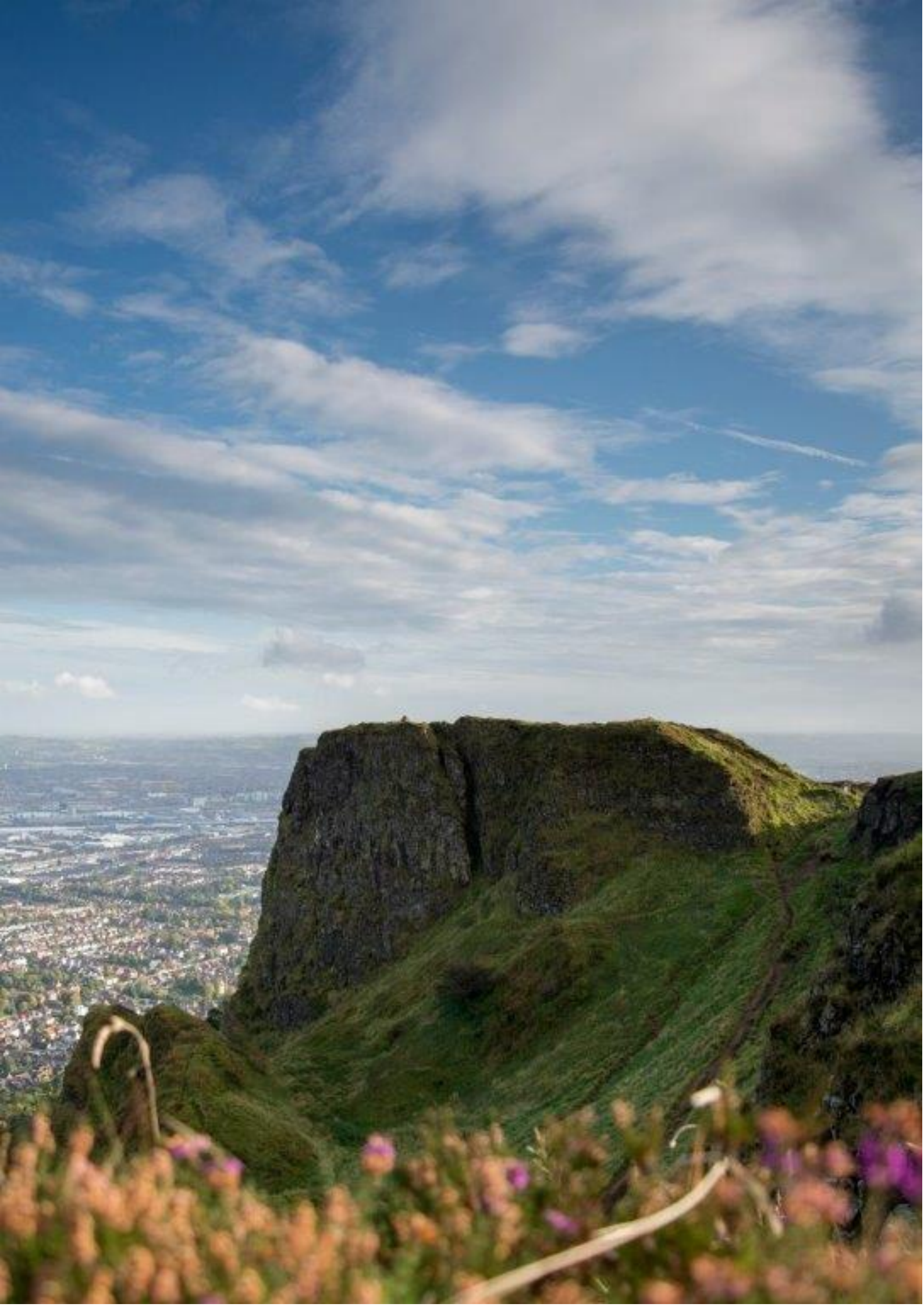
Technical Supplement 16
Environmental Issues
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1.0 Introduction

Purpose of this Document

- 1.1 This technical document has been prepared to draw together the evidence base that has been used to inform the preparation of the Belfast Local Development Plan (LDP) 2035. It is one of a suite of topic-based technical supplements that should be read alongside the LDP to understand the rationale and justification for the policies in the draft Plan Strategy.
- 1.2 The document builds upon the suite of 18 thematic topic papers published alongside the LDP Preferred Options Paper (POP), which established the baseline position at that time (January 2017) and identified the key issues to be addressed by the LDP. This document is compiled from two POP stage topic papers, relating to environmental constraints and environmental resilience, as many of the issues are inter-related. This technical document therefore updates this baseline position, along with the two previous topic papers, sets out the evidence base that has informed the relevant policies within the draft Plan Strategy.
- 1.3 Again, this document forms part of a series of thematic reports to accompany the draft Plan Strategy. Whilst each of the technical supplements can be read separately, there are inevitably important related matters and background evidence within other documents also.
- 1.4 It should be noted that the evidence base collected to inform the LDP also forms the basis for additional assessments and appraisals required as part of the plan preparation process, most notably the Sustainability Appraisal. By combining the evidence gathering stages for both the Sustainability Appraisal and LDP, we aim to streamline the documentation produced and avoid duplication. It will also help to ensure that sustainable development is embedded in the planning process and that the Sustainability Appraisal is one of the main drivers informing the preparation of the LDP.

Planning and Environmental Issues

- 1.5 The environment in general and, in particular, environmental protection is the very foundation of the planning system, the purpose of which is, as stated in the Strategic Planning policy Statement for NI (SPPS), to secure the orderly and consistent development of land whilst furthering sustainable development and improving wellbeing. The planning system operates in the public interest, including of individuals and local communities and also in the interests of the region as a whole. It also seeks to address the future needs of society as well as the present and, in doing so, the planning system must ensure the protection of the environment, including protecting important assets and improving environmental quality.

- 1.6 The planning system has a pivotal role to play in addressing social and economic issues but within a context of safeguarding the city's valuable environmental resources and maintaining environmental quality and standards. The SPPS states that 'when place-making, planning authorities should make efficient use of existing capacities of land, buildings and infrastructure, including support for town centre and regeneration priorities in order to achieve sustainable communities where people want to live, work and play now and into the future'. Accordingly, implementing mitigation measures to avoid, minimise and remedy negative impacts on the environment is essential to achieving sustainable communities.
- 1.7 There are many environmental protection and amenity considerations, including noise and air quality, that have to be taken into account by planning authorities when preparing planning policies or managing development. For example, the planning system has a role to play in minimising potential adverse impacts, such as noise or light pollution on sensitive receptors by means of its influence on the location, layout and design of new development. The planning system can also positively contribute to improving air quality and minimising its harmful impacts. By embedding environmental considerations within the planning process, the planning system will be better placed to improve the health and wellbeing of the city in order to achieve the council's corporate objective of creating a successful city where people love to live, work and visit and which attracts investment and talent.
- 1.8 In addition to protecting the current environment, the LDP can play a key role in helping to mitigate and adapt to the effects of climate change through sustainable approaches to building design, supporting low and zero carbon energy generation, sustainable transport, creating and maintaining habitats and open space and addressing and mitigating against flood risk. The planning system can also protect and create integrated natural spaces that sequester carbon (e.g.: trees and forests) to provide a cooling effect in cities as well as manage storm water to minimise flooding. Plan-making for urban areas, can help to reduce energy demand (e.g.: through less travel and more sustainable transport) and promote alternative sources of energy and fuel. Sustainable approaches to design and construction can also assist in reducing fuel poverty and protecting the population from extreme temperatures.
- 1.9 There is the opportunity to both help to mitigate the impacts of climate change and ensure that we are in a position to adapt to the impacts of future climate change. Mitigation means to slow climate change by reducing the amount of greenhouse gases in the atmosphere. Adaptation means measures to adapt to our changing climate. Predictions are for warmer and wetter winters, hotter and drier summers, rising sea levels and increased extreme weather conditions. The LDP has a clear role to play in supporting the shift to a low carbon city and ensuring that new development is resilient to a changing environment. This is clearly recognised in the Regional Development Strategy 2035 (RDS), which includes aims to protect environment, to reduce our carbon footprint and to adapt to climate change.

- 1.10 In preparing the new LDP for Belfast, it is recognised that there are a number of environmental challenges that should be considered and addressed as part of the LDP process. This technical document identifies and reviews the key environmental challenges from a land use planning perspective. The best available information has been used in compiling this paper. However it may need to be revised in light of the release of any new data. It contains some original data that refers in places to the former BMAP pre-local government reform, when the boundary of Belfast City Council was enlarged. Where possible and relevant, data has also been included which relates to the new Belfast City Council area. In addition, any data used in the previous topic paper (January 2017) has been updated where there is more recent data, so that the overall statistical evidence base is as up to date as possible.

2.0 Planning Context

National and Regional Policy

The Environmental Noise Directive.

- 2.1 Environmental noise pollution describes noise caused by road, rail and airport traffic, industry, construction, as well as some other outdoor activities. The Environmental Noise Directive (END) 2002/49/EC provides for a common framework approach to be applied across European member states that is intended to avoid, prevent or reduce on a prioritised basis the harmful effects of noise, including annoyance due to exposure to environmental noise.
- 2.2 END requires member states to prepare and publish, every 5 years, noise maps and noise management action plans for population centres of more than 100,000 persons (referred to as agglomerations), major roads with more than 3 million vehicle movements per year, major railways with more than 30,000 train movements per year and major airports with more than 50,000 movements a year. These requirements are addressed locally via the Environmental Noise Regulations (Northern Ireland) 2006. The provisions of these Regulations are summarised later in this chapter.

World Health Organisation Guidelines for Community Noise.

- 2.3 The World Health Organisation (WHO) has derived a series of guideline values for community noise (also referred to as environmental, residential or domestic noise) that are designed to help protect people from the harmful effects of noise in non-industrial environments. Community noise is defined as noise emitted from all sources except noise at the industrial workplace. The main sources of external community noise include road, rail and air traffic, industries, construction and public works, whereas the main indoor sources include ventilation systems, office machines, home appliances and neighbours. Typical neighbourhood noise also comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs. As part of the planning process, the council will seek to ensure that the internal noise environment for residential premises complies with the WHO guideline values for community noise. These WHO noise levels are also reflected in the British Standard BS 8233:2014 Guidance on sound insulation and noise reduction for buildings.

The Environmental Noise Regulations (Northern Ireland) 2006

- 2.4 The Environmental Noise Regulations transcribe the requirements of the Environmental Noise Directive into Northern Ireland legislation, thereby requiring competent authorities to develop strategic noise maps and accompanying noise action plans and to identify and safeguard Quiet Areas. Within Northern Ireland, the Department for Infrastructure (formerly the Department for Regional Development) is the competent authority for road noise, Translink has been designated the competent authority for railway noise, the Department of Agriculture, Environment and Rural Affairs (formerly the Department of the Environment) is the competent authority for industrial noise and the George Best Belfast City Airport is the competent authority

for airport noise. All these bodies have published Noise Action Plans covering the period 2013-2018 which identify actions that they will take to limit and mitigate noise from their respective operations. In addition, competent authorities have also identified and highlighted that the Northern Ireland planning system has a role to play in preventing and minimising the impact of noise through its influence in the layout and design of new developments and consideration of the resulting amenity impacts which is considered to be a fundamental part of the development management process.

Noise Policy Statement for Northern Ireland 2014

- 2.5 Through the effective management and control of environmental, neighbour and neighbourhood noise, the Noise Policy Statement for Northern Ireland (NPSNI) aims to avoid or mitigate significant adverse impacts on health and quality of life, to mitigate and minimise adverse impacts on health and quality of life and where possible to contribute to the improvement of health and quality of life. Moreover, the Noise Policy Statement highlights that the planning system has a role to play in preventing and minimising the impact of noise through its influence on the location, layout and design of new development and consideration of the amenity impacts. With regard to local development plans, the NPSNI states that the zoning of land for economic development should consider the potential for noise nuisance upon sensitive receptors such as existing or approved residential developments. Where potential for adverse impacts are unavoidable, the development plan should seek to mitigate through the application of key site requirements to new zonings (for example by requiring new housing in proximity to an existing noise generating activity to be set back a specified distance and / or to incorporate sound proofing design elements).

Water Framework Directive

- 2.6 The Water Framework Directive (2000/60/EC) establishes a framework for community action in the field of water policy. The overarching objective of the Directive is therefore to establish and implement a framework for European Community action in the field of water policy in order that Member States achieve good qualitative and quantitative status for their water bodies by 2015. Accordingly, the Directive provides for a single system of water management known as River Basin Management. The River Basin Management approach enables water bodies to be managed in their natural geographical and hydrological unit instead of according to administrative or political boundaries.
- 2.7 Surface waters – in order to ensure ecological protection for surface waters, the WFD established a general requirement for ecological protection alongside minimum chemical standards. As no absolute standards for biological quality can be set which are appropriate across the entire European Community, the biological controls applied allow only a slight departure from the biological community which would be present in conditions of minimal anthropogenic impact. Good chemical status is determined in terms of compliance with all the quality standards established for chemical substances at a European level.

- 2.8 Groundwaters - the presumption in relation to groundwater protection is that it should not be polluted at all. For this reason, the WFD approach to protection of groundwater comprises a prohibition on direct discharges to groundwater, and to safeguard against indirect discharges, a requirement to monitor groundwater bodies so as to detect changes in chemical composition, and to reverse any anthropogenic pollution.
- 2.9 Quantitative status – the quantity of groundwater is also a major issue inasmuch as there can only be limited ongoing recharge of groundwater systems, and of this recharge, some is needed to support ecosystems such as surface water or terrestrial systems such as wetlands. For good water management, only that portion of the overall recharge not needed by the ecological systems should be abstracted. This is known as the sustainable resource and the Water Framework Directive limits abstraction to this quantity.

