Local Development Plan - Position Paper

Environmental Resilience

Ards and North Down Borough Council

Contents

Executive Summary

This Position Paper aims to provide an overview of environmental change projections and the potential impacts of these changes in Ards and North Down Borough Council with a view to informing as to the key issues within the Borough.

It should be noted that Borough specific information is available for air quality, however no information exists specifically for coasts and climate change for Northern Ireland.

Evidence at a Northern Ireland level is available for emissions and has been used for the basis of this report. It is important to stress that in compiling the Position Paper the best information available has been used however it may need revised in light of the release of any new data.

This paper and subsequently the views of members generated from the upcoming engagement event will provide a foundation for direction of the Preferred Options Paper (POP). The POP is the earliest stage of plan preparation and will form the basis for consulting with the public and stakeholders on a range of options for dealing with key issues in the Borough.

Any future decision making will need to be made within the context of a Sustainability Appraisal under the provision of Planning (Northern Ireland) Act 2011. This paper is therefore intended to generate ideas on how planning can best provide for sustainable development in the Borough whilst being cognisant of the need to be environmentally resilient.

Introduction

1.1 This paper examines the existing baseline data regarding environmental changes and sustainability issues in the new Ards & North Down Council area. The paper sets out the policy context followed by an assessment of the existing Plans and allows members to commence consideration of how planning policy may be formulated within the context of the Regional Planning Policy and the Strategic Planning Policy Statement (SPPS).

1.2 The overriding objective of the planning system is to deliver sustainable development. Local authorities have a responsibility to strive to meet the UK's emissions targets by encouraging energy efficiency and renewable energy sources.

1.3 Spatial planning can make a contribution to mitigating and adapting to climate change and can help to shape places with greater resilience to the impacts of climate change.

Policy Context

European and National Context

The Climate Change Act (2008)

2.1 The Climate Change Act (2008)[1] established a legislative framework to enable a reduction of UK greenhouse gas (GHG) emissions by 80% from 1990 levels by 2050 and by 34% by 2020. The Act also introduces legally binding five-year carbon budgets, which set a ceiling on the levels of GHG the UK can emit to secure the 2050 target.

[1] The Climate Change Act (2008)

2.2 The current European Union (EU) has a target of reducing greenhouse gas 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.

The United Nations Paris Agreement

2.3 The United Nations Paris Agreement[2] was signed by 195 countries and the EU in December 2015. This is a legally binding agreement in International law, requiring all signatories to reduce Green House Gas (GHG) emissions to limit global temperature rise to 2 degrees Celsius, and that efforts should be pursued to limit to 1.5 degrees Celsius. The Paris Agreement marks a clear turning point towards a sustainable and low carbon economy. It establishes a new long term goal to strengthen adaption and resilience 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.

Regional Context

Draft Programme for Government (2016-21)

2.4 The Draft Programme for Government[3] agreed by the Northern Ireland Executive indicates the commitment to the implementation of goal 13 of the UN 2030 Sustainable Development Goal requiring us to take urgent action to combat climate change and its impacts. Greenhouse gas emissions have fallen 10% since 1990 and the target of reducing levels of 35% on 1990 by 2025 remains. Any measures taken to reduce Greenhouse Gas Emissions will make a contribution to mitigating the effects of climate change globally,

[2] The United Nations Paris Agreement 2015
[3] Draft Programme for Government (2016-21)

and will also reduce our dependence on fossil fuels, and increase resource and energy efficiency.

Everyone's involved: Sustainable Development Strategy[4]

2.5 This document states, 'the impacts of climate change are already being witnessed in Northern Ireland. We all need to start to operate within sustainable development principles if inappropriate flooding, habitat loss, water pollution etc. are to be addressed'.

Regional Development Strategy (RDS) 2035

2.6 Sustainable development is at the heart of the RDS[5]. 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.

2.7 The RDS states that 'Northern Ireland must plan to deal with climate change as a key environmental and economic driver.' It is important that we in Northern Ireland play our part by reducing greenhouse gas emissions and that we plan for the impacts which climate change brings. The Strategy sets out measures on transport, energy and the location of jobs and houses to help address and adapt to these important issues.

[4] Everyone's involved: Sustainable Development Strategy
[5] Regional Development Strategy (RDS) 2035

Strategic Planning Policy Statement for Northern Ireland (SPPS)

2.8 The Strategic Planning Policy Statement (SPPS) clearly specifies sustainable development as one of the core principles of the reformed planning system.

