

Local Development Plan | 2030

Draft Plan Strategy

Evidence Paper 13: Renewables

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Executive Summary

- Renewable energy production is becoming more common within Antrim and Newtownabbey Borough and the wider Northern Ireland region, with the annual proportion of electricity consumption from renewable sources in Northern Ireland rising considerably in recent years, from 8.4% in 2010 to 35.2% in 2018.
- The main source of renewable energy within Northern Ireland is generated from wind energy. Other sources include generation of renewable energy from landfill gas, biogas, biomass, hydro, tidal, combined heat and power, and photovoltaic.
- There is currently a concentration of renewable energy development to the south of the Borough and around the rural Lough Neagh lowlands, including a number of recent solar farms, one of which was Northern Ireland's first ever large-scale solar farm.
- The Borough is home to Belfast International Airport, which remains a material consideration for future renewable energy development proposals, with matters such as public safety being paramount. Wind turbine development tends to cluster in exposed uplands areas within the Borough. These areas tend to be highly visible and a sensitive approach to turbine placement is required.
- The Borough also benefits from smaller-scale renewable energy generation developments, supplying both domestic and non-domestic customers. While these resources are currently small scale, they reduce dependency on imported fossil fuels and in turn, this should reduce consumer costs and lessen climate change.
- Despite public interest in electric vehicles being in its infancy, Antrim and Newtownabbey Borough Council is leading the way through encouraging citizens, visitors and staff to use this sustainable form of transport by generously locating 15 public charging points on Council premises, spread throughout the Borough.
- The majority of the Borough has significant potential for Grid connection of additional small-scale energy generation facilities. However, parts of the northeast could have limited potential, and a substantial section of the northwest appears to have reached saturation point.
- The Council's new Local Development Plan will aim to ensure the siting of renewable energy generating facilities are in appropriate locations within the Borough, and work towards achieving wider Government targets realising the benefits of renewable energy without compromising other environmental assets.

1 Introduction

- 1.1 This is one of a series of background papers and studies being presented as part of the evidence base to inform the preparation of the Antrim and Newtownabbey Local Development Plan 2030 (LDP). This paper draws together the evidence base used in relation to the topic of Renewables. The evidence in this paper was collated at a point in time and may be subject to further updates. Evidence papers should be read collectively.
- 1.2 In line with Departmental guidance, the Council has updated its evidence base to inform the next stage of the LDP known as the Plan Strategy. This paper updates the 'Facilitating Economic Development' baseline evidence paper, as it relates to renewable energy, which accompanied the Preferred Options Paper (POP) published in January 2017.
- 1.3 It should be noted that the evidence base collected to inform the draft Plan Strategy also forms the basis for additional assessments and appraisals required as part of the LDP preparation process, most notably the Sustainability Appraisal.
- 1.4 This Paper aims to present evidence and issues under the topic of Renewable Energy. Renewable Energy is defined as energy derived from natural processes (e.g. sunlight and wind) that are replenished at a faster rate than they are consumed. Solar, wind, geothermal, hydro and some forms of biomass are common sources of renewable energy. Renewable electricity is therefore electricity generated from any of these sources.¹ Greater use of renewable energies will reduce our dependency on imported fossil fuels. In turn, this should reduce consumer costs and lessen climate change. Policies set out in the LDP will play an important role in contributing to national targets for reducing CO₂ emissions and encouraging the production of energy from renewable resources.

2 Legislative Context

The Planning Act (Northern Ireland) 2011

- 2.1 The Planning Act (Northern Ireland) 2011 (hereafter referred to as the 2011 Act) is the principal planning legislation in Northern Ireland, which underpins the reformed two-tier planning system that commenced on 1 April 2015. It introduced the plan-led system, where the LDP is the primary consideration for decision making on all new development schemes and proposals will be required to accord with its provisions unless, exceptionally other material considerations indicate otherwise.

¹ International Energy Agency

- 2.2 Under the new Planning System introduced in 2015, the LDP will comprise of two documents, a Plan Strategy and a Local Policies Plan that will be prepared in sequence. It also requires the LDP to be subject to a Sustainability Appraisal.

The Planning (Local Development Plan) Regulations (Northern Ireland) 2015

- 2.3 These Regulations set out the sequence in which the Council's new LDP is to be prepared and provides detail on the content and procedure of each stage in the plan preparation process and independent examination.

The Planning (Statement of Community Involvement) Regulations (Northern Ireland) 2015

- 2.4 These Regulations set out the sequence in which the Council's Statement of Community Involvement (SCI) is to be prepared and provides detail on the content and procedures required. The Council published it's SCI in January 2016 the purpose of which is to define how the Council will engage with the community in the delivery of the LDP. It is set within the context of the Council's Corporate Plan and meets the requirements of the 2011 Act.

Northern Ireland (Miscellaneous Provisions) Act 2006

- 2.5 Section 25 of the Northern Ireland (Miscellaneous Provisions) Act 2006 requires all Northern Ireland Departments and Councils, in exercising their functions, to act in the way they consider best calculated to contribute to the achievement of sustainable development. Section 5 of the 2011 Act copper-fastens this duty by requiring those who exercise any function in relation to LDPs to do so with the objective of furthering sustainable development.

Local Government Act (Northern Ireland) 2014

- 2.6 The Local Government Act (Northern Ireland) 2014 introduced a statutory link between Community Plan and the Council's LDP, and requests that the preparation of the LDP must take account of the Community Plan.

Section 75 of the Northern Ireland Act 1998

- 2.7 The Council has a statutory duty under Section 75 of the Northern Ireland Act 1998 as a public authority, in carrying out its functions relating to Northern Ireland, to have due regard to the need to promote equality of opportunity between the nine equality categories of persons of different religious belief, political opinion, racial group, age, marital status or sexual orientation; men and women generally; persons with a disability and persons without; and persons with dependants and persons without.
- 2.8 Council has engaged and will continue to engage with Section 75 groups throughout the LDP process, adhering to the Council's SCI.

Rural Needs Act (Northern Ireland) 2016

- 2.9 The Rural Needs Act (Northern Ireland) 2016 provides a statutory duty on public authorities to have due regard to rural needs when developing, adopting,

implementing or revising policies, strategies and plans, and when designing and delivering public services and came into effect for Councils in June 2017.

- 2.10 Rural needs is an ongoing and integral component of the Council's LDP.

The Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004

- 2.11 It is a statutory requirement that all plans and programmes that are likely to have a significant environmental effect must be subject to a Strategic Environmental Assessment (SEA). The European Union Directive '2001/42/EC' states that an SEA is mandatory and was transposed into local legislation in the form of The Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (the EAPP (NI) Regulations). The objective of the SEA directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the Council's LDP, with the view to promoting sustainable development.
- 2.12 The SEA is an ongoing process and must be carried out in conjunction with, and integrated into the LDP process. Under the provisions of the SEA Directive and the Regulations, an environmental report is published with the LDP document.

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995

- 2.13 The LDP is required to consider its impact on the integrity of Natura 2000 sites (these comprise Special Areas of Conservation, Special Protection Areas and RAMSAR Sites) and will be subject to a Habitats Regulation Assessment (HRA). Similar to the SEA the HRA is an on-going process, which will take place at key stages during the preparation of the LDP. The Regulations contribute to transposing the requirements of the EC Habitats and Birds Directives.