North Eastern River Basin Management Plan 2009 and 2015

- 2.10 This identifies where the water environment is in a good or excellent condition and sets out objectives for the improvement or the prevention of deterioration of rivers, lakes, marine and groundwater.

The EU Floods Directive

- 2.11 The EU Floods Directive (2007/60/EC) requires member states to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.

North Eastern Flood Risk Management Plan

- 2.12 This is a requirement of the Floods Directive aimed at reducing the potential adverse consequences of significant floods on human health, economic activity, cultural heritage and the environment.

Preliminary Flood Risk Assessment (Northern Ireland) 2011

- 2.13 The Preliminary Flood Risk Assessment (PFRA) for Northern Ireland is required by Article 4 of the EU Floods Directive (2007/60/EC). It assesses the potential adverse consequences of future floods on human health, economic activity, cultural heritage and the environment taking into account long term developments such as climate change.

European Directive on ambient air quality and cleaner air for Europe

- 2.14 The European Directive on ambient air quality and cleaner air for Europe serves to merge most of the existing European air quality legislation into a single Directive, with the exception of the provisions of the 4th daughter Directive that relate to the control of heavy metals and polycyclic aromatic hydrocarbons. The Directive also establishes new air quality objectives for PM_{2.5} and it provides for the possibility of discounting natural sources of pollution when assessing compliance against limit values. Finally, the Directive provides for the possibility of time extensions for complying with limit values PM₁₀, NO₂ and benzene.

- 2.15 Within Belfast, the progressive adoption of cleaner combustion technologies and introduction of natural gas has meant that residential emissions have dramatically reduced over recent years. Similarly, new technologies and the introduction of the industrial emission legislation have meant that industrial emissions have also been reduced. Against this backdrop of emission improvements however, it should be noted that emissions from road transport have not correspondingly declined resulting in exceedences of European air quality standards for particulate matter and nitrogen dioxide along certain arterial transport routes into the city. The role of the planning system in air quality management is therefore to ensure that the locations of developments that may give rise to air pollution are considered carefully and that other developments are, as far as practicable, not adversely affected by major existing or potential future, sources of air pollution.

Draft Programme for Government 2016-2021.

- 2.16 The Draft Programme for Government 2016-2021 contains 14 strategic outcomes which, taken together, set a clear direction of travel and enable continuous improvement on the essential components of social wellbeing. The outcomes are supported by 42 indicators (including an indicator to measure improvements in air quality), which are clear statements for change. Each indicator is accompanied by a measure which is largely based upon available statistics. It has a target of continuing to work towards a reduction in GHG emissions by at least 35% on 1990 levels by 2025. The measures taken to reduce GHG Emissions will make a contribution to mitigating the effects of climate change. It will reduce our dependence on fossil fuels, and increase resource and energy efficiency.

Northern Ireland Executive Sustainable Development Strategy

- 2.17 The Northern Ireland Executive's Sustainable Development Strategy recognises that concentrated efforts across all sectors will be needed to improve energy efficiency and reduce carbon emissions in order to address the challenges presented by climate change and the need for sustainable development.

Regional Development Strategy 2035.

- 2.18 The Regional Development Strategy (RDS) provides an overarching strategic planning framework to facilitate and guide the public and private sectors. Sustainable development is at the heart of the Regional Development Strategy. The RDS aims to "meet the needs of the present without compromising the ability of future generations to meet their own needs." Our society and economies are completely dependent on the environment which encompasses them and are therefore bound to its limits and capabilities. Climate change is widely accepted as a major environmental threat with increases in annual rainfall and average temperatures potentially impacting on society, the economy, species and habitats.
- 2.19 The RDS includes an objective to take actions to reduce our carbon footprint and facilitate adaptation to climate change. It recognises that climate change is one of the most serious problems facing the world and we need to play our part to reduce and offset our impact on the environment. We need to reduce harmful green house gas

emissions to help reduce the threat of climate change and promote sustainable construction, consumption and production. This means an even greater focus on where people live and work and how transport and energy needs are planned. A holistic approach is required to integrate physical economic and social developments to mitigate and adapt to climate change and create a resilient city.

Strategic Planning Policy Statement (SPPS) for Northern Ireland 2015.

2.20 The SPPS consolidates some twenty separate policy publications into one document, and sets out strategic subject planning policy for a wide range of planning matters. It also provides the core planning principles to underpin delivery of the two-tier planning system with the aim of furthering sustainable development. It sets the strategic direction for the new councils to bring forward detailed operational policies within future local development plans. It states that the planning system should:

- Shape new and existing developments in ways that and positively build community resilience to problems such as extreme heat or flood risk;
- Promote sustainable patterns of development, including the sustainable re-use of historic buildings where appropriate, which reduces the need for motorised transport, encourages active travel, and facilitates travel by public transport;
- Require the siting, design and layout of all new development to minimise resource and energy requirements that would help to reduce greenhouse gas emissions;
- Avoid developing in areas with increased vulnerability to the effects of climate change, particularly areas at significant risk from flooding, landslip and coastal erosion and highly exposed sites at significant risk from impacts of storms;
- Consider the energy and heat requirements of new developments when designating land for new residential, commercial and industrial development and making use of opportunities for energy and power sharing, district heating, or for decentralised or low carbon sources of heat and power wherever possible;
- Promote the use of energy efficient, micro-generating and decentralised renewable energy systems; and
- Work with natural environmental processes, for example through promoting the development of green infrastructure and also the use of sustainable drainage systems (SuDs) to reduce flood risk and improve water quality.

Ensuring a Sustainable Transport Future: A New Approach to Regional Transportation

2.21 This 2011 document sets out the Department for Regional Development's approach to regional transportation and particularly future decisions on investment. It establishes strategic objectives of improving connectivity, using road space and railways more efficiently, better maintaining transport infrastructure, improving access in our towns, cities and in rural areas, improving connections to key tourism sites and improving safety. The strategy also seeks to enhance social inclusion, develop transport programmes focussed on the user, reduce greenhouse gas emission, protect biodiversity and reduce water, noise and air pollution.

The Environment (Northern Ireland) Order 2002.

2.22 This provides a statutory framework to enable transposition of the requirements of EC Directives 96/61 on Integrated Pollution Prevention and Control (the IPPC Directive) and 96/62 on Ambient Air Quality Assessment and Management:

- Makes additional provision for the prevention and control of environmental pollution;
- Introduces measures to allow for the better protection and management of Areas of Special Scientific Interest (ASSIs).

The Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013.

2.23 Industrial production processes account for a considerable share of the overall pollution in Europe, for emissions of greenhouse gases and for acidifying substances, wastewater emissions and waste. In order to take further steps to reduce emissions from such installations, the European Commission adopted its proposal for a Directive on industrial emissions. The Pollution Prevention and Control Regulations (Northern Ireland) 2013 has brought this directive into effect for Northern Ireland.

The United Nations Paris Agreement

2.24 The United Nations Paris Agreement signed by 195 countries and the EU in December 2015, is a legally binding agreement in international law, requiring all signatories to reduce GHG emissions to limit global temperature rise to 2°C, and that efforts should be pursued to limit to 1.5 degrees. The Paris Agreement marks a clear turning point towards a sustainable and low carbon future, and sends a strong signal to investors that governments are committed to a low carbon economy. It establishes a new long term goal to strengthen adaptation and resilience to reduce vulnerability to climate change. The agreement is an important step forward, to limit global temperature rises and to avoid the worst impacts of climate change. This is vital for long-term economic and global security.

UK Climate Change Act 2008

2.25 The UK Climate Change Act 2008 established a legislative framework to enable the reduction of UK GHG emissions by 80% from 1990 levels by 2050 and by 34% by 2020. It also introduced legally binding five-year carbon budgets, which set a ceiling on the levels of GHG the UK can emit to secure the 2050 target. The European Union (EU) has a target of reducing GHG emissions from 1990 levels by 20% by 2020 and 40% by 2030. These targets ensure that the EU is on the cost-effective track towards meeting its objective of cutting emissions by at least 80% by 2050.

Climate Change Risk Assessment 2017 Evidence Report- Summary for NI

2.26 The Climate Change Risk Assessment is required every five years under Section 56 of the Climate Change Act 2008. The report presents a national assessment of potential risks from climate change facing Northern Ireland for the period to 2060.

Radon: indicative atlas for Northern Ireland.

- 2.27 Radon is a naturally occurring radioactive gas that can cause lung cancer. It is measured in Becquerels per cubic metre of air (Bq m⁻³). The relative health risk to residential properties in different parts of Northern Ireland is described in terms of the probability that the level of radon within the property exceeds an 'Action Level' of 200 Bq m⁻³. Where radon levels in residential properties exceed the action level, it is recommended that radon levels are reduced to as low as possible with the aim of getting below a target level of 100 Bq m⁻³. The 'Radon: indicative atlas for Northern Ireland' (August 2015) presents an overview of detailed mapping in Northern Ireland of radon potential, defined as the estimated percentage of homes in an area that are at, or above the radon action level of 200 Bq m⁻³. This new atlas has identified that homes in some parts of Belfast are now likely to be above the radon action level. The Building Regulations Technical Booklet C provides information and guidance on the requirements for site preparation and building resistance to naturally occurring contaminants including radon.

SEVESO Directive and the Control of Major Accident Hazards Regulations

- 2.28 The Seveso Directive (96/82/EC) was introduced following a disaster in the Italian town of Seveso in 1976. It aims to prevent major accidents involving dangerous substances and to limit consequences of such accidents for people and the environment. A new Directive on the control of major accident hazards involving dangerous substances, known as Seveso III, was published on 24 July 2012 by the European Commission. The Control of Major Accident Hazards Regulations (Northern Ireland) 2000 were repealed on 28th September 2015 to be replaced with the Control of Major Accident Hazards Regulations (Northern Ireland) 2015 that implements the majority of the Seveso III Directive. The Seveso III Directive does not fundamentally alter the previous regulatory regime but does strengthen a number of areas such as public access information and standards of inspection.
- 2.29 The Regulations are enforced by a competent authority comprising the Health and Safety Executive NI (HSENI) and NIEA. NIEA is responsible for assessing measures to protect the environment under the Regulations. This includes examining operators' safety reports and carrying out inspections on establishments covered by the regulations. COMAH applies when a site has more than a threshold quantity of dangerous substances present (lower tier). Sites are subject to more stringent controls if the quantities of substances present are above a higher threshold (top tier). There are a number of COMAH sites in Belfast, including in the harbour area. In terms of land use planning, new development in the vicinity of COMAH sites is considered as part of planning approval processes. HSENI advises planning authorities by applying the Planning Advice for Developments near Hazardous Installations guidelines.

Local Policy

- 2.30 The current planning policy context at a local level is complex as a result of a successful legal challenge to the adoption of the Belfast Metropolitan Area Plan

(BMAP) 2015. There are therefore five existing development plans that relate to parts of the Belfast district, alongside draft BMAP. All of these documents will be superseded at the adoption of the new Belfast LDP 2035.

Belfast Urban Area Plan (BUAP) 2001

- 2.31 The current development plan for the majority of the Belfast district is the Belfast Urban Area Plan (BUAP) 2001, which was adopted in December 1989. The area covered by the plan included the whole of the administrative area of the former Belfast City Council area, together with the urban parts of the former district council areas of Castlereagh, Lisburn and Newtownabbey as well as Greenisland and Holywood.
- 2.32 The purpose of the BUAP was to establish physical development policies for this broad urban area up to 2001, clarifying the extent and location of development and providing a framework for public and private agencies in their investment decisions relating to land use. Although alterations were made in 1996, the BUAP is now largely out-of-date and was formally superseded by the BMAP in September 2014. However, BMAP was quashed as a result of a judgement in the court of appeal delivered on 18 May 2017, meaning that the BUAP 2001 remains the statutory development plan for most of the council's area.

The Lisburn Area Plan 2001

- 2.33 The change in council boundary as a result of the local government reform on 1 April 2015, and the subsequent quashing of BMAP, means that the Lisburn Area Plan 2001 remains the statutory development plan for a small portion of Belfast's district around Dunmurry. Adopted on 4 July 2001, the Lisburn Area Plan sought to establish physical development policies for Lisburn and its surroundings up to 2001. However, as work on the development of BMAP had commenced at the time of adoption, an element of provision had been incorporated so that the area's reasonable housing development needs could continue to be met with some certainty until such time as the successor BMAP was in place.

Lagan Valley Regional Park Local Plan 2005

- 2.34 The quashing of BMAP also means that the Lagan Valley Regional Park Local Plan (adopted in 1993) was re-instated as the statutory development plan for the Lagan Valley Regional Park (LVRP). It sets out the strategy and policies associated with the protection and enhancement of the natural and man-made heritage of the LVRP. Its main objectives are to conserve the landscape quality and features of the Lagan Valley and to enhance recreational use by the public.

Belfast Harbour Local Area Plan 1990-2005

- 2.35 The quashing of BMAP also means that the Belfast Harbour Area Local Plan (adopted in 1991) was also re-instated as the statutory development plan for Belfast Lough and its foreshores, encompassing land east of the Belfast to Larne railway line and west of the Sydenham By-Pass and the Belfast to Bangor road. It was prepared

within the strategy set out in the Belfast Urban Area Plan 2001 and underlines the importance of the harbour area to Belfast and to the Northern Ireland economy.

North Down and Ards Area Plan 1984-1995

- 2.36 A small section of the Belfast District at Knocknagoney was subsumed into Belfast as part of local government reform in 2015. The quashing of BMAP means that this area reverts back to the original North Down and Ards Area Plan 1984-1995 (adopted 1989).