2.9 A central challenge in furthering sustainable development is mitigating and adapting to climate change, whilst improving air quality. Climate change adaptation is the process of adjusting to the changes in our climate and planning how to prepare for the future. Adaptation also means seeking out ways in which opportunities arising from potential climate changes can be exploited. In January 2014, 'A Northern Ireland Climate Change Adaptation Programme' was published. This document sets out the strategic objectives, proposals and policies by which each Department will contribute to this adaptation programme. According to the SPPS, the planning system should therefore help to mitigate and adapt to climate change by:

- shaping new and existing developments in ways that reduce greenhouse gas emissions and positively build community resilience to problems such as extreme heat or flood risk;
- promoting 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 in preference to the private car;
- requiring the siting, design and layout of all new development to limit likely greenhouse gas emissions and minimise resource and energy requirements;
- avoiding development 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;
- considering 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, or for decentralised or low carbon sources of heat and power wherever possible;

- promoting the use of energy efficient, micro-generating and decentralised renewable energy systems; and
- working 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. [6]

Local Planning Policy Context

Belfast Metropolitan Area Plan 2015 (BMAP)

2.10 It should be noted that BMAP was adopted in September 2014 but was subsequently quashed as a result of a judgment in the Court of Appeal delivered on 18 May 2017. As a consequence of this, the North Down and Ards Area Plan 1984-1995, the Belfast Urban Area Plan, and Bangor Town Centre Plan 1995 are now the statutory Development Plans for the North Down area with draft BMAP remaining a material consideration. These plans remain extant until replaced by the new Local Development Plan (LDP) for the Borough. The existing plans are an important consideration in the LDP process, as they provide a starting point for the review of our spatial planning options.

2.11 The existing plans contain no policies which relate directly to climate change.

[6] Strategic Planning Policy Statement, Department of Environment

Ards and Down Area Plan 2015 (ADAP)

2.12 The Ards and Down Area Plan 2015[7] is a development plan prepared under the provisions of Part 3 of the Planning (Northern Ireland) Order 1991 by the Department of the Environment (DOE). One purpose of this plan is to facilitate sustainable patterns of growth and development throughout the Plan area in accordance with the sustainability related strategic objectives of the RDS;

2.13 Policies will be considered in the proposed Local Development Plan that will mitigate and adapt to climate change. It is proposed that summarising the wider issues and identifying the relevant policies will ensure that it is given the appropriate weight in the plan and policy making process.

Council Plans and Strategies

Ards and North Down Borough Council Corporate Plan (2015-19)

2.14 By placing sustainability at the heart of the corporate plan[8], Ards and North Down Borough Council recognise that even at a local level, biodiversity and the environment are vitally important to our future health, wellbeing and prosperity. Under the 'Place' category the Plan aims to 'promote a clean, green, healthy, safe and sustainable environment'. The success of which will be measured by levels of anti-social behaviour and crime; success in environmental award schemes; waste and recycling levels; the number of residents perceiving the borough to be clean and attractive; the proportion of residents who feel safe.

[7] Ards and Down Area Plan 2015, Department of Environment
[8] Ards and North Down Borough Council Corporate Plan 2015-19

Ards and North Down Borough Council Community Plan- 'The Big Plan'

2.15 Outcome 5 listed in the 'Big Plan'[9] states, all people in Ards and North Down feel pride from having access to a well- managed sustainable environment. Public services are dependent on a stable environment where the effects of climate change, flooding, coastal erosion, and changes in biodiversity are kept in check by mitigation and adaptation measures. Without planned resilience to these changes, delivery of services and personal wellbeing is at risk.

Ards and north Down Borough Council Environmental Statement

2.16 Ards and North Down Borough Council is committed to environmental stewardship demonstrated through the accreditation of an ISO 14001 Environmental Management System. We work to enhance our local environment, improve the health and well-being of our local community and reduce the negative impact our activities could have on the environment.

The Councils environmental statement[10] sets out commitments as an organisation:

- to reduce, reuse and recycle our waste
- to introduce measures to ensure best practice and responsible use of water, fuel and energy
- to investigate and introduce, where possible, measures to minimise the release of pollutants which cause damage to land, air and water due to our activities
- to reduce the environmental impact of goods we buy and encourage suppliers and contracted services to improve their environmental performance

[9] Ards and North Down Borough Council Community Plan, Strategic Community Planning Partnership, March 2017
[10] Ards and North Down Borough Council Environmental Statement.

Ecosystem Services Approach

3.1 The SPPS recognises the importance of ecosystem services: 'where appropriate, identifying the condition of ecosystems, the provision of services and their relationship to human wellbeing' should be integrated into the plan making and decision taking processes.

3.2 Ecosystem services are the processes by which the environment produces resources used by people that are often taken for granted, such as clean air, water, food and materials. Our health and well-being, and economic prosperity depend upon the services provided by ecosystems and their components which need to be healthy and resilient to change in order to function effectively. The careful management, maintenance and enhancement of ecosystem services are therefore an integral part of sustainable development.

3.3 A great deal of progress has been made over recent years in understanding the role of the natural environment in contributing to our economic performance. Our environmental assets and a good quality environment provide benefits that enhance economic performance, offer new opportunities for investment and employment, and improve living standards, health and well-being, and our quality of life. A good quality environment can also help to improve resilience to climate change, as trees and other green infrastructure provide important ecosystem services that reduce the effects of flooding and the urban heat island.