The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017

- 2.14 The role of the Planning (Environmental Impact Assessment) Regulations (NI) 2017 is to reinforce the quality of decision-making and improve the current levels of environmental protection. Notably, the agricultural industry is becoming heavily regulated through this legislation, due to the increase in number of on-farm anaerobic digester schemes submitted and identified as a Schedule 1 or 2 development.

The Planning (General Permitted Development) Order (Northern Ireland) 2015

- 2.15 This Order clarifies that there are certain permitted development rights where planning permission is not required. This covers development by statutory and other undertakers, which fall mainly within Part 37 of the above order.
- 2.16 In addition, where development is identified as a Schedule 1 or 2 development (as defined in The Planning (EIA) Regulations (NI) 2017), and an Environmental Impact Assessment (EIA) is applicable based on the detail of the proposed development, permitted development rights do not apply.

European Union Renewable Energy Directive (2009/28/EC)

- 2.17 The European Commission's Renewable Energy Directive (2009/28/EC) establishes the overall policy for the production and promotion of energy from renewable sources in the EU and sets a binding target to reduce EU greenhouse gas emissions by 20% by 2020. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020.

UK Climate Change Act 2008

- 2.18 The UK Government passed the Climate Change Act in 2008. This Act sets ambitious targets beyond those agreed by Europe in setting legally binding targets to reduce carbon emissions by 80% by 2050, from 1990 levels.

3 Regional Policy Context

Draft Programme for Government Framework 2016-2021

- 3.1 The key aim of the draft Programme for Government (PfG) is to grow a sustainable economy through investing in the future, tackling disadvantage, improving health and wellbeing, protecting the people and the environment, building a strong and shared community and delivering high quality services. The delivery of many of the strategic outcomes will be the responsibility of central government, however, the LDP will play a supporting role in helping to deliver many of these.
- 3.2 A key outcome of the PfG is the connection of people and opportunities through infrastructure. This involves improving the physical mobility of people and the provision of essential energy, water and telecommunications services. The Executive aims to contribute towards delivery of this objective through a range of growth areas, including increased availability of access to high quality telecommunications. An important indicator of this outcome is to 'improve internet connectivity' with fast efficient broadband recognised as a significant factor in business access to compete successfully in external markets and in promoting Northern Ireland as an attractive inward investment location.

Sustainable Development Strategy Northern Ireland 2010

- 3.3 The Government's Sustainable Development Strategy (SDS) Everyone's Involved was published in May 2010. The strategic objectives identified in this strategy include climate change, promoting sustainable land management and managing development in ways that contribute to creating a better environment. The SDS recognises the role that renewables have to play by driving sustainable, long-term investment in key infrastructure to support economic and social development.
- 3.4 One of the six Priority Areas for Action identified in the SDS relates to '*Ensuring reliable, affordable and sustainable energy provision and reducing our carbon footprint.*' Objectives within this Priority include the need to reduce greenhouse gas emissions, increase the proportion of energy derived from

renewable sources, implement energy efficiency measures (particularly for vulnerable groups), increase energy security, and adapt to the impacts of climate change.

Regional Development Strategy 2035

- 3.5 The Regional Development Strategy 2035 (RDS) aims to protect and enhance the environment for current and future generations. It recognises that Northern Ireland's environment is one of its greatest assets which has benefits in terms of the economy and quality of life. With regard to Regional Guidance (RG) and Spatial Framework Guidance (SFG), the Regional Development Strategy (RDS) seeks to deliver a sustainable and secure energy supply (RG 5). It also seeks to reduce Northern Ireland's carbon footprint and facilitate mitigation and adaptation to climate change whilst improving air quality (RG 9) using renewable energy sources, facilitating more energy efficient buildings, and the use of more energy efficient transport modes.
- 3.6 The RDS acknowledges that the development of renewable energy sources in Northern Ireland is vital to increase energy security, help combat climate change, and achieve renewable energy targets. Development consisting of infrastructure to provide renewable energy will be the subject of a Strategic Environmental Assessment or an Environmental Impact Assessment and will assess the impacts on the environment against the sustainable benefits it creates.

Regional Transportation Strategy for Northern Ireland 2002-2012

- 3.7 The Regional Transport Strategy (RTS) for Northern Ireland 2002-2012 identifies strategic transportation investment priorities and considers potential funding sources and affordability of planned initiatives over the strategy period. The RTS is a 'daughter document' of the Regional Development Strategy for Northern Ireland 2035, which sets out the spatial development framework for Northern Ireland up to 2035.
- 3.8 This Strategy was supported by three initiatives namely Belfast Metropolitan Transport Plan 2004, Regional Strategic Transport Network Transport Plan 2015 and the Sub-Regional Transport Plan 2007².

Belfast Metropolitan Transport Plan 2004

- 3.9 The Belfast Metropolitan Transport Plan (BMTP) 2004 is the local transport plan for the Belfast Metropolitan Area (BMA) including Metropolitan Newtownabbey. This plan will deliver a phased and costed implementation programme of transport schemes to 2015. This plan takes forward the strategic initiatives of the RTS 2002-2012.

^{2 2} The Department for Infrastructure is currently preparing new Transport Plans which will cover the Borough. The Council is represented on the Project Boards for both plans and is working to ensure that the LDP is aligned with emerging transport plans.

Regional Strategic Transport Network Transport Plan 2015 (2005)

- 3.10 The former Department for Regional Development (DRD), now the Department for Infrastructure (DfI) prepared the Regional Strategic Transport Network Transport Plan (RSTN TP) 2015. The Plan is based on the guidance set out in the RDS 2035 and the RTS 2002-2012. The Plan presents a range of multi-modal transport initiatives to manage, maintain and develop Northern Ireland's Strategic Transport Network. The Regional Strategic Transport Network of Northern Ireland comprises the complete rail network, five Key Transport Corridors (KTCs), four Link Corridors, the Belfast Metropolitan Transport Corridors and the remainder of the trunk road network.

Sub-Regional Transport Plan 2007

- 3.11 The Sub-Regional Transport Plan (SRTP) 2007 covers Antrim and takes forward the strategic initiatives of the Regional Transportation Strategy (RTS) for Northern Ireland 2002-2012. The SRTP deals with the transport needs of the whole of Northern Ireland with the exception of the BMA and the rail and trunk road networks, which are covered, in the BMA and RSTN TP.

Ensuring a Sustainable Transport Future – 'A New Approach to Regional Transportation' 2011

- 3.12 Ensuring a Sustainable Transport Future (ESTF) was developed to build on the RTS for Northern Ireland 2002-2012 and to refocus and rebalance the investment in the future. Unlike the 2002 Strategy, Ensuring a Sustainable Transport Future (ESTF) does not include details of schemes or projects. Rather, the Department has set three High Level Aims for transportation along with twelve supporting Strategic Objectives, covering the economy, society and the environment. The ESTF complements the RDS 2035 and contains high-level aims and strategic objectives to support the growth of the economy, enhance the quality of life for all and reduce the environmental impact of transport. It sets out the approach to regional transportation and is used to guide strategic investment decisions beyond 2015. Work is progressing on the implementation of the ESTF and the Council will ensure that any future transportation projects affecting the Borough are appropriately reflected in the LDP.