Belfast Metropolitan Area Plan 2015

- 2.37 Although formally adopted in 2014, this process of final BMAP adoption was declared unlawful as a result of a judgement in the court of appeal delivered on 18 May 2017. This means the Belfast Urban Area Plan (BUAP) 2001 and the other Development Plans provides the statutory plan context for the area. However, BUAP was published in 1990, nearly 30 years ago. The Belfast City Council Plan Area has undergone massive transformation since then, particularly in the city centre. The formal development plans which apply are dated and silent on many of the planning issues pertinent to needs of current planning decision making. In recognition of this unique circumstance and taking account of the short term transitional period in advance of the adoption of the Local Policies Plan it is important to provide clarity in relation to the application of planning policy.
- 2.38 Draft BMAP, in its most recent, post-examination form remains a significant material consideration in future planning decisions. It was at the most advanced stage possible prior to formal adoption. Draft BMAP referred to throughout the LDP Draft Plan Strategy documentation therefore refers to that version. However, the council has also had regard to the provisions of the draft BMAP which was published in 2004, the objections which were raised as part of the plan process and the Planning Appeals Commission Inquiry report.
- 2.39 The SPPS's transitional arrangements provide for continuity until such times as a new LDP for the whole of their council area is adopted to ensure continuity in planning policy for taking planning decisions.
- 2.40 BUAP contains fewer zonings or designations than draft BMAP and delineates a city centre boundary which has expanded significantly since then by virtue of the application of Draft BMAP. The council therefore intends to use a number of the existing designations contained in the draft BMAP, insofar as it relates to the Belfast City Council Plan Area, to form the basis of decision making until the LDP is adopted in its entirety. A list of the existing draft boundaries and designations is contained in Appendix A of the LDP Draft Plan Strategy.
- #### **2014 Air Quality Progress Report for Belfast City Council**
- 2.41 This report includes a review of air quality monitoring data across the city in order to identify locations where new or existing exceedences of Air Quality Strategy objectives and European Commission limit values are occurring.

Belfast City Council Air Quality Action Plan 2015-2020

- 2.42 The aim of this Action Plan is to confirm measures that will be implemented throughout the city to improve air quality for the citizens of Belfast.

Air Quality and Land Use Planning. A Belfast Specific Guidance Note for Planners and Air Quality Consultants 2009

- 2.43 Guidance supports developers and consultants involved in developments in Belfast, to give due consideration to air quality matters and to submit appropriate supporting information with their planning applications.

Detailed Air Quality Assessment for Belfast City Council 2010

- 2.44 This report is presented within compliance of the Environment Order (NI) 2002 which places responsibility on councils to periodically review and assess air quality within their boundaries.

3.0 Environmental Profile

Air Quality

- 3.1 The presence of air pollution can lead to poor air quality and to an adverse impact on human health, typically by irritating the lungs and airways or by passing into our blood via our lungs. Air pollution is also known to adversely affect ecosystems such as water quality, soils, plants and animals. The Regional Development Strategy 2035 (RDS) recognises the dangers from air particulate pollution stating that it is estimated that it reduces life expectancy in the UK by 7-8 months. The RDS acknowledges that there is a need to reduce air pollution from transport by the use of more energy efficient transport as well as a need to continue to protect Air Quality Management Areas.
- 3.2 The Strategic Planning Policy Statement (SPPS) details that the Local Development Plan (LDP) must consider the location of development which may give rise to air pollution. The LDP must also, ensure that other developments are, as far as practicable, not adversely affected by major existing or potential future sources of air pollution.
- 3.3 Belfast City Council has a statutory duty to annually review, assess and report on air quality across the city under the Local Air Quality Management (LAQM) regime. This is provided for via Part 3 of the Environment (Northern Ireland) Order 2002 and the relevant policy and technical guidance. LAQM reporting requirements are to be reviewed by DEARA as part of a wider air quality strategy update.
- 3.4 The initial air quality assessment was carried out by Belfast City Council in 2003. The assessment concluded that measures would be required in four specific areas of the city in order to mitigate the effects of nitrogen dioxide (NO₂) and particulate matter (PM₁₀) pollution, associated principally with road transport. In August 2004, the council identified and declared four Air Quality Management Areas (AQMAs) across the city where the health based air quality objectives for nitrogen dioxide and particulate matter were exceeded. The details and illustrative boundaries (in blue) are shown below:
- 3.5 The **M1/ Westlink corridor** from the Belfast City boundary at Sir Thomas and Lady Dixon Park to the end of the Westlink at the junction with Great Georges Street and York Street including Stockmans Lane and Kennedy Way. This area was declared for predicted exceedences of both the nitrogen dioxide and particulate material annual mean air quality strategy objectives, as well as exceedences of the particulate matter 24-hour mean objective and the nitrogen dioxide 1-hour mean objective.
- 3.6 **Cromac Street** to the junction with East Bridge Street and then from East Bridge Street to the junction of Ravenhill and Albertbridge Roads and Short Strand. This area was declared for predicted exceedences of the nitrogen dioxide annual mean air quality strategy objective.

- 3.7 The **Upper Newtownards Road** from the North Road junction to the Belfast City boundary at the Ulster Hospital incorporating Knock Road to the city boundary at Laburnum Playing Fields and Hawthornden Way. This area was declared for predicted exceedences of the nitrogen dioxide annual mean air quality objective.
- 3.8 The **Ormeau Road** from the junction with Donegall Pass to the Belfast City boundary at Galwally. This area was declared for predicted exceedences of the nitrogen dioxide annual mean air quality strategy objective.

Figure 1: M1 / A12 Westlink AQMA

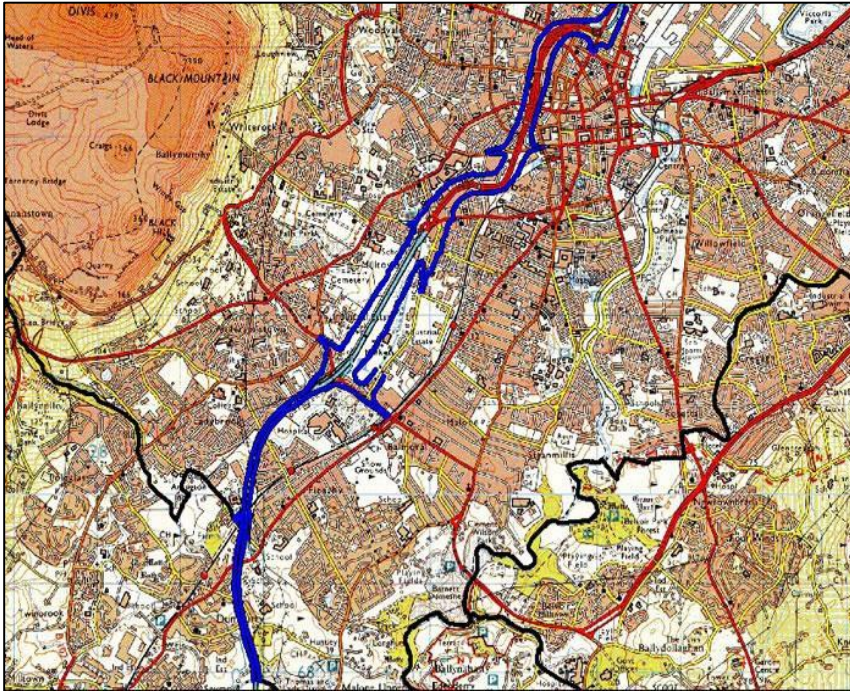


Figure 2: Cromac Street and Albertbridge AQMA



Figure 3: Ormeau Road AQMA

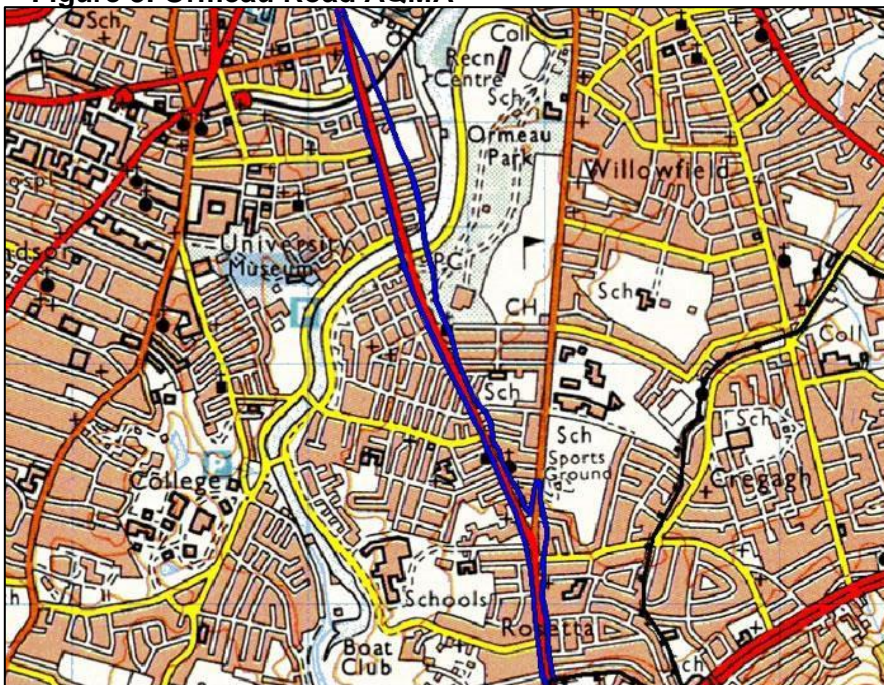
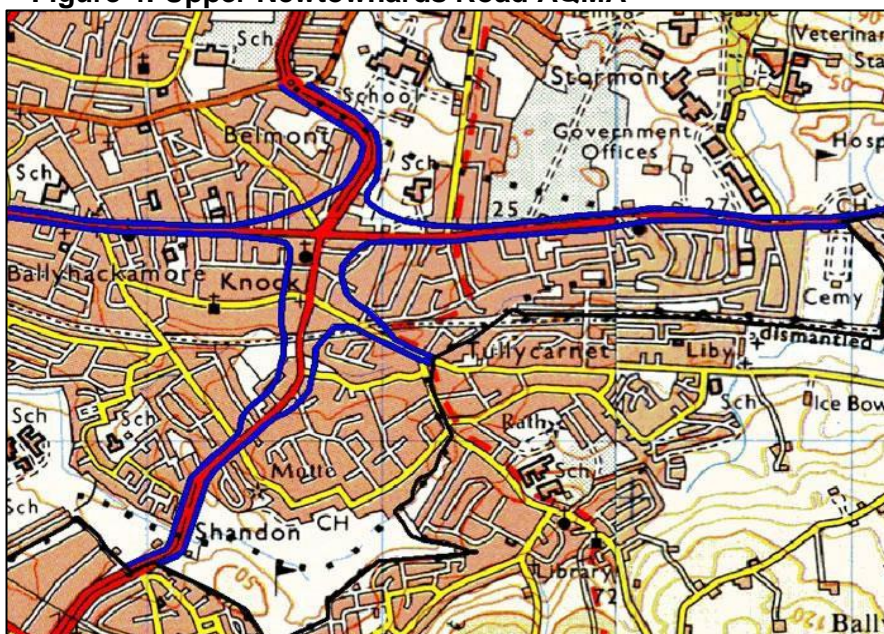


Figure 4: Upper Newtownards Road AQMA



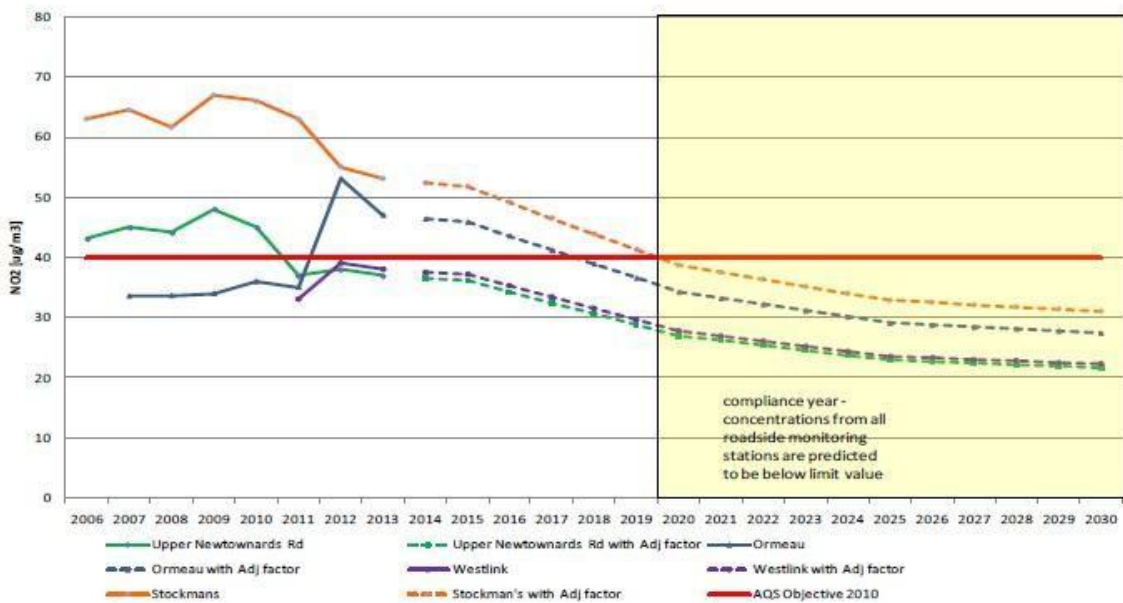
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3.9 The 2010 detailed review and assessment considered the potential for exceedences of the nitrogen dioxide objectives at a number of further locations across the city:

- The junction of the Sydenham Bypass with the Lower Newtownards Road.
- Shaftesbury Square
- Donegall Road
- Albertbridge Road
- Locations throughout city centre

- 3.10 Some of the above locations have suggested exceedences of the nitrogen dioxide annual mean objective through atmospheric dispersion modelling. The review and assessment identified however that there was no relevant public exposure at these locations and as a consequence, there was no need to declare further AQMAs.
- 3.11 Five automatic monitoring stations monitor air quality across Belfast. They provide real time information to the public in relation to air pollution levels within the air quality management areas. One monitoring station is located within each of the four area quality management areas as well as one located in the city centre at Lombard Street.
- 3.12 The monitoring data indicates that air quality in Belfast has generally improved over recent years. The Upper Newtownards Road AQMA has shown reductions to the point that the area is now in compliance with the air quality objectives for nitrogen dioxide. Using the DEFRA year adjustment calculator tool, it is predicted that Belfast will be in compliance with the EU limit values for nitrogen dioxide by 2020. This is shown on figure 5.