3.4 Ecosystem services have also been highlighted in the 'Landscape Character assessment position paper'.

3.5 Ecosystem services are being given an increasingly high profile in land use planning. The Northern Ireland National Ecosystem Assessment presented the first analysis of the benefits provided by Northern Ireland's natural environment in 2011, and formed part of a UK wide project to assess the

state of ecosystems, the goods and services they deliver and the value they provide to human well-being and the economy.

3.6 Ecosystem services are generally grouped into four main categories:

- **Provisioning:** the products obtained from ecosystems such as food, fibre and fresh water
- **Regulating:** the benefits obtained from ecosystem processes such as pollination and control of climate and water
- **Cultural:** the non-material benefits obtained from ecosystems for example through spiritual enrichment, recreation and tourism or other aesthetic experience
- **Supporting:** ecosystem functions that are necessary for the production of other ecosystem services including soil formation and cycling of nutrients and water

3.7 For example, the following ecosystem services have been identified in Landscape Character Area 26 (Strangford, Ards and Lecale): marine fisheries, aquaculture, arable production, agriculture and food processing, nitrogen cycling, waste disposal, public access, archaeological heritage, tourism and angling.

Environmental change

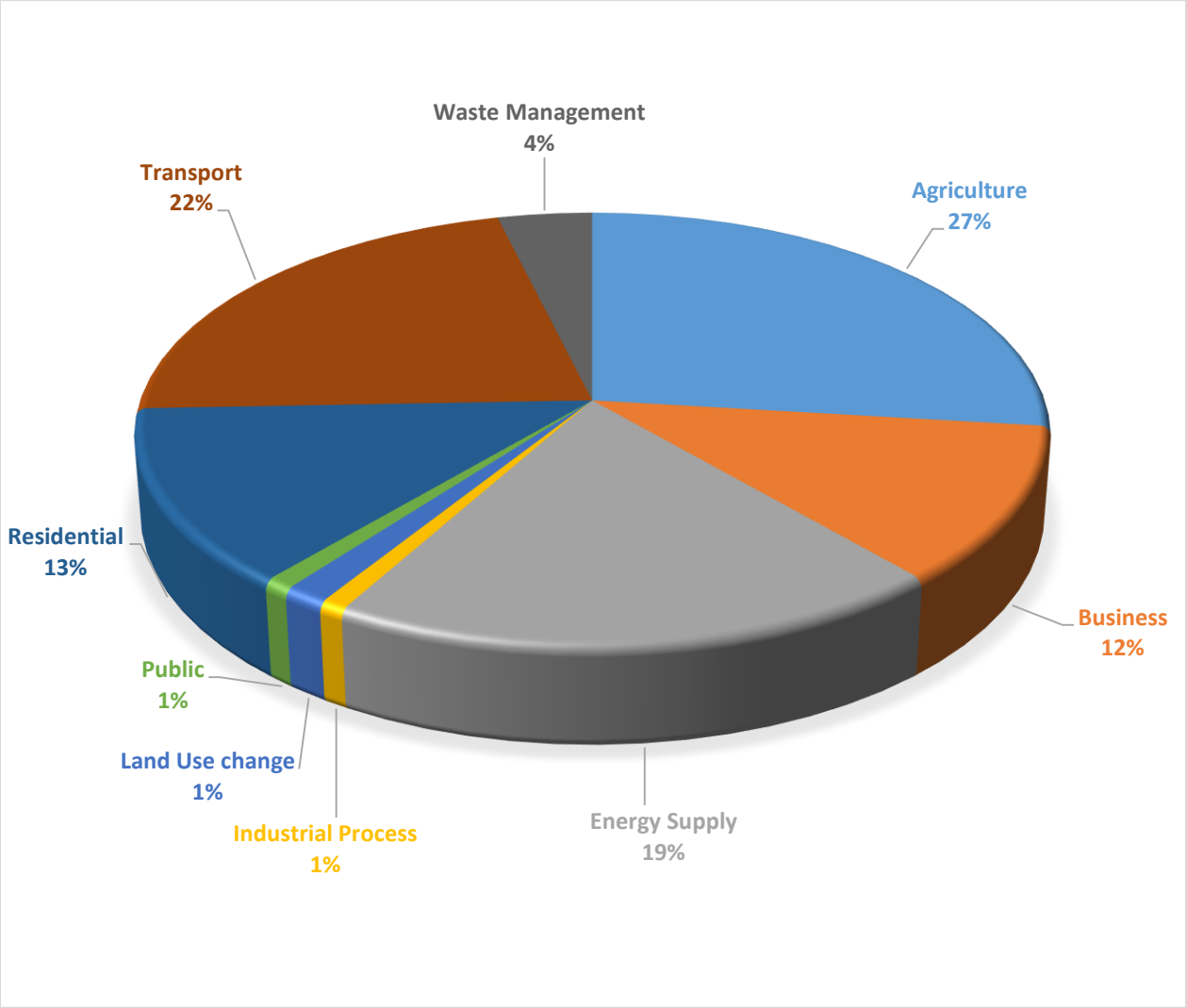
4.1 The planning system is a key mechanism by which Ards and North Down Borough Council can make an important input into the delivery of the NI Executives objective of a reduction in greenhouse gas emissions by at least 35% of 1990 levels by 2025. This is a contribution towards the 2008 UK climate change target, which extends to Northern Ireland, to reduce emissions by 80% by 2050.