Forthcoming Transport Plans

- 3.13 The Department for Infrastructure is currently preparing new Transport Plans which will cover the Borough. This includes a new Regional Strategic Transport Network Plan for all of Northern Ireland and a new Belfast Metropolitan Transport Plan which will cover Belfast City Council, Lisburn and Castlereagh City Council, Ards and North Down Borough Council and Mid and East Antrim Borough Council as well as Antrim and Newtownabbey Borough Council. Antrim and Newtownabbey Borough Council is represented on the Project Boards for both plans along with other Councils.
- 3.14 As part of the preparation for the Belfast Metropolitan Transport Plan, the Department is preparing a Transport Study for the greater Belfast area and the

Council has taken the emerging study into consideration in the preparation of its draft Plan Strategy. Work will also continue to bring forward the next stage of the LDP, the Local Policies Plan, alongside the Department's Transport Plans.

- 3.15 Further information on the Transport Study and Transport Plans is available on the Department of Infrastructure's website <https://www.infrastructure-ni.gov.uk/>.

Sustainable Water – A Long-Term Water Strategy for Northern Ireland 2015-2040

- 3.16 'Sustainable Water – A Long-Term Water Strategy for Northern Ireland (2015-2040)' sets out a range of initiatives to deliver the Executive's long term goal of a sustainable water sector in Northern Ireland. The Strategy recognises how planning can impact on flood risk and water quality and aims to ensure that existing water and sewerage infrastructure and investment proposals inform future planning decisions and the preparation of LDPs.

- 3.17 The Strategy sets out a number of matters that the Council's new LDP will need to take into account which are summarised below:

- Ensuring planning decisions are informed by up to date information on the risk from all significant sources of flooding;
- Prevention of inappropriate development in high flood risk areas and ensuring that future development does not increase flood risk;
- Exceptional development within high flood risk areas must make provision for adequate mitigation measures;
- Ensure surface water drainage is adequately addressed; and
- Planning policy should promote sustainable water and sewerage services by making appropriate space for water and sewerage infrastructure including sustainable drainage systems.

Strategic Planning Policy Statement 2015

- 3.18 The Strategic Planning Policy Statement (SPPS) sets out the Department's regional planning policies for securing the orderly and consistent development of land in Northern Ireland. The provisions of the SPPS therefore must be taken into account in the preparation of LDPs and are material to all decisions on individual planning applications and appeals.
- 3.19 It acknowledges that Northern Ireland has significant renewable energy resources and a vibrant renewable energy industry that makes an important contribution towards achieving sustainable development, in addition to job creation and investment. The policy approach, outlined within the SPPS with regard to renewable energy, is to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment in order to achieve targets and realise the benefits of renewable energy without compromising other environmental assets.
- 3.20 The Regional Strategic Objectives for renewable energy relate to:

- Ensuring the impacts associated with renewable energy development are adequately addressed;
 - The provision of protection of built, natural and cultural heritage features throughout Northern Ireland; and
 - Facilitating the integration of renewable energy technology into the design, siting and layout of new development, whilst also promoting the greater application of the principles of Passive Solar Design.
- 3.21 The RDS states that Councils should set out policies and proposals in their LDPs that support a diverse range of renewable energy development, including the integration of micro-generation and passive solar design. LDPs must take into account the above-mentioned aim and regional strategic objectives, local circumstances, and the wider environmental, economic and social benefits of renewable energy development.
- 3.22 In March 2016, the former Department of the Environment launched a 'Call for Evidence' to help inform the scope of forthcoming reviews of the SPPS in relation to Renewable Energy development. The public consultation, which closed in May 2016, invited comments on how strategic planning policy can best assist with:
- a) Facilitating sustainable renewable energy development in appropriate locations without compromising the natural and built environment, and other assets of acknowledged importance; and
 - b) Addressing potential amenity issues that may arise because of facilitating all types of renewable energy development (e.g. wind, solar, water (hydropower), geothermal energy, biomass.
- 3.23 The information gathered during this public consultation is currently being considered and is expected to help inform the upcoming review of strategic planning policy for Renewable Energy development.

Electricity Consumption and Renewable Electricity Generation in Northern Ireland: Year Ending December 2018 Report

- 3.24 This Report, published in 2019, details the percentage of electricity consumption in Northern Ireland generated from renewable sources and includes information on the type of renewable generation used. The report reflects performance against the 2011-2015 programme for Government which was to 'Encourage achievement of 20 per cent of electricity consumption from renewable sources by 2015' and the Executive's 2010-20 Strategic Energy Framework, which includes a target to achieve 40 per cent electricity consumption from renewable sources by 2020.
- 3.25 For the 12-month period from April 2017 to March 2018, 35.2% of electricity consumption in Northern Ireland was generated from renewable sources, representing an increase of 3.5% on the previous 12-month period (January 2017 – December 2017) and is the highest rolling 12 month proportion on record. In terms of the volume of electricity consumption between April 2017

and March 2018, approximately 7,816 Gigawatt hours (GWh) of total electricity was consumed in Northern Ireland. Of this, some 2,984 GWh was generated from renewable sources within Northern Ireland.

Envisioning the Future: Considering Energy in Northern Ireland to 2050

- 3.26 The DETI 2050 Vision is intended to guide thinking on what can be achieved by 2050 and what early decisions and activities may be needed to support development towards that date. The study focused on three key parts of the energy sector – electricity, heat and transport. Conclusions included a switch to renewable energy as the main form of electricity generation; a move to renewable heat; improved efficiency of buildings, industry processes, light and appliances; and uptake of electric vehicles, plug in hybrid vehicles and fuel cell vehicles.

Strategic Energy Framework 2010

- 3.27 The goals of this DETI Framework are building competitive markets; ensuring security of supply; enhancing sustainability; and developing our energy infrastructure. The Strategic Energy Framework sets a target of 40% electricity consumption from renewable sources and a 10% renewable heat target by 2020, in line with mandatory EU renewable targets.
- 3.28 The Framework is to be supplemented with a number of more specific DETI Action Plans, such as that detailed below.

Strategic Energy Framework 2010-2020 Review and Refresh

- 3.29 DETI has undertaken public engagement, with a view to publishing a review of its original Strategic Energy Framework 2010 (SEF). One of the most significant accomplishments since the SEF was published in 2010 is meeting the Programme for Government target for 20% of our electricity to be generated from renewable sources by 2015.

Sustainable Energy Action Plan 2012-2015 and beyond

- 3.30 This Action Plan outlines the various initiatives being undertaken by the Northern Ireland Executive. It sets out actions with set timeframes, and the Department responsible. The majority of actions within the document are short term, (2015) but medium (to 2020) and long term (2050) actions are also considered.

Renewable Energy Action Plan 2010

- 3.31 This Action Plan (produced by DARD) sets out a framework of recommendations, which aim to support the land-based sector to further, develop renewable energy opportunities. The Action Plan calls for opportunities to exploit sustainable scale Anaerobic Digestion (AD) and its associated technologies as well as exploiting the opportunities for renewable heat produced by AD. The Action Plan has been updated with an Interim report for 2013/14, which shows progress to date.

Bioenergy Action Plan

- 3.32 This Action Plan (produced by DETI) lists a set of actions to facilitate the start of a longer-term development process that will enable bioenergy to increase its contribution towards the 2020 renewable electricity and heat targets and beyond.

Onshore Renewables Electricity Action Plan

- 3.33 The aim of this Action Plan is to maximise the amount of renewable electricity generated from onshore renewable sources in order to enhance diversity and security of supply, reduce carbon emissions, contribute to the 40% renewable electricity target by 2020, and develop business and employment opportunities for Northern Ireland companies.