Figure 5: Monitored and projected annual mean NO2 concentrations at Belfast roadside air quality monitoring stations.



Source: Belfast City Council Air Quality Action Plan 2015-2020

Noise Pollution

- 3.13 Noise is an inevitable consequence of a mature and vibrant society, but it is regarded by some to be an unwelcome feature of everyday life. Noise is subjective and different people react to it in different ways. What can cause annoyance to some people may barely be noticeable to others. Noise can however have the effect of causing people to feel annoyed simply because it is audible. As noise increases in volume, it can interrupt conversation, disturb sleep and, in extreme conditions, may affect the physical wellbeing of those affected.
- 3.14 The SPPS states 'Planning authorities should pay regard to the Noise Policy Statement for Northern Ireland as it seeks to set clear policy aims to enable decisions to be made and will ensure appropriate inter-relationship between the planning system and what is acceptable noise burden to place on society.' The SPPS states LDP's have a role in reducing the potential for detrimental noise impacts through the implementation of measures such as zoning.
- 3.15 The Noise Policy Statement for Northern Ireland, through the effective management and control of environmental, neighbour and neighbourhood noise, aims to:
- Avoid or mitigate significant adverse impacts on health and quality of life having regard to the principles of sustainable development;
 - Mitigate and minimise adverse impacts on health and quality of life – this means that the noise impact should lie between the LOAEL (Lowest Observed Adverse Effect Level) and the SOAEL (Significant Observed Adverse Effect Level). Its requires that all reasonable steps should be taken to mitigate and minimise adverse effects in health and quality of life while together taking into account the guiding principles of sustainable development. This does not mean that adverse effects cannot occur but that effort should be focused on minimising such effects; and
 - Where possible, contribute to the improvement of health and quality of life – to be achieved through the proactive management of noise, recognising that there will be opportunities for such measures to be taken and that they will deliver potential benefits to society. The protection of quiet places and times as well as the enhancement of the acoustic environment will assist with delivering this aim. However, attempts to improve the acoustic environments should not be to the detriment of other potential environmental impacts.
- 3.16 The NPSNI is relevant to most forms of noise, except workplace (occupational) noise and therefore applies to the following types of noise:
- environmental noise - noise from transportation and industrial sources;
 - neighbour noise - noise from inside and outside people's homes; and
 - neighbourhood noise - noise arising from within the community such as from entertainment premises, trade and business premises, construction noise and noise in the street.

- 3.17 With regard to the development planning system, the NPSNI states that the planning system can minimise the potential for noise nuisance through the zoning of land. By way of example, zoning for economic development should consider the potential for noise nuisance upon sensitive receptors such as existing or approved residential development. Where potential for adverse impacts are unavoidable, the development plan should seek to mitigate through the application of key site requirements to new zonings (for example by requiring new housing in proximity to an existing noise generating activity to be set back a specified distance and / or to incorporate sound proofing design elements).
- 3.18 The aim of the Environmental Noise Directive (2002/49/EC) (commonly referred to as END) is to 'avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to exposure to environmental noise'. This is to be achieved by determining the noise exposure of the population through noise mapping, making information on environmental noise available to the public, developing Action Plans based on the mapping results to reduce noise levels where necessary, and preserving environmental noise quality where it is good (which includes protecting Quiet Areas).
- 3.19 The Environmental Noise Directive (END) requires that noise from various transport and industrial noise sources be mapped every five years. The transport noise sources that have been mapped are road, rail traffic and air traffic. Two rounds of noise maps have been completed to date; round 1 based upon 2006 data and round 2 based upon 2011 data. It should be noted that the resultant noise maps are derived from noise modelling and as such, they are not based on actual ambient noise readings.
- 3.20 The Department for Infrastructure (formerly DRD) has been designated as a competent authority under END and has therefore developed a Noise Action Plan (2013-2018) to address noise from road transport. The Noise Action Plan has identified those areas where the top 1% of the Belfast population that are affected by the highest noise levels are located, and where the noise level assessed as LA10, 18 hour indicator is at least 75dB. Such locations have been designated as Candidate Noise Management Areas and include residential areas adjacent to the M2 Motorway, Westlink York Street, Donegal Road, Antrim Road, Ormeau Road, Lisburn Road and Upper Newtownards Road.
- 3.21 Translink has been designated as a competent authority under END and has therefore developed a Noise Action Plan (2013-2018) to address noise from railway traffic. Noise modelling results shown that railways have little noise impact, with less than 1 km² of the Belfast agglomeration exposed to noise levels within the Lden 65-69 dB contour band. With limited railway operations during night time hours, noise modelling also shows little noise impact from railways at night. Translink has determined that no dwellings are exposed to noise levels in excess of 75 dB. It has however determined that the top 1% of the population affected by the highest railway noise levels is located along the railway adjacent to the M2

Motorway at the area around York Park, Arosa Park and Glasgow Street. Accordingly, Translink has stated that this area will be the focus of its noise management initiatives and thus be designated as Candidate Noise Management Area. Despite a relatively modest noise impact, Translink has indicated that it will nonetheless seek to influence planning policy in order to minimise the number of noise sensitive properties located around its railway network.

- 3.22 George Best Belfast City Airport has been designated as a competent authority under END and has therefore developed a Noise Action Plan (2013-2018) to address noise from aircraft operations. The Airport's noise modelling has indicated that the top 1% of population exposed to the highest noise levels above 50dB LAeq, 16 hour are generally located towards the south-western end of the Airport next to the A2 / Sydenham Bypass in the areas of Sydenham and Ballymacarrett. At present, the airport is subject to a number of controls via its planning agreement; namely restricted operating hours, a limit on the number of flights per annum, restrictions on noisier aircraft, a Belfast Lough bias for takeoff, an annual noise contour reporting requirement and a requirement to install and operate an integrated noise and track keeping system. It should be noted however, that GBBCA is presently engaged in a Planning Agreement Modification Process with DAERA that may see the Airport's 'seat for sale' restriction removed and replaced with a noise contour control cap and other noise control measures.
- 3.23 DAERA (formerly DoENI) has been designated as a competent authority under END and has therefore developed a Noise Action Plan 2013-2018) to address noise from industry associated with the 36 sites permitted under the industrial pollution prevention and control regime. It should be noted that the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2012 already control noise from Part A processes whereas noise from part B and C processes are subject to the statutory nuisance regime enforced by councils. Population analysis for industrial activities within the Belfast agglomeration show that no one experiences noise in the top two noise categories (more than or equal to 75 dB LAeq 16 hour and 70-74 dB LAeq 16 hour) and only 7 people (or 4 properties) experience noise of 65-69 dB LAeq 16 hour. Accordingly, DAERA has identified that the top 1% of the population exposed to industrial noise are 2 non-residential buildings, located at Duncrue Street/Northern Road, near to Belfast Harbour. No Candidate Noise Management Areas have therefore been proposed for industrial noise.
- 3.24 The designation of Quiet Areas is a further legal requirement of END and the Environmental Noise Regulations (Northern Ireland) 2006. END requires Member States to 'preserve environmental noise quality where it is good' by identifying Quiet Areas within agglomerations (urban areas with a minimum population density). Whilst END does not provide a prescriptive definition of identifying quiet areas, it is up to DAERA to develop the approach, definition and protection measures and advice local authorities accordingly. The only agglomeration within Northern Ireland is the Belfast agglomeration which includes parts of Carrickfergus, Newtownabbey, Lisburn, Holywood, Dundonald, Carryduff and Bangor. On 7th June 2016, the Lagan

Meadows was proposed as a Candidate Quiet Area to the People and Communities Committee. The proposal is currently under consideration by DAERA. This designation was based upon the following qualifying criteria: publicly available park and open space within an agglomeration; a noise level less than or equal to 55 dB Lden; and a minimum area of 5 hectares. The council has indicated however, that that it will engage with DAERA in order to develop more appropriate Quiet Area screening criteria and supporting guidance to be employed in the subsequent identification, designation and management of Quiet Areas.

- 3.25 The consultation by DAERA on Quiet Area Policy Guidance highlights that there is growing policy and emphasis on the positive role of open space, especially green space, in helping to ameliorate some of the problems of urban living. Whilst the adverse impacts of high levels of noise on health and quality of life are relatively well understood, the beneficial effects of access to quietness are less well understood and rarely acknowledged in policy documents.

Water Quality

- 3.26 In adopting the requirements of the Water Framework Directive (2000/60/EC), which has been transposed into Northern Ireland law through the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003, the understanding of the state of Northern Ireland's water environment has developed. In assessing water quality the ecological and chemical quality is considered as well as the pressures that affect them.
- 3.27 The ecological and chemical classification results for surface waters are combined to give an overall status in one of five classes: high; good; moderate; poor and bad. The classification of water bodies gives a deeper understanding of what measures might be required for improvements.
- 3.28 Belfast lies within the North Eastern River Basin. The first North Eastern River Basin Management Plan was published in 2009, detailing where the water environment needs to be protected or improved, the timeframe to make these improvements and how that can be achieved. An update to the plan was published in 2015. There are five springs within the LDP area that were previously used for public supply. These are:
- Ballycollin Road
 - Drumankelly
 - Springfield Road
 - Whitewell
 - Ligoniel
- 3.29 Surface Water is defined by the Water Framework Directive (2000/60/EC) as being inland waters, except groundwater; transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters. All but one of the surface water bodies within the LDP Area has a status of moderate. Connswater River has a status of poor.

- 3.30 Groundwater is defined by the Water Framework Directive (2000/60/EC) as being all water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil. Two groundwater bodies are within the LDP area; these are Belfast Hills and Belfast. Belfast Hills have a status of good while Belfast has a status of poor.
- 3.31 The following figures show the 2015 status of various water bodies within the North Eastern Basin (source: North Eastern River Basin Management Plan Summary 2015).