4.2 Spatial Planning can make a major contribution to tackling climate change by shaping new and existing developments in ways that reduce carbon dioxide emissions and positively build community resilience to problems such as extreme heat or flood risk. Spatial planning has the potential to deliver the right development in the right place in a fair and transparent way, informed by the imperative of sustainable development. (Planning and Climate Change Coalition, 2012)

4.3 The land use planning system has an important role to play in mitigating and adapting to climate change and supporting the shift towards a low carbon economy. Spatial planning is critical in facilitating beneficial human behaviours, in helping to determine whether lifestyles are more or less carbon intensive. Decisions around the design and location of new developments. The core business of planning considerations will have long term consequences for climate mitigation and adaption.

4.4 Climate change is largely accepted, the specific impact it is having and will have in the future is difficult to predict. Increased storm surges are predicted to be one of the impacts of climate change. Fully functional coastal and wet land ecosystems will help to absorb some of the impact, such as flooding, but the storms themselves may cause damage to habitats making it difficult for them to perform other functions such as regulating water quality.

Figure 1: Greenhouse Gas Emissions by Sector 2016



Source: DAERA [11]

4.5 The chart above shows Northern Ireland's Green House gas emissions per sector in 2015. According to the Northern Ireland greenhouse gas inventory 1990-2016, the largest sectors in terms of emissions in 2016 were agriculture (27%), transport (22%) and energy supply (19%). Most sectors showed a decreasing trend since the base year. The largest decreases were in the energy supply, residential and waste sectors. They were driven by

[11] https://www.daera-ni.gov.uk/publications/northern-ireland-greenhouse-gas-inventory-1990-2016-statistical-bulletin

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. The full report from which these estimates are sourced is available from the National Atmospheric Emissions Inventory website http://naei.defra.gov.uk/reports/reports?report_id=894.

4.6 Emissions in a particular year can be influenced by the weather. For example, the two successive cold winters in early and late 2010 resulted in high demand for heating and subsequently an increase in emissions. In 2012 there was an increase in emissions from widespread forest wildfires which occurred during a spell of particularly dry, windy weather. Global fuel prices have caused a shift in recent years from burning natural gas to coal in the energy supply sector which has increased emissions from the energy supply sector since 2011.

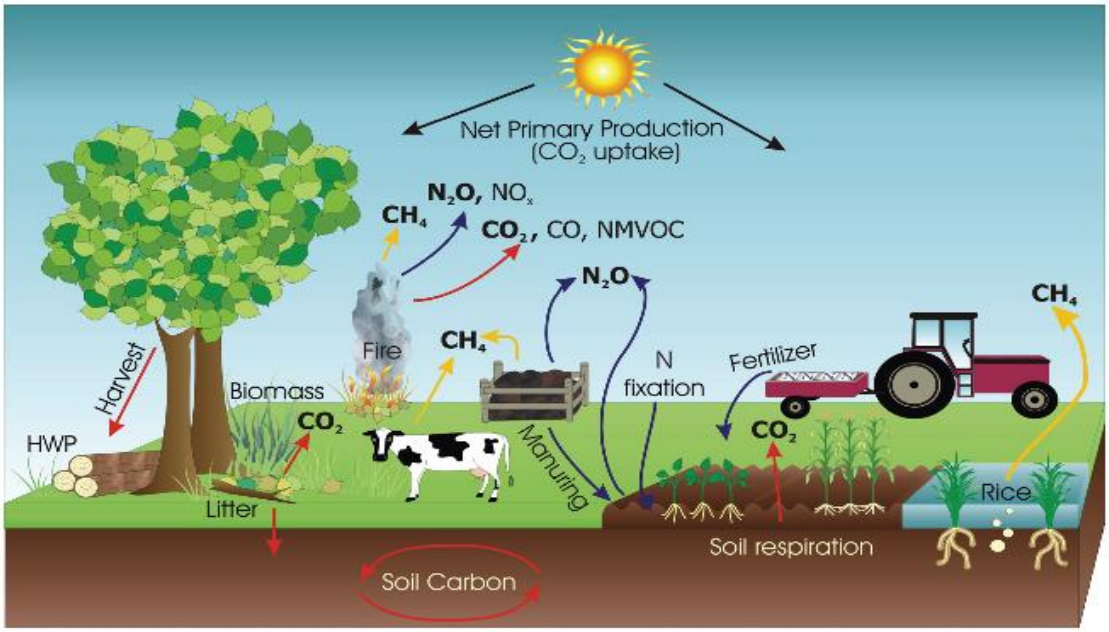
Agriculture Sector

4.7 Most farm-related emissions come in the form of methane (CH4) and nitrous oxide (N2O). Cattle belching (CH4) and the addition of natural or synthetic fertilisers and wastes to soils (N2O) represent the largest sources. Agriculture is the most significant source sector for methane and nitrous oxide, accounting for 87% and 86% of total Northern Ireland emissions of these two gases, respectively. Northern Ireland CO2 emissions in 2014 represented 3.0% of UK CO2 emissions, a similar proportion to the base year at the farm level, the relative size of different sources will vary widely depending on the type of products grown, farming practices employed, and natural factors such as weather, topography, and hydrology.