Offshore Renewable Energy Strategic Action Plan

- 3.34 This Action Plan aims to optimise the amount of renewable electricity generated from offshore wind and marine renewable sources in Northern Ireland's waters.

Towards Resource Management – The Department of the Environment's Waste Management Strategy 2006-2020

- 3.35 The aim of this Strategy is to help manage waste and resources effectively. This means using material resources in a way that reduces the quantities of waste produced and, where waste is generated, to manage it in a way that minimises its impact on the environment and public health and contributes positively to economic and social development.
- 3.36 In the Strategy, emphasis is placed on the importance of waste prevention and of breaking the link between waste production and economic growth. It reinforces the need to increase waste recycling and recovery through a mixture of approaches, including the renewal of recycling targets, focused awareness campaigns and the possible introduction of incentive schemes.

British Geological Survey

- 3.37 The British Geological Survey (BGS) carries out the geological survey of Great Britain and Northern Ireland. The Department for the Economy in Northern Ireland instructed BGS in 2006 to carry out an appraisal of underground energy storage potential in Northern Ireland. This produced a desktop study to scope the level of work necessary for a proposed full-scale study and research into the potential for underground energy (natural gas, compressed air, hydrogen and thermal) storage in Northern Ireland.
- 3.38 The Report concluded that improved gas infrastructure, including underground storage facilities, would be required to provide a reliable supply to meet variable demand, and to maintain security of supply.

Belfast Region City Deal 2018

- 3.39 The City Deal is a 10-15 year bespoke investment plan to improve infrastructure in the region, along with developing innovation skills and attracting more and better jobs.
- 3.40 The Council partnered with Belfast City Council, Ards and North Down, Lisburn and Castlereagh, Mid and East Antrim, and Newry, Mourne and Down for the City Deal funding. The Treasury announced in October 2018 that the Autumn Budget awarded £350 million to the Belfast Region City Deal, with the Northern Ireland Executive expected to add at least a further £350 million. The Councils involved have committed to contributing over £100 million, whilst Queen's University and Ulster University have committed a further £50 million.

Other Planning Policy

- 3.41 Current operational planning policy, in relation to aspects of renewable energy is primarily included within the following Planning Policy Statements (PPSs):
- PPS 11 Planning and waste Management;
 - PPS 18 Renewable Energy; and
 - PPS 21 Sustainable Development in the Countryside.
- 3.42 These PPSs, as well as the SPPS, have been taken into consideration in the formulation of the detailed development management policies, which are contained within the draft Plan Strategy document.

Departmental Guidance

- 3.43 The LDP has been prepared taking account of Departmental policy and guidance, which is available by contacting the Department for Infrastructure.
- 3.44 The Development Plan Practice Note 7 'The Plan Strategy', published in 2015, guides officers and relevant users through the key requirements for the preparation of the Plan Strategy and deals primarily with procedures as well as good practice.
- 3.45 Development Control Advice Notes (DCANs) are non-statutory planning guidance, which are intended to supplement, elucidate and exemplify policy documents including PPSs and development plans. DCAN 10 Environmental Impact Assessment (Revised, 2012) provides guidance on the operation of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2012. The role of the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017 is to reinforce the quality of decision-making and improve the current levels of environmental protection. Notably, large wind farm and solar farm projects are heavily regulated through this legislation. Consideration should be given in the LDP to the collection of the gases generated as a by-product to be used as a renewable source of energy when considering proposals for waste management facilities and for upgrading existing facilities.

- 3.46 In 2013, the DOE launched draft Supplementary Planning Guidance (SPG) public consultation document, Anaerobic Digestion, which was to be read in conjunction to PPS 18 Renewable Energy. This SPG document provides additional advice and guidance specific to Anaerobic Digestion (AD) to complement the background information already set out in the Best Practice Guidance to PPS 18. It has been drawn up taking account of similar material available for other parts of the UK and the Republic of Ireland.
- 3.47 The NIEA SPG, Wind Energy Development in Northern Ireland Landscapes (2010) was also to be read in conjunction with PPS 18 Renewable Energy and is intended to provide broad, strategic guidance in relation to the landscape and visual impacts of wind energy development. It was based on the sensitivity of Northern Ireland's landscapes to wind energy development and contains an assessment of each of the 130 Local Landscape Character Areas by referencing the characteristics and associated values.
- 3.48 The NIEA Development Management Team Advice Note, Active Peatland and PPS 18, was published in November 2012 as a guide for NIEA officers on the identification of 'active' peatland in relation to PPS 18. Active blanket bog and raised bog are European priority habitats listed under Annex 1 of the Habitats Directive 92/43/EEC and therefore we have an obligation to conserve these habitats.

4 Local Policy Context

Legacy Development Plans

- 4.1 The following is a list of the legacy development plans that apply to the Borough:
- Antrim Area Plan 1984-2001 and its alterations (AAP);
 - Belfast Urban Area Plan 2001 (BUAP) ;
 - Carrickfergus Area Plan 2001³ (CAP);
 - Draft Newtownabbey Area Plan 2005 (dNAP); and
 - Draft Belfast Metropolitan Area Plan 2015 (dBMAP).
- 4.2 It should be noted that the Belfast Metropolitan Area Plan adopted in September 2014 was subsequently quashed as a result of a judgement of the Court of Appeal delivered in May 2017. As a consequence, the BUAP is now the statutory development plan for the Metropolitan Newtownabbey area of the Borough, with dBMAP remaining a material consideration.

³ Insofar as it relates to that part of the legacy Carrickfergus Borough Council area at Greenisland that transferred to Antrim and Newtownabbey Borough in 2015 under Review of Public Administration (RPA).

Community Plan – Love Living Here, 2017

- 4.3 The Council's Community Plan, 'Love Living Here', sets out a shared vision and agreed outcomes for the area up to 2030. The successful implementation of the Community Plan will be marked by a demonstrable improvement in how services are delivered across the Borough and the quality of life its citizens experience. As such the Community Plan is an important document and has been taken into account in the preparation of the Council's LDP.
- 4.4 The Community Plan sets out four Outcomes which are as follows:
- Our citizens enjoy good health and wellbeing;
 - Our citizens live in connected, safe, clean and vibrant places;
 - Our citizens benefit from economic prosperity; and
 - Our citizens achieve their full potential.
- 4.5 It also sets out one Wildly Important Goal namely that our vulnerable people are supported. Both the health and education sectors are represented on the Council's Community Plan Working Group.

Corporate Plan – Our Borough Your Vision 2019-2030

- 4.6 The Council's Corporate Plan sets out a vision for the Borough and identifies what it needs to do between now and 2030 to achieve this. The Vision for the Borough up to 2030 is defined as,

'A progressive, smart and prosperous Borough. Inspired by our people; Driven by ambition.'

- 4.7 The Corporate Plan sets out a number of objectives in relation to Place, People and Prosperity. The LDP has a key role to play under the objective of 'Place' and the Corporate Plan states:

'We will have succeeded if: People take pride in their surroundings. People feel safe. Our environment, natural habitats and built heritage are protected and enhanced. We have vibrant and welcoming towns, villages, neighbourhoods, and rural areas. We have an efficient planning process that promotes positive development and sustainable growth.'

Council Masterplans/Village Plans

- 4.8 Through the Village Renewal Scheme, supported by the Rural Development Programme 2014-2020, the Council benefited from funding to devise and update plans for the development of villages in the Borough. Whilst these plans are non-statutory, they have been prepared in close conjunction with local residents and identify a range of potential projects to improve the settlements. These range from short term goals to long-term aspirations. The village plans alongside the masterplans relating to the Borough will be considered in the preparation of the LDP where relevant.