Figure 6: 2015 Status of Surface Water Bodies

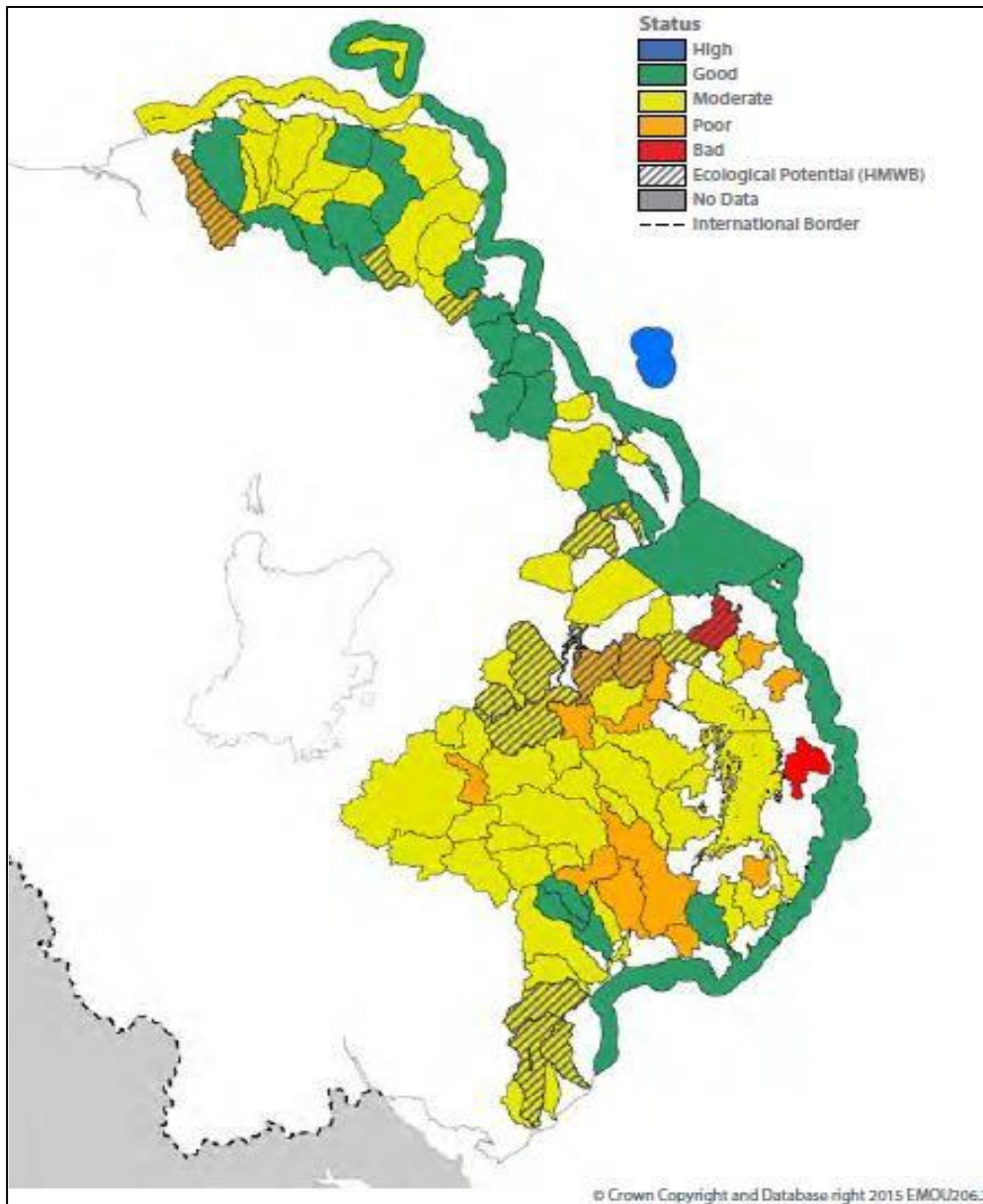


Figure 7: 2015 Overall Status for Groundwaters

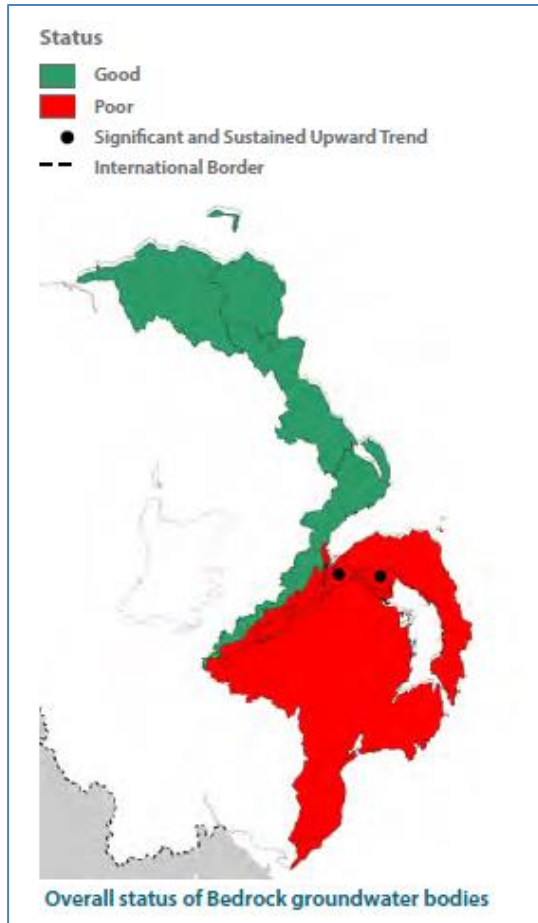
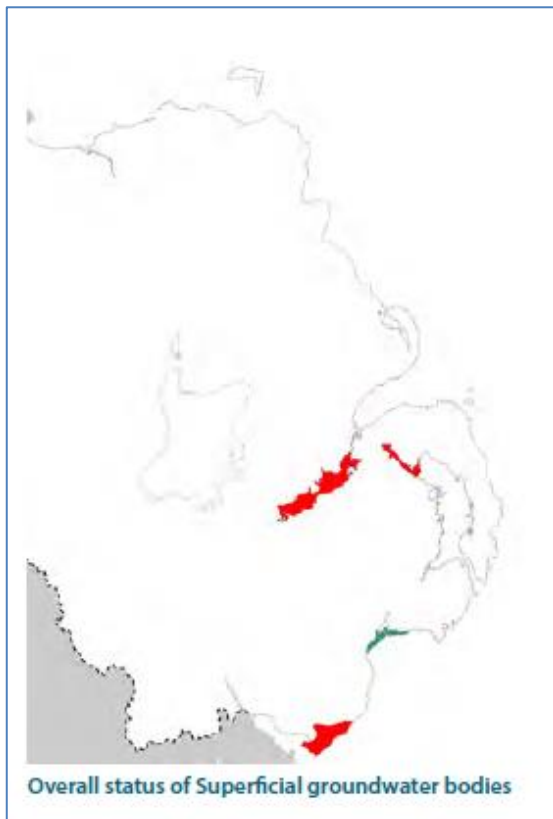


Figure 8: Overall Status of Superficial Groundwater Bodies



Drinking Water Quality

- 3.32 Drinking water quality in Northern Ireland is assessed against standards set in the Water Supply (Water Quality) Regulations (Northern Ireland) 2007 as amended. The 2016 water supply zones wholly or partially within the council area are as follows:

Figure 9: Table showing 2016 Supply Zones wholly or partially within the council area

| Zone Code | Zone Name | Zone | Zone Name |
|-----------|----------------------------|--------|--------------------------|
| ZS0101 | Dunore Ballygomartin North | ZS0108 | Belfast Purdysburn |
| ZS0102 | Dunore Ballygomartin South | ZS0109 | Dorisland Whiteabbey |
| ZS0103 | Belfast Ballyhanwood | ZS0111 | Dunore Point Hydepark |
| ZS0104 | Dunore Breda North | ZS0404 | Drumaroad Ards |
| ZS0105 | Dunore Breda South | ZS0501 | Drumaroad Lisburn |
| ZS0106 | Dunore Belfast North | ZS0502 | Forked Bridge Dunmurry |
| ZS0107 | Belfast Oldpark | ZS0503 | Forked Bridge Stoneyford |

- 3.33 Water quality in the Belfast City Council area is based upon samples taken randomly from customer taps in each water supply zone and from planned samples at authorised supply points. The Belfast percentage compliance at customer tap is shown in the table below:

Figure 10: Compliance at Customer Tap (Including Supply Points)

| | Target | 2013 | 2014 | 2015 | 2016 |
|-------------------------------------|--------|-------|-------|-------|-------|
| Overall Northern Ireland Compliance | 99.7% | 99.7% | 99.8% | 99.7% | 99.8% |
| Belfast Compliance | 99.7% | 99.8% | 99.8% | 99.8% | 99.9% |

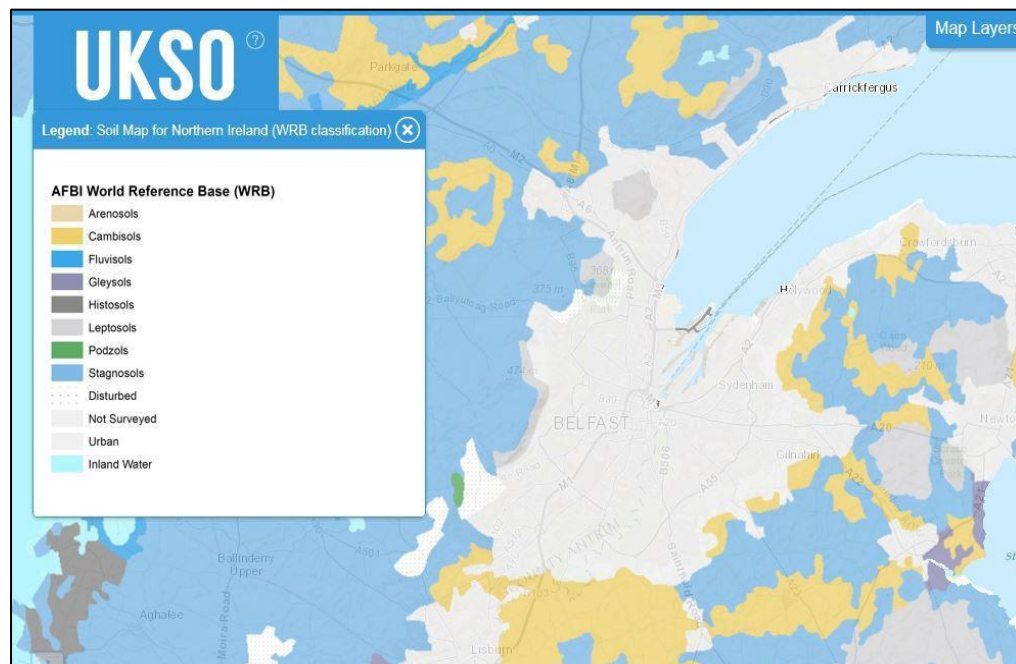
- 3.34 In addition to this there are a number of reservoirs located within Belfast, some of which are used for community activity and other uses.

Soil

- 3.35 Soil is a non-renewable resource that performs many functions essential for human life, the environment and its ecosystems. These functions include; storing, filtering and transforming nutrients and water, biomass production, hosting the biodiversity pool, providing raw materials and acting as a carbon sink. Knowledge of soil types and properties can underpin management practices to develop sustainable agricultural production while maintaining the UK's carbon balance and a wide range of other services such as flood prevention, a major issue in Belfast.

- 3.36 The Regional Development Strategy 2035 recognises the importance of a fully functioning soil that reduces the risk of flooding and protects underground water supplies by neutralising and filtering out potential pollutants. Threats to soil caused by development include soil sealing, loss of biodiversity and deposition of processed materials.
- 3.37 The UK Soil Observatory provides datasets to access UK soils data, used to underpin research. Figure 11 shows the soils present in the Belfast LDP area. Within Belfast, heavy clays and silt dominate the surface soils. Beneath these is an alluvial deposit, known as sileach (deposited by the sea or a river), which is well known for its problematic characteristics. There are four soil types within the Belfast Area:
- Urban Soil which accounts for the majority of Belfast. Urban soil is material in the urban environment which has been disturbed, manipulated or transported by man's activities. It is also used as a medium for plant growth.
 - Cambisols are present to the south and east of the city. Cambisols contain a favourable aggregate structure and high content of weatherable materials. They can usually be exploited for agriculture.
 - Stagnosols are present to the west of Belfast and to the east. Stagnosols are periodically wet and mottle in the top soil, agricultural suitability is limited because of oxygen deficiency, resulting from stagnating water above dense topsoil.
 - Leptosols are present in the west of the city towards the Belfast Hills and contain a shallow profile depth with large amounts of gravel.
- 3.38 The majority of the Belfast area is urban in nature with 30% of the area located within the rural landscape. It is important to understand how the soil in rural areas is utilised in order to facilitate future designations. The Northern Ireland Agricultural Census (June 2017) provides data of agricultural land within the Belfast City Council Area. The total land within Belfast used for crops is 99 hectares. Belfast City Council has the smallest area of land used by crops in Northern Ireland however, this would be expected as the city is the largest urban area. The crops are made up of the following:
- 71 hectares of cereals,
 - 16 hectares of other farm crops,
 - 12 hectares of horticulture crops.
- 3.39 Belfast also includes 31 farms, the fewest number of farms of any council in Northern Ireland. This is broken up into the following farm types:
- 1 Cereal Farms,
 - 2 General Cropping Farm,
 - 19 Cattle and Sheep Less Favoured Area (LFA) Farms,
 - 7 Cattle and Sheep Lowland Farms,
 - 1 Mixed Farm.
 - 1 Other Farm.

Figure 11. Map showing soils present in Belfast LDP area.



Source: <http://mapapps2.bgs.ac.uk/ukso/home.html?layer=AFBIWRB>

Contaminated Land

- 3.40 Contaminated Land can cause wide environmental damage and has the potential to limit a healthy environment. Belfast has a legacy of contaminated land arising from its prominent past industrial use. It should be noted within Northern Ireland, land contamination was to be administered via Part III of the Waste and Contaminated Land (Northern Ireland) Order 1997, which was based around the principal of the ‘polluter pays’. Although the Order was made on 26th November 1997, a commencement order for Part III has not yet been issued. The Order would however, have required councils to survey their districts in order to identify contaminated land sites and then to take enforcement action to ensure that such lands were appropriately remediated.
- 3.41 The definition of “contaminated land” is any land which appears to a district council in whose district it is situated to be in such a condition, by reason of substances in, on or under the land, that—
- a) significant harm is being caused or there is a significant possibility of such harm being caused; or
 - b) pollution of waterways or underground strata is being, or is likely to be, caused.
- 3.42 In Great Britain, land contamination is dealt with via Part 2A of the Environmental Protection Act 1990. The government’s statutory guidance states however, that enforcing authorities should seek to use Part 2A only where no appropriate alternative solution exists, citing as an alternative that land contamination be addressed when land is developed or redeveloped under the planning system.

- 3.43 In the absence of Northern Ireland specific legislation, local councils have dealt historically with land contamination through the planning process. Belfast City Council would typically request that the development of potentially contaminated sites be informed by an adequate risk assessment and remediation strategy in order to ensure that all unacceptable risks to human health are addressed and that the development is suitable for its proposed use. Similarly, the Northern Ireland Environment Agency would also provide consultation responses to the Planning Service in respect of developments in order to ensure that all environmental risks associated with land contamination are adequately addressed.
- 3.44 Accordingly, it is important that land contamination continues to be dealt with via the planning regime and that contaminated land considerations for the city are adequately reflected in the Local Development Plan.

Light Pollution

- 3.45 Extensive artificial light from premises can cause distress to neighbours. Under the Clean Neighbourhoods and Environment Act (Northern Ireland) 2011, councils can take action against artificial light coming from poorly positioned security lights, garden lights, flood lighting from sports grounds or industrial lighting inasmuch as the artificial light emitted from the premises is prejudicial to health or constitutes a nuisance. This provision does not however apply to artificial light emitted from an airport, harbour premises, railway premises, a bus station, public service vehicle operating centre, a goods vehicle operating centre, a lighthouse or a prison.
- 3.46 The Institute of Lighting Professionals (ILP) has provided guidance on acceptable levels of illumination for light sensitive premises in specific environmental zones, e.g. urban location, town centre, city centre. As part of the local development planning process, lighting schemes for developments should be required to adhere to the Institute of Lighting Professionals UK recommendations for obtrusive light limitations for exterior lighting installations - Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

Major Accident Hazards

- 3.47 The Control of Major Accident Hazards Regulations (COMAH) designates certain sites where dangerous substances are present. The Regulations seek to ensure public safety and environmental protection, including through the proper licencing and management of premises where such substances are stored or used. There are a number of COMAH sites in Belfast, including fuel storage facilities in the harbour area.
- 3.48 In terms of land use planning, new development in the vicinity of COMAH sites is considered as part of planning approval processes and HSENI advises planning authorities on relevant proposals. In addition, due regard must be given to the location of designated COMAH sites when considering land use zoning. This is particularly relevant to the next stage of the LDP process – the Local Policies Plan.