4.8 Ards and North Down Borough Council covers an area of 228 sq miles of North East County Down and is made up of a mix of urban and rural communities. At the time of the 2011 census the population was 152,672. The area serves a rural population of 30,790 which equates to approximately

20% of the population. According to NINIS in 2017, the total number of farms in the Borough was 687 and the total area farmed was 31,994 hectares.

Figure 2: Where do a farm's emissions come from?



Source: World Resources Institute

4.9 The Environmental Farming Scheme (EFS) is a voluntary scheme that will support farmers and land managers to carry out environmentally beneficial farming practices on agricultural land. The EFS, funded by Department of Environment and Rural Affairs, opened for applications on 27 February 2017. The current target is to have up to 6200 EFS agreements in place by 2020.

Agreements will normally last for five years however the Tranche 1 agreement for EFS Wider may last 5.5 years.

The aims of the Scheme are to:

- restore, preserve and enhance biodiversity;
- improve water management and water quality;

- reduce soil erosion and improve soil management;
- foster carbon conservation and sequestration in agriculture; and
- reduce greenhouse gas and ammonia emissions from agriculture

Transport

4.10 Road transport represents the second largest source of emissions in Northern Ireland at 22% of the total in 2016.

4.11 Given the rural nature of the Ards Peninsula and the necessity of travel to avail of service provision and employment cars are very often the only viable choice. Cars offer increased freedom and independence and in the absence of a regular public transport network serving all parts of the Borough may be the only means of convenient travel.

4.12 Some journeys that involve commuting within or between towns and villages could be transferred to buses or trains, and efforts are underway in Belfast to achieve this. This will only happen in Ards and North Down if there are sufficient incentives by way of low fares and fast journey times.

4.13 For the most part the private car will remain the preferred choice of transport, for journeys over a mile, the best outcome would be a shift towards alternative-fuel vehicles, assuming of course that the alternative energy source is not itself generated from fossil fuels. This will require further incentives to reduce the price of such vehicles, and improved infrastructure to support it.

4.14 There is a small but growing alternative fuel vehicle market in Northern Ireland. For car manufacturers, the rising price of fuel is making customers increasingly aware of fuel consumption, so we are now getting cars with ever-better fuel efficiency coming onto the market.

4.15 More efficient cars and reliable public transport, combined**,** is the best way to achieve a more sustainable future.

4.16 Although emissions have increased by a greater percentage than elsewhere in the UK. This largely represents a catching up in car-ownership rates, which are now on par with GB average (476 cars per 1000 population). However not withstanding this catch up effect, emissions per capita are now higher than the UK average. This reflects a number of factors including a more dispersed rural population than UK average, with a higher use of private vehicles as opposed to public transport. 17% of miles travelled on average per person in GB are by public transport, the equivalent figure for NI is 8% and within this only 1% of miles travelled in NI are by rail compared to 9% in the UK as a whole.

4.17 Research carried out by NISRA via the continuous household survey indicates that when respondents were asked 'which, if any of the following actions have you taken in the last 12 months?' The number of households indicating that they deliberately used public transport/walked/cycled increased from 16% to 27% between 2003/4- 2014/15. This shows the increase in the use of public transport in NI. However due to the rural nature of a large part of the Borough this figure may not be fully representative to this Council area.

Alternative transport methods- The electric vehicle. (EV)

4.18 Electric vehicles have no tail pipe emissions and it is estimated that an electric car powered from today's grid could emit between 15 per cent and 40 per cent less CO2 over its lifetime than a similar sized petrol car. The reduction in carbon emissions is mainly due to the fact that electric cars are more energy efficient than conventional vehicles. Regenerative breaking, which returns energy to the battery when brakes are applied, also improves fuel efficiency by up to 20 per cent.

4.19 The use of alternative fuels, like electricity, can help reduce emissions, and in the case of electricity, help improve local air quality. As Northern Ireland's

electricity sector moves to low carbon energy sources this will help electric vehicles be more environmentally friendly from power source to the road. In most cases electric vehicles will be charged at night at the owner's home. An increase in night time demand for electricity (when there is traditionally lower demand on electricity resources) will mean better use of surplus night time wind energy.

4.20 In September 2013 the Office for Low Emission Vehicles produced a document entitled *'Driving the Future today – A strategy for Ultra low emission vehicles in the UK'* . The document 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 the public the independent and mobility they want. The vision is that by 2050 almost every car and van in the UK will be ultra low emission vehicles (ULEV).

4.21 As emissions targets become tighter technology continues to develop. It is anticipated that ULEV's including plug on vehicles and hydrogen fuel cells electric vehicles will take an increasing share of market value for cars and vans.