Cross Boundary Policy Context

- 4.9 In considering the local policy context, it is important to note that the Borough does not sit in isolation. Accordingly, it will be important to take account of neighbouring local authorities comprising Armagh, Banbridge and Craigavon Borough Council; Belfast City Council; Lisburn and Castlereagh City Council; Mid and East Antrim Borough Council; and Mid Ulster District Council.
- 4.10 Neighbouring Council's Preferred Options Papers (POPs), supporting evidence base and draft Plan Strategies have been taken account of, as these are regarded as the main cross boundary documents to be considered in addition to regional guidance.
- 4.11 Table 1 indicates each Council's position in relation to renewable energy as set out in their POP and draft Plan Strategy documents.

Table 1: Neighbouring Council Position

Council	Document
Armagh City, Banbridge and Craigavon Borough Council	It is an Environmental Objective of the Council's POP, published in March 2018, to support the generation of energy from renewable sources in appropriate locations whilst affording protection to the environment including sensitive or vulnerable landscapes. It is a Preferred Option to approach renewable development in line with existing policy but in addition, identify areas of sensitive landscape which may be unsuitable for particular forms of renewable energy development. This may include areas around Lough Neagh.
Belfast City Council	The draft Plan Strategy, 2018, aims to encourage development of renewable energy networks to build capacity and security. Policy ITU 4 provides the policy under which renewable development proposals will be assessed. The council is keen to promote and embrace renewable energy technology for its socio-economic and environmental benefits. They will only support renewable energy proposals where they would not have unacceptable adverse effects which are not outweighed by the local and wider environmental, economic and social benefits of the development.
Lisburn and Castlereagh City Council	The Council's POP, March 2017 outlines proposed Strategic Objective which will support renewables infrastructure whilst affording protection to the environment including landscape impacts of wind energy. It is a Preferred Option to introduce Areas of Constraint in relation to renewable development (wind turbines). The Council is currently working towards publication of it's draft Plan Strategy publication.

Mid and East Antrim Borough Council	It is a Strategic Objective of the Council's POP, 2017, to support the generation of energy from renewable sources in a balanced way that takes due account of environmental impacts and on sensitive or vulnerable landscapes. It is a Preferred Option to retain the approach of the SPPS, updating Policy RE 1 of PPS 18 by adopting a cautious approach within designated landscapes.
Mid Ulster District Council	It is a Plan Objective of the Council's draft Plan Strategy, February 2019, to encourage energy efficiencies and promote use of renewable energy. Policy RNW 1 provides the policy under which renewable development proposals will be assessed. For the most of Mid Ulster, the Council will presume in favour of renewable energy development of all types except where it is likely to cause harm to their most vulnerable and distinctive landscapes or where it would be detrimental to the public safety, human health or residential amenity. The Council recognises the District's most vulnerable and distinctive landscapes, providing policy and designations to protect and enhance them.

- 4.1 The Council has responded to neighbouring Council's POPs and LDP documents as they are published. In addition, the Council is also represented on a number of working groups and project boards to discuss cross boundary issues. This includes the Metropolitan Area Spatial Working Group and the Belfast Metropolitan Plan Project Board.
- 4.2 In terms of growth across the region, the Council's view is that no neighbouring Council's growth strategy should have a negative impact on the Council's LDP in terms of resources for infrastructure provision delivered by statutory providers.
- 4.3 In consideration of neighbouring Council's documents as well as regional policy, it is the opinion of the Council that it's draft Plan Strategy is sound and is not in conflict with neighbouring Council's emerging LDPs.

5 Preferred Options Paper

- 5.1 The Council's Preferred Options Paper (POP) was published in 2017 and was the first formal stage in the preparation of the LDP for the Borough and was designed to promote debate in relation to key strategic planning issues arising in the area. The POP set out a range of strategic options in relation to how and where development should be located within the Borough. It included options for the Borough's settlements, centres, employment land and housing locations, as well as a number of other key planning issues.
- 5.2 In addition, the Council asked the public for their views on a range of planning topics and issues. A total of 148 representations were received which were considered during the development of the draft Plan Strategy document and,

where relevant, these will also be considered during the preparation of the Local Policies Plan. Details are set out in the Council's published 'Preferred Options Paper Public Consultation Report 2019'.

6 Soundness

- 6.1 The LDP is prepared to meet the tests of soundness as set out in the Department for Infrastructure's Development Plan Practice Note 6: Soundness (Version 2, May 2017).

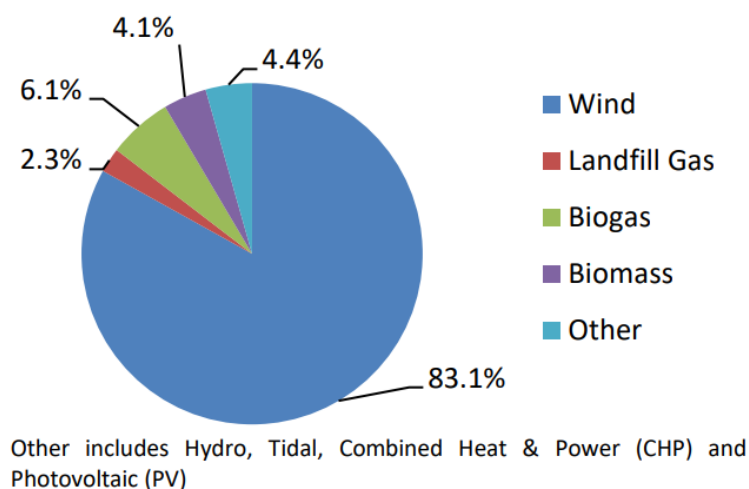
7 Current Generation and Consumption

- 7.1 To underpin economic growth, the Antrim and Newtownabbey Borough needs a modern and sustainable economic infrastructure, including reliable and adequate connections to renewable energy supplies.
- 7.2 In Northern Ireland, energy is generated either by fossil fuel power stations or by renewable energies such as wind. This is then transmitted at very high voltage to substations along the transmission network and distributed at lower voltage to domestic and non-domestic consumers along a network of overhead lines. Further information on the electricity network is detailed in Evidence Paper 11 – Public Utilities.
- 7.3 Although Northern Ireland relies heavily on fossil fuels, short, medium and long-term plans have been developed to reinforce the electricity transmission network for connecting energy from renewable sources. Parallel to these infrastructure plans, NIE have developed a plan to connect wind farms to the electricity network in groups. These 'clustered' connections will reduce the number and length of new overhead lines needed for the connections. NIE are also investing in smart meters and smart grid technology.
- 7.4 A current major project is the 'Tyrone-Cavan Interconnector', which is a cross border project requested by the utilities regulators and governments in both Northern Ireland and the Republic of Ireland. The project will upgrade the North-South Interconnector to ensure the effective operation of an 'all island' electricity market, to support the realisation of strategic renewable energy targets and to reduce customer costs.
- 7.5 Aside from the electricity and gas networks, energy provision for both domestic and non-domestic use may be alternatively sourced or supplemented directly from small-scale renewable energy generation. While these resources are currently small scale, they reduce dependency on imported fossil fuels and in turn, this should reduce consumer costs and lessen climate change.
- 7.6 The most recent statistics from the Department for the Economy (DfE) are contained within Issue 10 of the Electricity Consumption and Renewable Generation Statistics report. This report states that for the twelve-month period

January 2018 to December 2018, 38.2% of total electricity consumption in Northern Ireland was generated from renewable sources located in Northern Ireland. This represents an increase of 3.5% on the previous 12-month period and is the joint highest rolling 12-month proportion on record.