Flood Risk

- 3.49 The European Union Directive on the management of Flood Risks (2007/60/EC) provides the platform to fully implement sustainable flood management within the Belfast area. The Regional Development Strategy also recognises the need for a precautionary approach to development within areas of flood risk.
- 3.50 In accordance with the Floods Directive, Flood Risk Management Plans for Northern Ireland have been produced and highlight the flood risks in the 20 most significant flood risk areas (SFRA), including flooding from rivers, the sea, surface water and reservoirs. Under the North Eastern Flood Risk Management Plan, Belfast is designated as a SFRA, located within the Belfast Lough and Tidal Lagan Flood Management Area and, to a lesser extent, the Lagan Flood Management Area. The boundaries of the Belfast SFRA are shown in Figure 12. The city is at risk of both tidal and fluvial flooding. Up to 9,800 properties are at risk of flooding from rivers and 6,000 at risk from both rivers and the sea. Figure 13 shows the extent of the strategic coastal flood plain.

Please note that the issue of flood risk is addressed in a separate LDP technical supplement – Technical Supplement 9: Flood Risk.

Figure 12: Belfast Lough and Tidal Lagan Local Flood Management Area

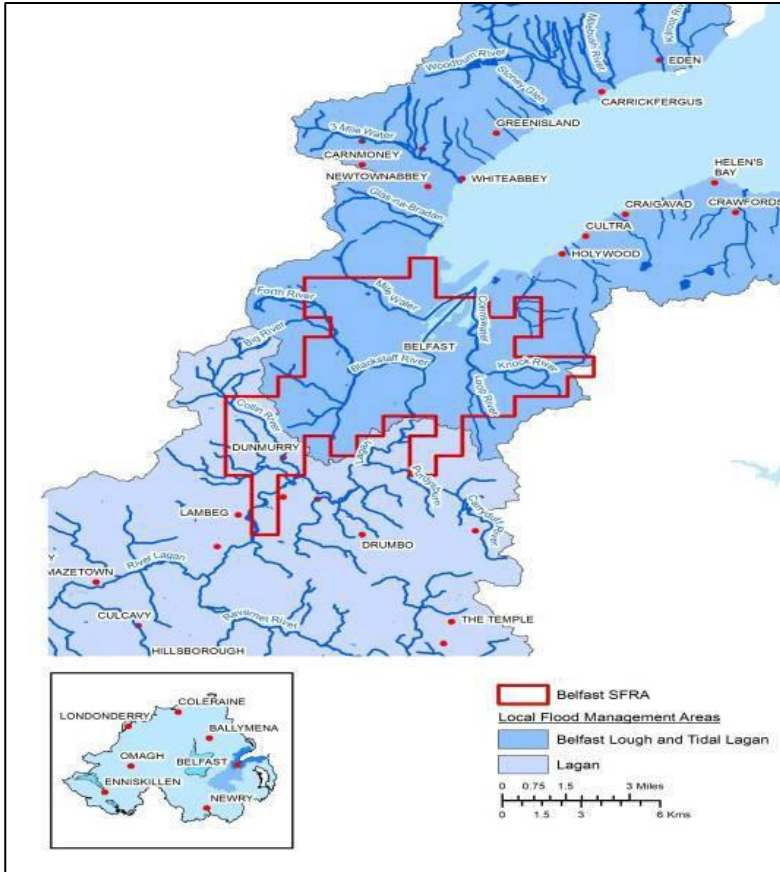
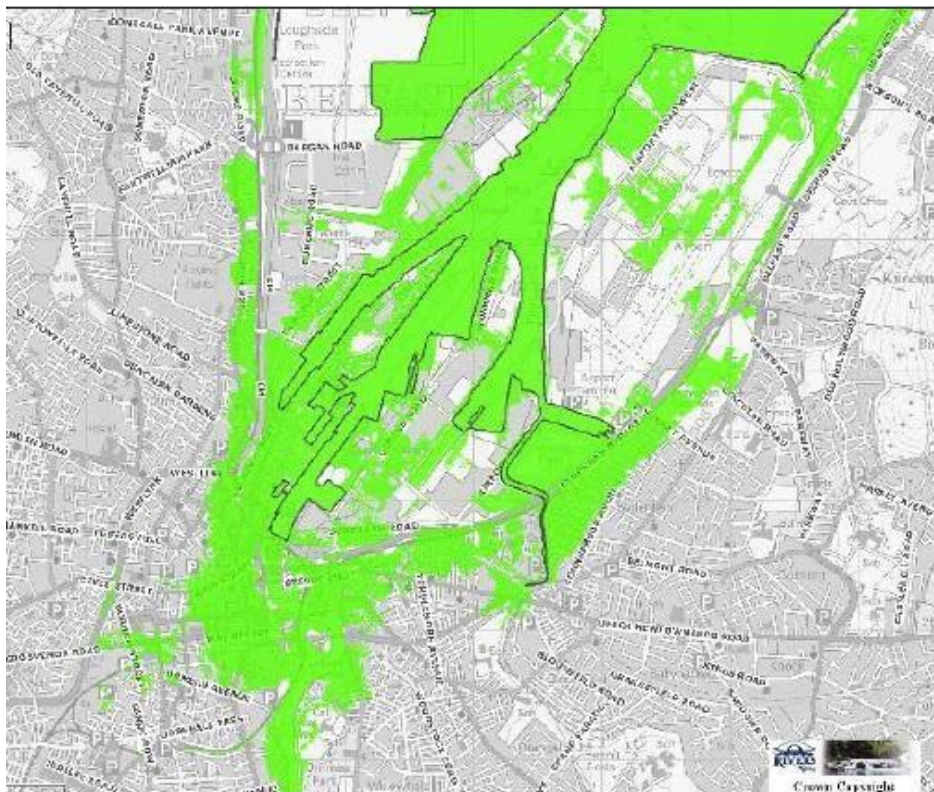


Figure 13: Belfast SFRA- Undefended Coastal Flood Plain



Source: North Eastern Flood Risk Management Plan

Environmental Change

Impacts of climate change

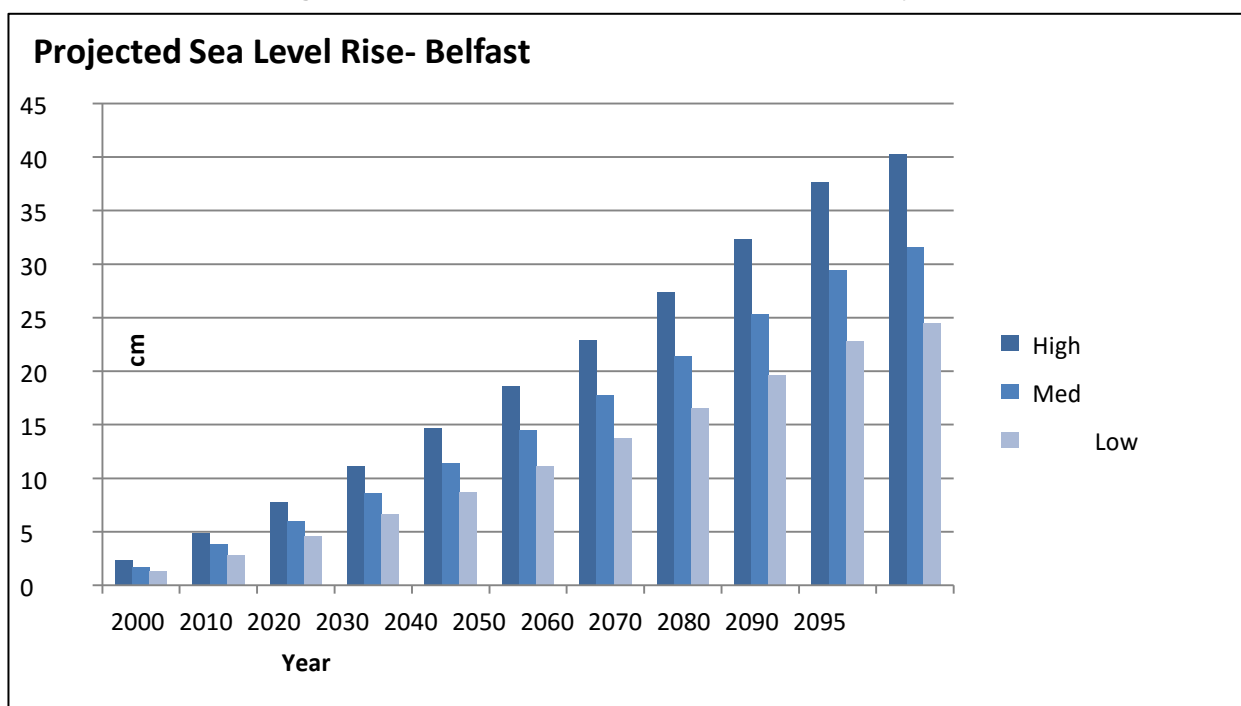
3.51 The UK climate change risk assessment presents a national assessment of potential risks from climate change facing Northern Ireland for the period to 2060. It predicts that, as a result of climate change, the coast of Northern Ireland will experience an increase in sea level. The relative sea level rise projections are shown in Figure 15. This will also have implications for flood risk across parts of the city. As well as hotter summers and wetter winters the UK climate change projections also predict increased frequency of extreme weather events such as heavy rain coupled with flooding, heat waves and dry spells. Key findings from the climate change projections for Northern Ireland by the year 2050 are listed below:

- Reduction in summer mean precipitation of approximately 12%,
- Increase in winter mean precipitation of approximately 9%,
- Increase in summer mean temperature of approximately 2.2°C,
- Increase in winter mean temperature of approximately 1.7°C,
- Sea level rise of 14.5cm above the 1990 sea level.

| City | Daily summer max temperature (°C) | | | | 5-day winter rainfall accumulation (mm) | | | |
|---------|-----------------------------------|---------------|-------------------|----------------|---|---------------|-------------------|----------------|
| | 1961-1990 Observed | 2041-2060 Low | 2041-2060 Central | 2041-2060 High | 1961-1990 Observed | 2041-2060 Low | 2041-2060 Central | 2041-2060 High |
| Belfast | 25.9 | 26.5 | 28.5 | 30.9 | 70.3 | 70.6 | 76.9 | 84.6 |

Figure 14 (above): Summer temperature and winter rainfall projections for Belfast
 Figure 15 (below): Relative sea level rise projections for Belfast (cm)

Source: UK Climate Change Risk Assessment 2017 Evidence Report- Summary for NI



Mitigating climate change – Moving to a Low Carbon Future

- 3.52 Definition - Mitigation is to slow climate change by reducing the amount of greenhouse gas emissions into the atmosphere.

Northern Ireland Green House Gas Emissions

- 3.53 The UK Climate Change Act commits the UK to reducing emissions by at least 80% by 2050 from 1990 baseline levels. The draft Programme for Government Framework 2016-2021 contains greenhouse gas emissions as a measure that seeks a reduction of 35% on 1990 levels by 2025. The UK has reduced emissions by 38% and Northern Ireland has reduced emissions by 18%. The Northern Ireland Executive projections suggest that progress is falling short of what is required in order to meet the 2025 target. (Meeting Carbon Budgets – 2016 Progress Report to Parliament Committee on Climate Change June 2016.)
- 3.54 In 2015, Northern Ireland accounted for 4.2% of UK greenhouse gas emissions which were estimated to be 20.7 million tonnes of carbon dioxide equivalent (MtCO_{2e}). This was an increase of 0.6% compared to 2014. Northern Ireland's target requires less emissions reduction compared to the Scottish and Welsh targets, reflecting the larger share of its emissions from difficult to reduce sectors (in particular agriculture).

Figure 16: Northern Ireland Greenhouse Gas Emissions by Sector

Base year (1990), 2014 & 2015

| Sector | base year | 2014 | 2015 | Units: MtCO _{2e} | | |
|--------------------|-------------|-------------|-------------|---------------------------|----------------------------|-----------------------|
| | | | | % of total emissions 2015 | % change base year to 2015 | % change 2014 to 2015 |
| Agriculture | 6.1 | 5.8 | 5.9 | 29 | -3.3 | 1.3 |
| Business | 3.1 | 2.6 | 2.6 | 13 | -16.9 | -1.0 |
| Energy supply | 5.3 | 3.8 | 3.8 | 19 | -27.8 | -0.1 |
| Industrial process | 0.8 | 0.2 | 0.2 | 1 | -69.4 | 28.0 |
| Land use change | 0.6 | 0.7 | 0.7 | 3 | 19.1 | 1.9 |
| Public | 0.5 | 0.2 | 0.2 | 1 | -61.2 | 3.2 |
| Residential | 3.9 | 2.5 | 2.4 | 12 | -36.8 | -1.9 |
| Transport | 3.3 | 4.2 | 4.3 | 21 | 29.4 | 2.1 |
| Waste management | 1.7 | 0.6 | 0.5 | 3 | -68.0 | -6.5 |
| Total | 25.2 | 20.6 | 20.7 | 100 | -17.8 | 0.6 |

Unrounded source data are available from

<https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2015-statistical-bulletin>

- 3.55 The largest sectors in terms of emissions in 2015 were agriculture (29%), transport (21%) and energy supply (19%). Most sectors showed a decreasing trend since the base year. The largest decreases, in terms of tonnes of carbon dioxide equivalent, were in the energy supply, residential and waste sectors. They were driven by improvements in energy efficiency, fuel switching from coal to natural gas, which became available in the late 1990s, and the introduction of methane capture and oxidation systems in landfill management.
- 3.56 Between 2014 and 2015, emissions from the transport and agriculture sectors accounted for most of the increase. These were linked to increased emissions from road transport and increased numbers of livestock.