4.22 The Government's strategy focuses mainly on cars and vans as they present the biggest opportunity for the early adaption of ULEV's. The Office for Low Emission Vehicles is also keen to encourage the adaption of ULEV technologies in other vehicle sectors from heavy duty vehicles and buses to powered two wheelers and other small vehicles.

4.23 The mass adoption of ULEV's 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 system.

4.24 The provision of an accurate source of charge point information is important for convincing existing owners and potential purchasers that their charging needs can be met.

4.25 There are currently 7 ecar EV charge point locations within the Borough, they have the ability to charge two cars at each location simultaneously.

4.26 The EV charge points within the Borough are located at:

- Ulster Folk and Transport Museum x2
- Crawfordsburn Country Park x2
- Quay Street Car Park x2
- Bloomfield Shopping Centre x2
- Mount Stewart Car Park x2
- Castle Street Portaferry x2
- Aurora Leisure Centre Bangor x2
- One other set of 7kw ‘pay for connection’ EV charge points operated by ‘Polar Network’ is located at Asda, Main Street, Bangor.

Figure 3: Map showing location of current EV charging points within the Borough.

4.27 None of the 7 chargers located within the Borough are highspeed 50Kw chargers which can provide an 80% charge to a vehicle in 30 minutes. Three NI Public Sector charge points have a 7kw charge (those at Crawfordsburn Country Park, Aurora, and Mount Stewart) the other four are the more common 22 Kw chargers currently operated by ESB Group. At locations such as Mount Stewart, Crawfordsburn Country Park and the Ulster Folk and Transport Museum, access is dictated to by the opening hours of those facilities.

Residential Sector

4.28 According to the Northern Ireland greenhouse gas inventory 1990-2016 Statistical bulletin, the residential sector accounted for 13% of emissions in Northern Ireland in 2016. Residential sector emissions, have generally decreased since the base year to 2016 (28.9% overall decrease) primarily due to fuel switching. A limited gas network has meant the majority (68%) of households are largely reliant on oil as the main fuel source for heating.

4.29 Whether or not legislation is introduced, approaches should be focused in Government leadership reducing emissions, reduction of fossil fuel consumption, and reduction of agriculture emissions. This will require new policies to encourage demand- side measures in transport take up of residential insulation and renewable heat, and possibly to go beyond voluntary approaches in agriculture. Together with existing polies (e.g. to encourage take up of more efficient vehicles) this would put Northern Ireland on a path to long term emission reduction which will ultimately result in economic benefits compared to the alternative of continued use of and dependence on fossil fuels.

4.30 The NI renewables obligation closed all renewable technologies by 31 March 2017 and the Department of the Economy (DFE) has advised that if all committed projects were to deploy, there would be enough renewable generation to get to 35% of electricity consumption from renewable sources

by 2020. The projection tool assumes this will increase to 40% by 2025 and remain there until 2030.

4.31 In 2015/16, 1,987 GWh of electricity in Northern Ireland was generated from indigenous renewable sources. This was equivalent to 25.5% of total electricity consumption in that period. (Source: Northern Ireland Statistics Report March 2017)

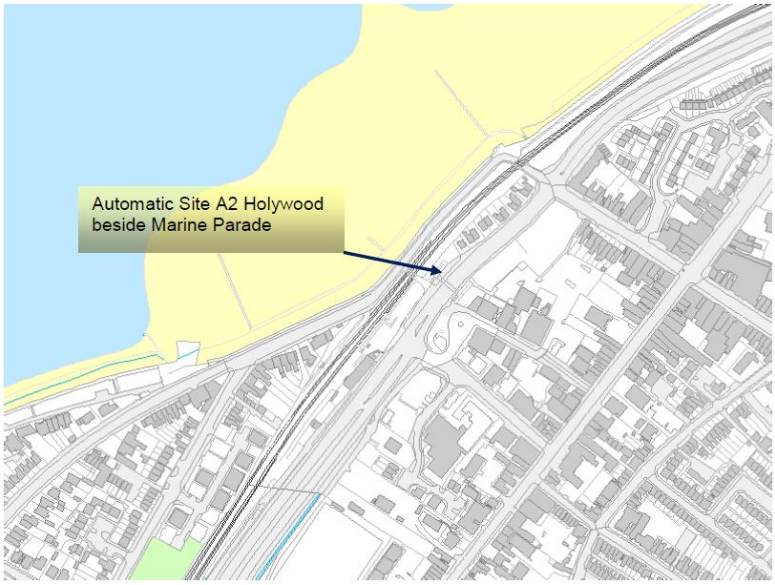
Air Quality Management Areas

4.32 Ards and North Down Borough Council produced a report in December 2015, '*2015 Update and Screening Assessment for Ards and North Down Borough Council'*, This report measured air quality in Ards and North Down Borough. An updating and screening assessment is required to be prepared every three years by local authorities in the UK. The report is followed up on a yearly basis by progress reports.

The 2016 progress report states that air quality is generally good as there is good ventilation from sea breezes. There are few industrial processes in the area that are significantly detrimental to air quality and heavy fuel oil is not widely used for heat generation, solid fuel is still very popular as a secondary fuel.