- 7.7 Of all renewable electricity generated within Northern Ireland over the 12-month period January 2018 to December 2018, 83.1% was generated from wind. A number of other renewable sources contribute to the overall total as shown in Figure 1.
- 7.8 In terms of the volume of electricity consumption between January 2018 to December 2018, approximately 7,816 Gigawatt hours (GWh) of total electricity was consumed in Northern Ireland. Of this, some 2,984 GWh (38.2%) was generated from renewable sources within Northern Ireland. Electricity generated from renewable sources is for those renewable generators physically located within Northern Ireland and recorded by NIE Networks and SONI. It excludes micro-generation and any imported electricity derived from known or unknown renewable sources.

Figure 1: Renewable Electricity Generation by Type of Generation (January 2018 to December 2018)



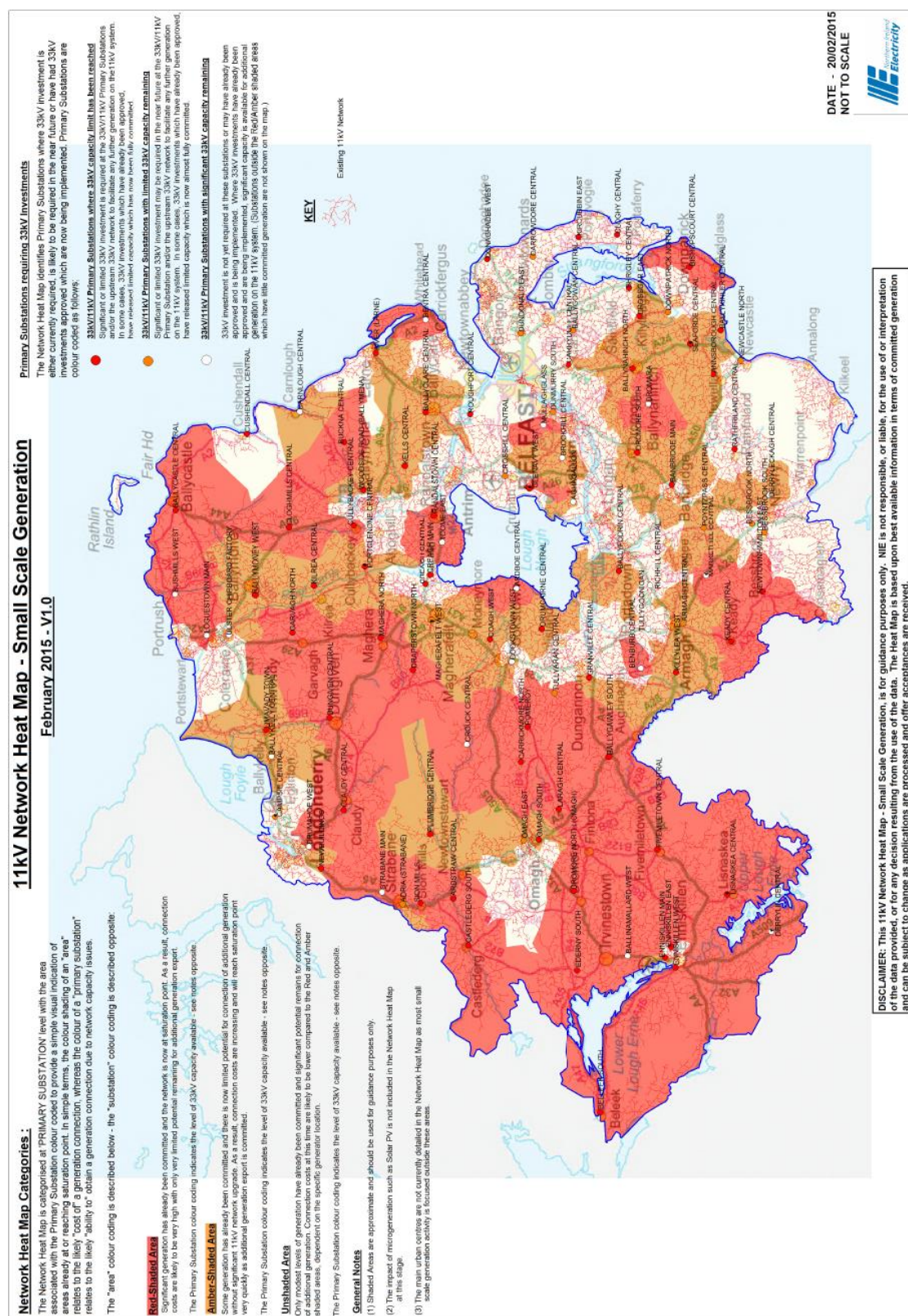
- 7.9 The **Energy in Northern Ireland report**, 2018, reflects performance against the 2011-15 Programme for Government target that was to encourage achievement of 20% of electricity consumption from renewable sources by 2015 and the Executive's 2010-20 **Strategic Energy Framework**, which includes a target to achieve 40% of electricity consumption from renewable sources by 2020.
- 7.10 However, in the non-domestic sector the greatest differences occur, with the legacy Antrim Borough Council area's average consumption being

significantly above the Northern Ireland average and amongst the highest in Northern Ireland. This indicates individual large consumers operating within the area. In the legacy Newtownabbey Borough Council area, although still above the Northern Ireland average, the average consumption per metre is much lower. These trends point to a more residential bias in terms of the legacy Newtownabbey Borough Council area, and more business bias in the legacy Antrim Borough Council area.

Network Capacity

- 7.11 Evidence Paper 11 – Public Utilities details how the introduction of increased Renewable Obligation Certificate incentives for small-scale generation in April 2010, there has been a large increase in the amount of small-scale generation either connected to, or committed to connect to, the 11kV network. This is leading to increased connection costs and the requirement for 33kV reinforcement work to facilitate generation from the 11kV network to the 33kV network.
- 7.12 To identify the areas where potential constraints to connection exist, NIE networks created a 'heat map' (Figure 2), giving indicative information on these problem areas. The main purpose of the network heat map is to provide guidance on the capability of the 11kV network to accept further small-scale generation.
- 7.13 The heat map indicates that the majority of the Borough would tend to be at the lower end of the saturation scale and therefore the greater potential for connection for additional generating capacity. This is illustrated by the lighter coloured shading. A significant pocket of network saturation does however exist between Toome and Randalstown, where significant generation has been committed, as indicated by the red shading. The Council advises applicants who propose to connect to the Network to contact NIE directly to ascertain the latest situation concerning connection availability.
- 7.14 Further information on the electricity network is contained in Evidence Paper 11 – Public Utilities.
- 7.15 Examining the number and location of approved energy related development schemes, offers a picture of what is happening within the Borough and the opportunities that remain for future energy exploitation. There is a concentration of renewable energy developments in the south of the Borough and around the rural Lough Neagh lowlands. This corresponds with areas of electric connection potential on the NIE small generation heat map as displayed in Figure 2. Wind turbines have a tendency to cluster, especially in exposed upland areas towards the east of the Borough. These areas also tend to be highly visible from the surrounding area and a sensitive approach in the turbines placement is required. This is discussed further within Evidence Paper 18 – Rural Pressure Analysis.