- 3.57 The residential and waste management sectors showed the largest decreases in emissions between 2014 and 2015. This was related to a reduction in the combustion of fuel in households and the introduction of methane capture and oxidation systems within landfill management.

Agriculture - Agricultural sources accounted for a higher proportion of emissions in Northern Ireland (29%) than other parts of the UK due to the relative importance of agriculture to the Northern Ireland economy. There has however been a 3.3% decrease from the base year.

Transport – Overall transport emissions increased by 29% from the base year due to growth in demand for transport, despite improvements in efficiency of vehicles. The increase in emissions since 1990 largely reflects an increase in car ownership rates in Northern Ireland, which are now comparable with the UK average.

Land Use Change – The relatively small net contribution to emissions made by the land use change sector increased by 19% over the time period; this mainly reflects the changes in carbon stock associated with land conversions between cropland, grassland, settlements and forest land. The largest growth in emissions since 1990 is from grassland converted to settlements in Northern Ireland.

Residential – Emissions from residential buildings in Northern Ireland fell by 1.9% between 2014 and 2015, following a period of little change between 2009 and 2013. The sector accounted for 12% of total emissions in 2015, and emissions were 36.8% lower than in 1990.

Waste Management – Waste emissions account for only a small proportion of total emissions, 3% in Northern Ireland. In 2015, emissions from waste declined by 6.5% in Northern Ireland.

Energy Supply – Power sector emissions fell across the devolved administrations in 2015, due to a fall in demand and changes in the fuel mix. In Northern Ireland, emissions fell 0.1% between 2014 and 2015. Emissions are 27.8% lower than 1990 levels. The sector accounts for 19% of total Northern Irish emissions.

Business – Emissions in this sector Includes emissions from stationary combustion in the industrial and commercial sectors, industrial off-road machinery, and refrigeration and air conditioning. Emissions in 2015 are 17% lower than in 1990, with a 1% decrease since 2014.

Public – Public sector emissions includes emissions from fuel combustion in public sector buildings (e.g. public administration, defence, education and health and social work). Northern Ireland has seen a 61% decrease in these types of emissions since 1990 as well as a 3% decrease on the 2014 levels. Emissions are predominantly affected by fuel type.

Industrial Process – Industrial emissions have seen the largest decrease since 1990 with a 69% reduction on the base year. This sector includes all emissions from industry except fuel combustion and therefore includes chemical and metal production, and mineral products (e.g. cement and lime). Emissions are significantly affected by abatement technology.

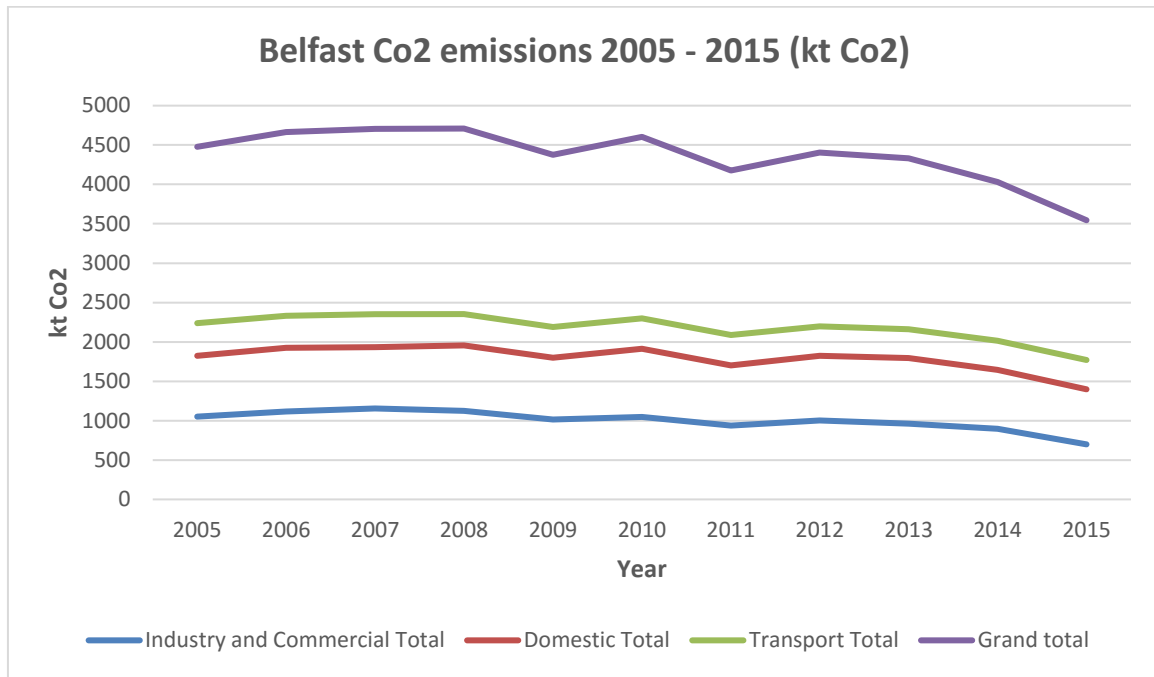


Figure 17 – Belfast CO2 Emissions

<https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2014> (Published June 2017)

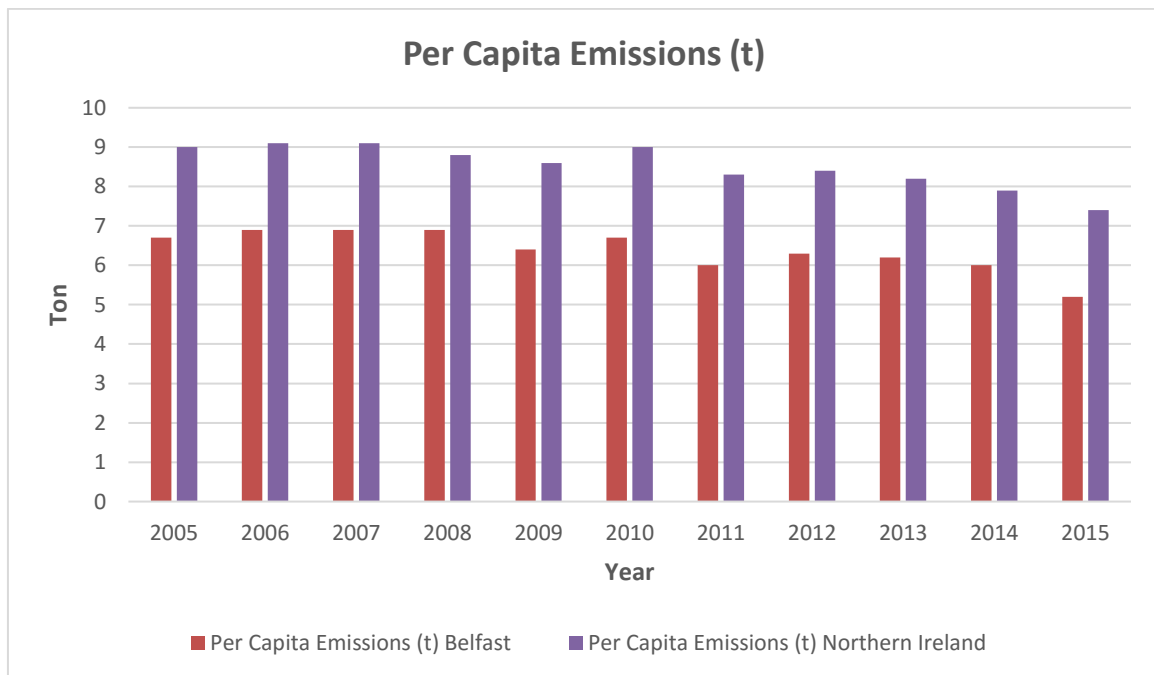


Figure 18 – CO2 Emissions per capita

<https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2014> (Published June 2017)

Sustainable and secure energy supply

- 3.58 The decarbonisation of the power sector is the key to achieving emissions reduction targets. The NI Executive's Strategic Energy Framework has a target of 40% electricity consumption from renewable sources and a 10% renewable heat target by 2020, in line with mandatory EU renewable targets. This is likely to mean an increase in the number of wind farms solar PV, tidal stream and bio-energy sources, and the grid infrastructure to support them. A renewable heat strategy is likely to require new renewable heat infrastructure, such as district heating schemes, to support it. In December 2017 38.1% of total electricity consumption in Northern Ireland was generated from renewable sources located in Northern Ireland (source: Northern Ireland Statistics and Research Agency – Electricity Consumption and Renewable Generation in Northern Ireland: Year Ending December 2017).
- 3.59 Increasing the contribution that renewable energy can make to the energy mix will reduce reliance on fossil fuels and improve security of supply. To build an outward-looking, dynamic and liveable city, significant investment is required in upgrading the electricity infrastructure, increasing renewable energy generation, and exploring the potential to develop a renewable heat generation and distribution network.
- 3.60 A robust and sustainable energy infrastructure is required to maintain the city's global economic competitiveness and community resilience. This will need to deliver reliable and secure sources of energy to communities and businesses across Belfast. It should be noted that major global businesses are now committed to securing 100% renewable energy supply before 2050.

Reduce our carbon footprint & air pollution - Transportation

- 3.61 Environmental change and air pollutants share common sources. Greenhouse gases are most active high up in the atmosphere, whereas the most important factor for air quality is the concentration of pollutants nearer the earth's surface.
- 3.62 Air pollution from particulate matter is currently estimated to reduce the life expectancy of every person by an average of 7-8 months. The young and infirm are often particularly affected, as well as people living in deprived areas. In addition, emissions of sulphur (SO₂), nitrogen (NO) and ammonia (NH₃) can be deposited on land and water causing either acidification, or nutrient enrichment (eutrophication). It is important that Belfast plays its part by reducing air pollution and greenhouse gas emissions and preparing for the impacts of climate change.
- 3.63 The council is required to comply with the Air Quality Strategy for England, Scotland, Wales and Northern Ireland via Part III of the Environment (NI) Order 2002. The Council also has to achieve the European Commission air quality limit values at national level in accordance with the EU Directive 2008/50 for air quality and cleaner air for Europe. In December 2015 the council along with relevant partner organisations launched a new Air Quality Action Plan (AQAP) 2015-2020 for the city that draws upon all forms of air quality and transport planning activities, including sustainable transport options as well as engineering solutions. The aim of this AQAP

is to improve road vehicle operations and promote and enable a shift onto more sustainable modes of transport to achieve compliance with the NO₂ EU limit value by 2020.

- 3.64 Consideration needs to be given on how to decrease green house gas emissions by encouraging the reduction of energy consumption and the move to more sustainable methods of energy production. The use of fossil fuels and greenhouse gas emissions can be reduced by improving energy efficiencies in transportation, urban design and buildings.
- 3.65 Efficient transport is vital to economic wellbeing and road transport remains the dominant transport mode in Northern Ireland. However, traffic and new road capacity can bring with them concerns over congestion, air quality and noise. Belfast has a weak public transport system and private cars are widely used in the city contributing to increasing GHG emissions. Without a considerable change in behaviour, carbon emissions will continue to rise. It is also the only sector where GHG emissions are rising rather than falling. In order to address this we need to promote ways to make the most efficient use of our infrastructure and land uses, so that we can move people and freight safely and reliably while also reducing pollution.
- 3.66 This will involve reducing the need to use the car for short urban journeys within Belfast. By designing neighbourhoods that have shops, workplaces and services, schools, churches, parks, and other amenities near homes, residents and visitors will have increased opportunities for walking, cycling, or taking public transport as they go about their daily lives. This will include the need to adapt the existing transport network to facilitate the modal shift away from the car. The car may be essential for some journeys but the social and economic value of a cleaner and quieter city, needs to be weighed against the vehicle's impact on the environment.

Driving the Future Today: A strategy for ultra-low emission vehicles in the UK

- 3.67 This strategy, published by the Office for Low Emission Vehicles (OLEV) in September 2013, states that we have begun a period of change in the way we power our motor vehicles, a period which will provide hugely significant opportunities for the UK to grow its economy, improve our environment and deliver people the independence and mobility they want. The vision is that, by 2050, almost every car and van in the UK will be an ultra-low emission vehicle (ULEV). These include battery electric vehicles, plug-in hybrid vehicles and fuel cell vehicles. This would reduce our reliance on foreign energy imports, reduce GHG emissions and help clean the air in cities. Increasing use of ULEVs therefore has a very important role to play in supporting mobility while reducing the GHG emissions and air quality impact of road transport.
- 3.68 The mass adoption of ULEVs will have significant implications for the energy sector at both a local and a national level. As the number of plug-in vehicles on our roads increases, so will the demand for electricity, placing additional pressures on the electricity infrastructure network. However, ULEVs can also help to balance the

demand for electricity at peak periods and support the efficient use of energy by consumers. This will be facilitated by the introduction of intelligent power supply networks (smart grids). The majority of plug-in vehicle owners will charge their vehicles at home, at night time, during the off-peak period. This is not only most convenient for drivers, but also maximises the environmental and economic benefits of plug-in vehicles by using cheaper, lower carbon night-time electricity generation.

- 3.69 To help people charge at home as easily as possible, there is a requirement for a charging infrastructure. This will allow recharging to happen when it is cheapest for consumers and the energy system (subject to appropriate technology in the charge point or plug-in vehicle). Plug-in vehicles could also act as distributed energy storage during periods when renewable electricity generation exceeds demand. This could happen during the life of the vehicle or as a potential end-of-life use for batteries. There may even be the potential for these vehicles to be used as an energy store, to power the house or feed electricity back to the grid at peak periods.
- 3.70 The eCar project in Northern Ireland has installed electric vehicle charging infrastructure and offers grants to electric vehicle owners to install charging points in their homes or work places.