However, there are a number of very busy trunk roads in the area and four main arterial routes into Belfast with a combined traffic flow of approximately 66500, the busiest being the A2 commuter route from Bangor to Belfast with average daily traffic flows of 44000 vehicle movements per day at Holywood. The A2 has now been identified as the main area of concern with relation to Air Quality for Nitrogen Dioxide (NO2) and Particulate Matter (PM10). Ards and North Down Borough Council has one automatic monitoring site on the A2 Holywood, monitoring NO2 and PM10.

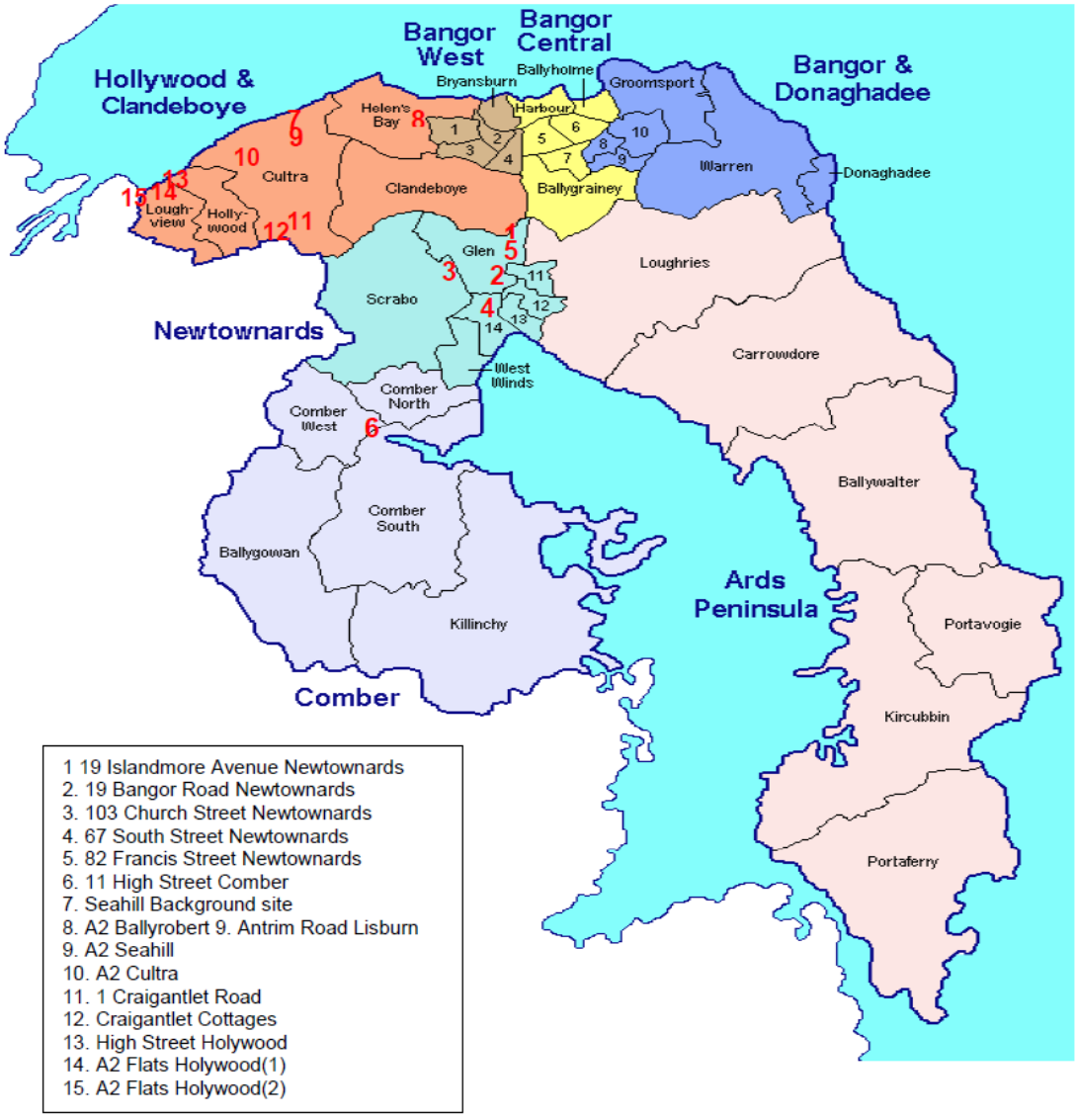
Figure 4: Map showing position of Automatic monitoring site on A2 Holywood.



(2015 Updating and Screening Assessment for Ards and North Down Borough Council)

4.33 Ards and North Down Borough Council has 15 NO^2 diffusion tubes at roadside and background sites. Five are positioned along the A2 main arterial route into Belfast on facades of the closest dwellings to the roadside, the remainder of the tubes are located at various hotspots in Newtownards, Holywood and Comber. A co-location study is carried out at the automatic site in Holywood and a background site is monitored from the A2 and Newtownards. At present, monitoring within the Borough identified no exceedances of the specified concentration of the pollutants contained within the Air Quality Strategy objectives.