Figure 2: NIE 11Kv Network Heat Map for Small Scale Generation



Source: NIE Networks

Anaerobic Digestion

- 7.16 Anaerobic Digestion (AD) is primarily regarded as a waste treatment facility. The process of AD provides a source of renewable energy as the waste is broken down to produce biogas, which is a mixture of around 60% methane, 40% carbon dioxide and traces of other gases. The biogas can be burned in a boiler or a Combined Heat and Power (CHP) plant to generate renewable heat and/or electricity. It may also be upgraded to pure methane and used as a bio-fuel (sometimes referred to as bio-methane) that may be injected into the gas grid to provide heat and power, or condensed for use as a renewable fuel for transport. One cubic metre of biogas at 60% methane content converts to 6.7kWh of energy.
- 7.17 The benefits associated with AD include a contribution towards meeting Government targets in relation to renewable energy and greenhouse gas emissions; a beneficial means of dealing with biomass waste that would otherwise go to landfill; the opportunity to utilise the region's natural resources to enhance security of energy supply; and support for jobs and businesses.
- 7.18 Anaerobic Digestion is already attracting increasing attention from more and more people, all seeking to set up food waste collection schemes. Many retailers, food manufacturing companies and farmers also see anaerobic digestion as the solution to their waste problems and a demonstration of corporate social responsibility – and as a way of genuinely boosting their green brand credentials.
- 7.19 In Northern Ireland as a whole, energy production from AD remains low and small scale. Only 4.1% of electricity produced from renewable sources in Northern Ireland is from biomass sources. It is considered that the AD industry within Northern Ireland is in its infancy. To research and promote the process, the Agri-Food and Biosciences Institute have commenced a project to consider the potential of the small scale on-farm AD in Northern Ireland as a future strategy for managing farm waste, together with the production of renewable energy.
- 7.20 AD proposals raise a number of planning issues including visual and landscape impacts arising from industrial scale plant/buildings, potential odour impacts, air emissions, noise impacts, watercourse pollution, and traffic impacts.

Solar Energy

- 7.21 Active solar technology can be divided into two categories: Photovoltaic (PV) and Solar Water Heating (SWH). Solar PV is unique among renewable energy technologies in that in addition to generating electricity from daylight, it can also be used as a building material in its own right. PV either can be roof mounted or freestanding in modular form, or integrated into the roof or facades of buildings through the use of solar shingles, solar slates, solar glass laminates and other solar building design solutions.

- 7.22 Solar technology, especially solar PV technology is on the rise within the Borough. Northern Ireland's first ever large-scale solar farm at Crookedstone Road in Antrim has been recently developed and connected directly into the private network of the nearby Belfast International Airport. This pioneering renewable energy project will provide approximately 27% of the Airport's annual electricity demand⁴. The energy from the solar farm will also provide the Airport with a source of renewable electricity, reduced energy costs and will save approximately 2,100 tonnes of carbon emissions each year (which is equivalent to taking 469 cars off the road).
- 7.23 The Council would actively encourage all large and small businesses to consider switching to renewable energy to give them a competitive edge and collaboratively, help to meet the Northern Ireland Executive's target of 40% of our energy demand from renewable sources by 2020.

Groundwater

- 7.24 The Department for the Economy (DfE) and Geological Survey of Northern Ireland have advised the Council that there is considerable potential within the Borough for the use of both shallow and deep groundwater as a geothermal energy resource for the production of heat, and possibly electrical power. Further information on this topic is considered in Evidence Paper 12 – Minerals.

Electric Vehicles

- 7.25 The use of Electric Vehicles (EVs) is a sustainable means to decarbonise transport. Ideally, the vehicles would be powered using renewable energy sources. This is in keeping with the policy objectives and targets mentioned in Sections 2, 3, and 4 of this Evidence Paper.
- 7.26 The Ecarri scheme was set up by the former Department of Regional Development and the Department of the Environment to introduce public EV charging infrastructure to Northern Ireland. The phased installation began in 2012 and ended in 2013. Under the Ecarri scheme, 334 public charging points (14 rapid charge points and 320 fast charge points) have been installed in Northern Ireland⁵. Within the Borough, one rapid charge point (located at the M2 motorway services and 18 fast charge points, which are located, in urban areas were developed.
- 7.27 Over recent years there has been an increase in demand for electric vehicles due to the improvement in infrastructure provision (i.e. faster charging points), growing confidence in the technology and the improved variety of electric vehicles on the market.
- 7.28 In July 2015, the Ecarri scheme was handed over to the Electricity Supply Board (ESB) who are now responsible for the operation, maintenance and development of the public charge point network in Northern Ireland. Since the

⁴ <https://www.lightsourcebp.com/uk/2016/05/northern-irelands-first-large-scale-solar-farm-connected/>

⁵ <https://www.ecarri.com>

handover, ESB has installed a further one rapid charge point (at The Junction Retail Outlet and Leisure Park) and a further three fast charge points within the Borough.

- 7.29 The Council is leading the way in encouraging this sustainable form of transport by generously locating 15 public charging points on Council premises, spread throughout the Borough. This commitment will be reflected in the Council's LDP.

8 Appropriate Siting

- 8.1 The aim of the Strategic Planning Policy Statement (SPPS) in relation to renewable energy is to facilitate the siting of renewable energy generating facilities in appropriate locations within the built and natural environment. This is in order to achieve Northern Ireland's renewable energy targets and to realise the benefits of renewable energy without compromising other environmental assets of acknowledged importance. The SPPS states that Local Development Plans (LDPs) must take this aim into account, along with regional strategic objectives, local circumstances, and the wider environmental, economic, and social benefits of the development.
- 8.2 It is the approach of the SPPS that LDP policy should permit proposals (including associated buildings and infrastructure) that will not result in an unacceptable adverse impact on the following:
- Public safety, human health, or residential amenity;
 - Visual amenity and landscape character;
 - Biodiversity, nature conservation or built heritage interests;
 - Local natural resources, such as air quality, water quality or quantity; and
 - Public access to the countryside.
- 8.3 The Council is in agreement with this policy approach, which will be reflected in its LDP, and is committed to ensuring the responsible use of resources, and promoting sustainable energy production.
- 8.4 The Borough benefits from a wealth of natural, built and archaeological heritage assets. These form an important part of the character and appearance of Antrim and Newtownabbey's urban and rural areas. They offer opportunities to the overall health and wellbeing of the Council's citizens. The Council is committed to protecting and enhancing these assets where possible, and as such this will be addressed within the LDP. Likewise, the LDP planning policy will encourage appropriate repowering, decommissioning and site restoration at the end of a development's lifetime. Further information on the Borough's natural and built environment can be found in Evidence Papers 7 Historic Environment, and 17 Natural Heritage.
- 8.5 The use of natural resources as a source of renewable energy can cause adverse impacts if not developed and managed sustainably. These impacts

can be on the amenity and wellbeing of people living and working in proximity to the development, as well as on the very environment that is supplying the resource. The Borough is home to Belfast International Airport and as such, planning officers and relevant statutory consultees must carefully consider the unacceptable effects of wind and solar energy development (including effects on aircraft safety, aircraft navigation equipment, and electromagnetic interference).