Adapting to Climate Change – Making the City Safe and Resilient

- 3.71 Definition - Adaptation are measures to adapt to our changing climate. Predictions are for warmer and wetter winters, hotter and drier summers, rising sea levels and increased extreme weather conditions.
- 3.72 Belfast has had direct experience of extreme weather patterns and rising sea levels in recent years. There have been five significant flood events in Belfast in the last ten years. The impact of flooding on individual households, communities and business can be devastating and costly. The effects of flooding on human activity are wide ranging, with the potential to cause fatalities and injury, displacement, pollution and health risk. Damage to buildings, can severely compromise economic and social activities. Extreme weather resulting in flooding of properties and infrastructure is expected to be a significant long term risk associated with climate change for Northern Ireland. (DEFRA, 2012. UK Climate Change Risk Assessment: Climate Change, Risk Assessment for Northern Ireland). The prediction is for more intense rainfall and stormier weather in summer months, wetter winters and rising sea levels. We are likely to experience more frequent damaging floods. It has been recorded that between 2002-11, on average 27% of annual rainfall fell during the summer months (June to August). In 2007 45% of the annual rainfall occurred in these three summer months. (Annual NI Environmental Statistics Report). Flooding is a natural process that cannot be entirely prevented. However some areas are already susceptible to intermittent flooding from rivers, storm water and the sea.

UK Climate Change Risk Assessment 2017: Evidence Report NI

- 3.73 This report outlined the observed and predicted changes due to increasing GHG emissions. The latest set of projected changes in climate for Northern Ireland comes

from the 2009 UK Climate Projections. Under a medium emissions scenario, regional summer mean temperatures are projected to increase by between 0.8 – 4°C by the 2050s compared to a 1961-1990 baseline. Regional winter precipitation totals are projected to vary between 0 to +19% with summer precipitation reducing by up to 41% and winter precipitation increasing by 27% by the end of the century. Potentially there will be higher intensity rainfall events that will cause flood from storm water. The average sea level for Belfast is expected to increase by between 22.8 cm and 37.6 cm by 2090 compared to a 1990 baseline. However, sea levels are projected to continue to rise beyond 2100 even in lower emission scenarios and several meters of sea level rise within centuries is possible. In Northern Ireland annual average temperatures over land have warmed in recent decades. The 2005 - 2014 decade was 0.7°C warmer than the 1961-1990 average. The daily maximum and minimum temperature extremes have increased by just over 1°C since the 1950s.

- 3.74 The consequence of increasing temperatures is the impact on the young and elderly population. Excessive heat causes discomfort and premature death, with over 600 cases of heat-related deaths reported in the UK alone during the heat wave of July 2013. This will become an increasing problem in urban areas where temperatures tend to be higher due to the hard surfaces absorbing and slowly releasing the heat so that cities tend to be hotter than the surrounding countryside. In effect cities have their own micro climate known as urban heat island (UHI).
- 3.75 There is also strong evidence linking flooding to reduce economic growth. A study focusing on European nations found that a one per cent increase in the area experiencing extreme rainfall can reduce GDP growth by 1.8 per cent (this is even higher for drought at 2.7 per cent).
- 3.76 Belfast is a densely built urban area with the River Lagan running through the city centre, into Belfast Lough and numerous rivers and streams flowing from the surrounding hills. Events such as flooding and extreme heat can have detrimental impacts on people's health directly during the event and afterwards in dealing with the aftermath. It is therefore important that we plan for Belfast to cope with these changes, taking account of climate change over the longer term, including factors such as flood risk, water supply, biodiversity and landscape. New development should be planned to avoid increased vulnerability to the changes in weather patterns and ensuring that the risk can be managed through suitable adaptation measures, such as green infrastructure. As a result, climate change adaptation is integral to the overall approach of the LDP.

Improve the Energy Efficiency and Adaptability of Buildings.

- 3.77 Most of today's buildings were designed for the climate that existed when they were built, and are not necessarily equipped to cope with current and future climates. Around 75% of the current building stock will be standing in 2050. Improvements to buildings are required to minimise energy use and encourage zero carbon emissions, while ensuring that the character of buildings of architectural or historic interest is maintained. The key to this will be in enabling householders and property owners to

respond to energy uncertainty and future energy scarcity and to fully contribute to GHG emissions reductions to secure a low- carbon society.

- 3.78 Increasingly new technology is being developed that will help society to mitigate and adapt to climate change. It will also improve digital connectivity to reduce potential travel or the need for physical assets, which increasingly will have a virtual presence to provide a service. Also there are emerging smart technologies that would help to improve mobility for visitors, tourist, disabled and elderly people to navigate around the city. New developments should consider the provision of, or should be adaptable to provide for new smart digital technology infrastructure.
- 3.79 There is a need consider how new housing and buildings could be flexibly used over their lifespan. Property development proposals should indicate how they will attract business and residential tenants through providing the environmental infrastructure that will be expected such as Combined Heat & Power, electric vehicle charging, smart metering, smart connected street furniture and local energy grid. Buildings should incorporate space for environmental monitoring, interactive portals, and connectivity to enable remote environmental monitoring, tele-health systems and remote working. Also there is a need to consider emerging practices from Smart Cities for shared facilities and collaborative working spaces.

Environmental Adaptation - Green and Blue Infrastructure within Urban Areas

- 3.80 Cities struggle to cope with flash floods of the sort we are likely to see more of with climate change resulting in problematic runoff. Green roofs, rain gardens and swales can help in the most basic fashion by holding onto large quantities of water. More engineered solutions can also store water for subsequent reuse in a closed loop system.
- 3.81 In cities, concrete structures absorb solar radiation and retain heat during the day, slowly emitting it at night, starting the process again each day. This leads to the 'urban heat island effect' where cities are often several degrees warmer than their surroundings. Installations like tree lined streets, living walls and green roofs can mitigate this effect as they facilitate evaporative, endothermic cooling. This can also save on air conditioning costs for buildings.
- 3.82 Green house gas emission has increased the amount of carbon dioxide (CO₂) and other pollutants in the atmosphere. Plants extract CO₂ from the air for use in photosynthesis. There are also some species that can capture, degrade, or eliminate pollutants and heavy metals from the air, soil and water.
- 3.83 The UK imports approximately 60% of food annually. Cities are net importers of food. However, increasing competition for food from developing countries is likely to mean higher food prices and shortages – and poor weather can also cause supply disruptions. Increasingly compact urban farming solutions such as allotments, hydroponics and aquaculture can help cities and communities to become more self-sufficient food producers.

- 3.84 Green and blue infrastructure planning is a holistic approach that seeks to identify the functions that are being provided by the parks, trees, gardens, waterways and grassland across the whole of the city. In particular, how these functions, such as public recreation, water management and reducing air pollution, provide benefits to address local needs and the key issues for the city. In planning for green and blue infrastructure, all areas of vegetation and water are assessed collectively, treating them as a system, that can provide a critical infrastructure to help the city adapt to climate change as well as creating an attractive environment that can deliver economic and social benefits.
- 3.85 Environmental adaptation measures are closely linked to the long-term planning of urban development. It is a focused effort to plan a greener city that can be a preventive investment to climate-proof Belfast and to deliver a high level of quality of life, and better health outcomes for the city's population.

4.0 Draft Plan Strategy Policy Approach

Introduction

- 4.1 The LDP Preferred Options Paper (POP) set out the proposed vision, key aims and objectives for the new Belfast LDP and the public consultation has indicated wide general support for the proposed approach. The overall structure of the draft Plan Strategy (DPS) generally retains the thematic approach used in the POP, set under an overall vision and development strategy.
- 4.2 Sustainable and inclusive development is at the heart of the LDP and the LDP is required to strike a balance in meeting the economic, social and environmental needs of the current population, without compromising the ability of future generations to meet their own needs. This includes a presumption in favour of sustainable development to improve and enhance the balance between economic, social and environmental conditions to deliver economic success, and a better quality of life for people living in Belfast.
- 4.3 The POP identified a series of objectives to help deliver sustainable growth for Belfast. Whilst many of the objectives ultimately affect environmental quality and environmental change, the following two objectives are of particular relevance to this document:
- Address the local elements that could contribute to wider environmental challenges through ensuring new development is designed to minimise carbon emissions, use resources efficiently, and be resilient to longer term implications.
 - Adapt for the potential implications of environmental changes through management of development within areas of risk and designing new development to reduce future risk from flooding.
- 4.4 In the POP, we proposed to enhance environmental quality and protect communities from materially harmful development. Our preferred approach was also to reduce greenhouse gas emissions and facilitate the incorporation of adaptation measures to adapt to environmental changes. In addition, we proposed to review the scope of existing flood risk policy to focus on the management of potential flood risk in the urban area, including mitigation measures such as SuDS. These approaches received significant public support in the POP consultation.
- 4.5 Following on from the POP stage, the DPS includes a number of strategic policies that over-arch the entire plan. These also relate to the overall vision and provide a link to the more detailed operational policies. The most relevant DPS strategic policy to this technical document is SP6 - Environmental resilience, which supports development that protects/improves the environment and helps to mitigate and adapt to environmental change.

4.6 Taking the above into account, the DPS has addressed the issues around environmental constraints generally through the following policy groupings:

- Environmental quality
- Environmental change
- Flood risk

These policies will help to inform the next stage of the LDP, the local policies plan, in the event that there are site specific land use implications. In the meantime any development proposals will be assessed against the relevant policy framework set out in the DPS.

Environmental quality

4.7 The aim of the LDP is to enhance environmental quality and protect communities from materially harmful development. The types of environmental quality and harm that may fall within the scope of the LDP include relating to ground contamination, air, water, noise and light pollution. In addition, COMAH sites require to be considered to ensure public safety and environmental protection. These types of environmental matters are also generally the subject of separate legislative requirements and control regimes. Nevertheless, they remain an important consideration for development planning and development management purposes.

4.8 The DPS policy approach is to maintain and, where possible, enhance environmental quality and protect public safety and health. This policy approach is informed by the evidence in this document and is in accordance with national and regional planning policy and guidance. Whilst the draft policy approach is to cover environmental quality and pollution in its widest sense, it makes particular reference to the key issues affecting Belfast, such as contaminated land, air quality and water quality. In addition, it recognises that noise and light pollution can have adverse impacts on health and amenity. The policy approach seeks to ensure that all such matters are carefully considered in the assessment of any development proposals. This includes a requirement for detailed technical assessment reports to accompany relevant planning applications.

Environmental change

4.9 New development must be planned in such a way that vulnerability to the range of environmental change impacts is minimised. The council wants to build community resilience to a changing climate through effective spatial planning. Some of the challenges that we expect as a consequence of environmental change include increased and more intense rainfall, warming temperatures and a general rise in sea level. This will gradually bring an increased risk of extensive damage and loss of value if action is not taken now to help to mitigate and adapt. It will become increasingly more difficult and expensive to remediate problems that early action can help to adapt to the changing climate.

- 4.10 The aim of the LDP is to try to mitigate environmental change, whilst also supporting proposals that adapt to such change. Mitigation seeks to address the root causes of environmental change, by reducing Greenhouse Gas emissions (GHG). Adaptation seeks to lower the consequential risks by ensuring that new development is resilient. Both approaches are necessary, because even if emissions are dramatically decreased in the medium term, adaptation will still be needed in the short term to cope with global changes that have already started. To leave Belfast vulnerable without mitigating or adapting to future changes is a high risk strategy and financially expensive and the policy approach in the DPS promotes both mitigation and adaptation to environmental change.
- 4.11 There are many ways in which the LDP can assist in addressing environmental change. Primary amongst these is reducing the need to travel and, in particular, reducing car use, through creating a compact urban area with neighbourhoods with local facilities. Other ways include promoting active travel, green design, more open space and trees and renewable energy.
- 4.12 The effects of environmental change will also need to be considered over the lifetime of the development, especially with regards to location and design. New developments will need to be 'climate proofed', requiring developers to include environmental change adaptation measures into proposals at the design phase. This seeks to ensure that new development is robust and sustainable in the longer term.
- 4.13 This policy approach is informed by the evidence in this document and is in accordance with national and regional planning policy and guidance. The DPS approach complies with the core planning principle of sustainable development and it seeks to ensure that the potential impacts of environmental change on development and people are considered early in the planning process to maximise benefits, promote resilience and sustain the city for existing and future generations.

Flood Risk

- 4.14 Flooding is a key environmental constraint and is a particular issue for Belfast, which has experienced many flood events and significant damage has been caused by both fluvial and pluvial flooding. The coastal and pluvial flood risks are also both sensitive to environmental change and therefore the policies on mitigation and adaptation are of particular relevance to this issue. The evidence base of flood risk areas, including projections for climate change, confirms that this is an important issue for Belfast.
- 4.15 The SPPS sets out planning policies and objectives for flood risk, which are consistent with the RDS and the Long Term Water Strategy for Northern Ireland. The LDP policy approach is consistent with the SPPS and also adopts a precautionary approach to seek to avoid flood risk areas or exacerbate the risk of flooding. The SPPS contains some detailed planning policies in relation to flooding and the LDP approach is to adopt the same approach without duplicating the policy provisions.

- 4.16 The DPS also recognises the value of natural processes to assist in surface water management and it promotes the incorporation of SuDS measures in new development. The policy approach also acknowledges that SuDS measures can be incorporated into a wide range of development proposals, including at different scales, and it seeks consideration of appropriate measures in all built development. The potential value of SuDS measures, including cumulatively across a wide range of development types and scales, is recognised and this is supported by the draft policy approach.

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