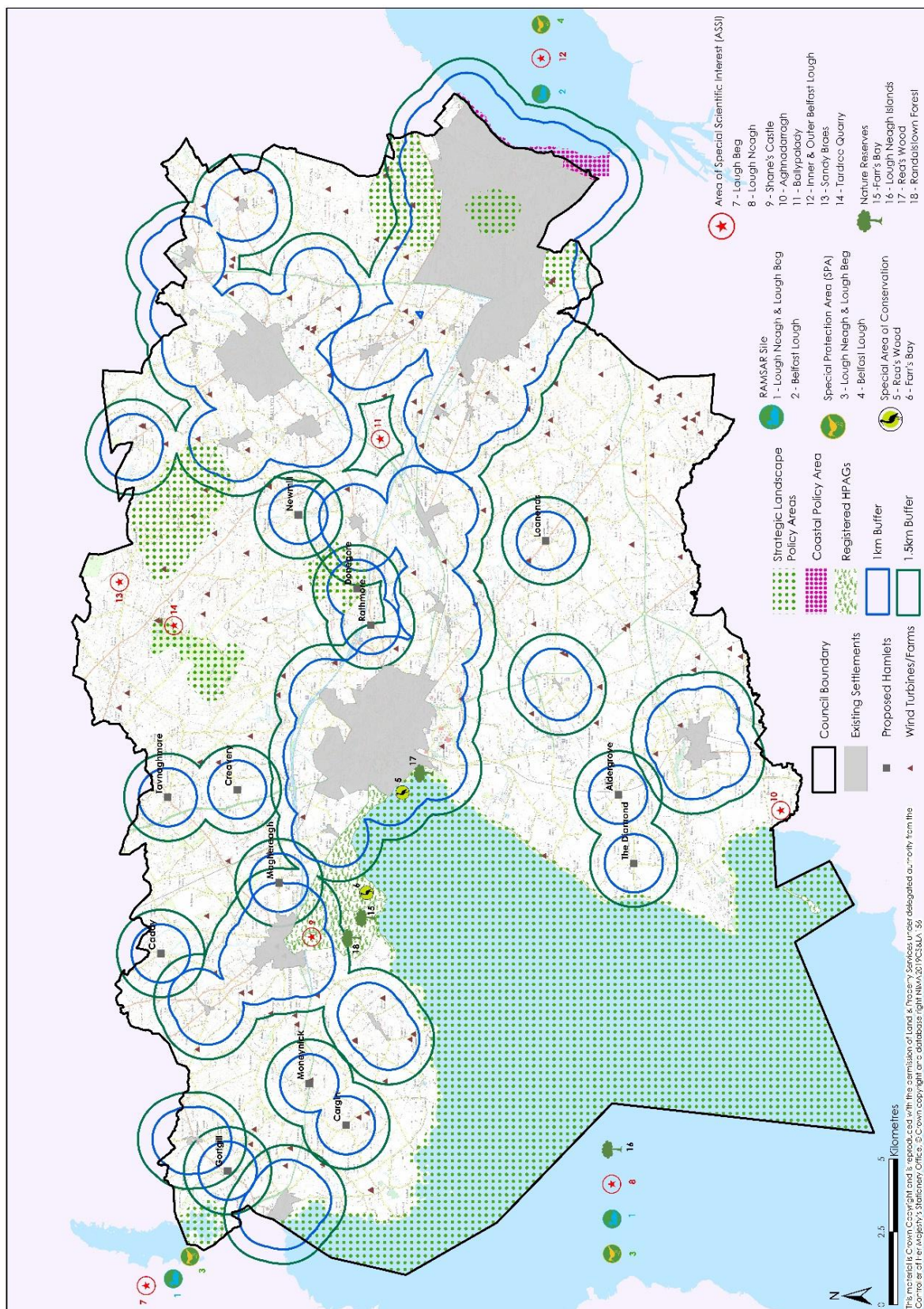
- 8.6 In 2018, the Council updated its evidence base, in line with Departmental guidance, and undertook a Landscape Character Assessment throughout the Borough. This identified landscapes that are sensitive to the impact of development, such as wind turbines and major transition lines from power stations, and makes recommendations on their capacity to absorb further development. In relation to the landscapes that would be particularly sensitive to the impact of wind energy development, the Council considers it a sound policy approach for its LDP to identify areas where particular consideration should be applied. The Borough can be divided into three main categories:

- Group 1 - Areas where wind turbines will not be acceptable;
- Group 2 - Areas of protection; and
- Group 3 - Areas with potential for wind farms.

- 8.7 In line with the direction of regional planning policy, Group 1 locations will include areas of active peatland, Coastal Policy Areas, and Strategic Landscape Policy Areas, and a presumption against wind energy development will apply. In Group 2, the Council will apply particular consideration and protection to proposals located within International and National Sites of nature Conservation Importance; Historic Parks, Gardens and Demesnes; and those proposals that would impact on the setting of a settlement. Figure 3 which illustrates a 1 km buffer around settlements would be appropriate for the Borough. Proposals for wind turbine development within Group 3 locations are generally likely to be acceptable subject to other planning policies.

- 8.8 The Council will reflect these matters in the LDP. Further information on these sensitive locations within the Borough is within Evidence Paper 16 – Landscape Character Assessment.

Figure 3: Areas of Wind Energy Development Restriction within the Borough



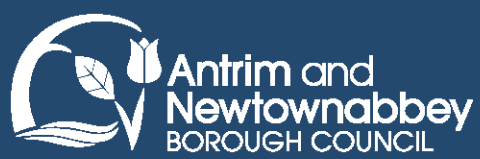
9 Key Findings

9.1 The evidence presented in this Evidence Paper on Renewables has led to the identification of the following key findings:

- The DETI Strategic Energy Framework (2010) confirms a target of achieving 40% of Northern Ireland's electricity consumption from renewable energy sources by 2020;
- Northern Ireland relies heavily on fossil fuels to meet energy needs, with 65% of the Borough's households heating their homes using oil;
- Renewable energy production is becoming more common, with the annual proportion of electricity consumption from renewable sources in Northern Ireland rising considerably in recent years, from 8.4% in 2010 to 35.2% in 2018. This represents an increase of 8.1 percentage points on the previous 12-month period and is the joint highest rolling 12-month proportion on record⁶;
- Wind remains the dominant source of renewable electricity generation in Northern Ireland accounting for 75% of volume generated in 2016. Wind also accounted for some 80% of installed renewable capacity, though this was down from 94% in 2011 due to the growth of other technologies like solar PV and bioenergy. Such reliance on wind does mean that monthly renewable electricity generation volumes in Northern Ireland can be prone to large fluctuations, due to changing weather conditions;
- Natural gas mains connection is available in main urban areas, and in 2011 19% of the Borough's households heated their homes using this source;
- The majority of the Borough has significant potential for Grid connection of additional small-scale energy generation. However, parts of the northeast could have limited potential, and a substantial section of the northwest appears to have reached saturation point;
- There are five primary substations located within the Borough, three of which have reached their capacity limit and require investment to facilitate further generation on the 11kV system;
- Approved renewable energy development has been drawn to the south of the Borough, around the rural Lough Neagh lowlands. Wind turbines have tended to cluster in exposed upland areas towards the east of the Borough;
- Anaerobic Digestion plants in the Borough are small scale, focusing on processing on farm waste rather than a means of creating renewable energy; and

⁶ <https://www.economy-ni.gov.uk/articles/electricity-consumption-and-renewable-generation-statistics>

- The infrastructure network for charging electric vehicles has recently been developed within the Borough, although the public's interest and investment in electric vehicles remains low.



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