Figure 5: Map showing location of Non- Automatic sites within Ards and North Down.



Source: (2017 Progress report, Ards and North Down Borough Council)

4.34 Where exceedances of NO^2 are considered likely the Local Authority must then declare an Air Quality Management Area (AQMA) and prepare an air quality action plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives.

4.35 The 2015 Update and Screening Assessment report for Ards and North Down Borough Council and subsequent progress reports have identified there is no need to proceed to a detailed assessment for any of the pollutants. Monitoring sites are sited in accordance with the guidance and at relevant exposure, no new significant sites have been identified. Ards and North Down Borough Council intends to continue monitoring NO2 and PM10 in 2018 and submit a progress report. (http://www.airqualityni.co.uk/laqm/district-council-reports

Climate change – UK Climate Change Risk Assessment 2017: evidence report Northern Ireland

4.36 The Committee on Climate Change (CCC) is an independent statutory body established under the Climate Change Act 2008 to advise the UK and devolved administration Governments on setting and making carbon budgets and preparing for climate change.

4.37 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 predicted to increase by between 0.8°C and 4°C by the 2050's compared to a 1961-1990 baseline. Regional winter precipitation totals are projected to vary between 0-19% and summer participation reducing by up to 41% and winter precipitation increasing by 27% by the end of the century.

4.38 Sea levels are expected to continue to rise beyond 2100 even in lower emission scenarios and several meters of sea level rise within centuries is possible. In terms of temperature in Northern Ireland, the average temperatures over land have warmed in recent decades. The 2005-2014 decade was 0.7°C warmer than the 1961-1990 average. The average sea

level for Belfast is expected to increase by between 22.8cm and 37.6cam by 2020 compared to a 1990 baseline.

4.39 Climate change poses various risks to wellbeing, communities, homes, people and the healthcare system. High temperatures have a negative effect on human health and wellbeing. There is a robust relationship between high temperatures and an increase in hospital admissions for respiratory causes and there is some evidence suggesting an increase in GP consultations. In NI it is estimated that there are approximately 16.7 deaths per year (heat related). Heatwave events such as the 1976 and 2003 heatwaves in the UK are likely to become the norm between 2030 and 2050.

4.40 Ards and North Down Borough Council area contains an abundance of both natural and built assets. The borough has coastline along both Strangford Lough and the Irish Sea and this means the area remains vulnerable to flooding events through both sea level rises and additional surface water from more frequent, prolonged rainfall.

4.41 'Planning for Climate Change - Guidance for Local Authorities' is a document published by the Planning and Climate Change Coalition[12]. Led by the Town and Country Planning Association (TCPA) and Friends of the Earth, the coalition is made up of a wide cross-sector group of organisations and individuals unified by a common drive to ensure that the planning system responds effectively to the climate challenge. The document offers a set of principles and good practice guidance that local authorities, private sector practitioners and communities in England may find helpful in preparing plans

[12] https://www.tcpa.org.uk/planning-and-climate-change-coalition

and implementing them through development management. The guide focuses on mitigation and adaptation.

4.42 As outlined in, ‘Planning for Climate Change – Guidance for Local Authorities’, it will be necessary for the Local Development Plan to take account of climate change over the longer term. Helping to build community resilience to the impacts of extreme weather such as flooding or extended periods of heat through the favouritism of proposals that work with the natural environmental processes through green infrastructure.

4.43 It is clear that failing to take action to reduce the potential threats from climate change will cost considerably more than taking steps to mitigate climate change, therefore it is of utmost importance that the Local Development Plan keeps Climate change at its core.

4.44 Any local requirement for a building’s sustainability should be set out in a Development Plan Document and applied appropriately to specific sites.

4.45 Local Planning authorities should prioritise walking, cycling and public transports and other smarter choices by setting targets for the proportion of trips in their area by these modes. It is recommended that local authorities:-

- Support the development of voluntary travel plans for existing developments and communities
- Ensure that appropriate targets are set within travel plans for new development particularly for new neighbourhoods.
- Ensure that the infrastructure delivery plan includes investment in transport infrastructure, including public transport that will contribute towards the achievement of these targets.

- Work in partnership with the local transport authority and local transport authority and local transport providers.

4.46 Local authorities should design their policies to focus on prioritising a move away from car dependency and ensure that all developments are at least air quality neutral and do not lead to further deterioration of existing poor air quality.

4.47 Local authorities should consider how to support the take up of electric and plug in hybrid vehicles, and in particular, should encourage new developments with parking facilities to provide opportunities for charging such vehicles especially at home.

4.48 Local planning authorities should engage with developers to deliver well designed, sustainable buildings and high- quality local environments suitable for low-carbon living in a changing climate. Proposals should be designed to use landform, layout, and building orientation, tree planting etc to help to contribute to achieving national targets to reduce greenhouse gas emissions. Priority should also be given to the use of sustainable drainage systems and support of sustainable waste management by providing space for recycling and composting. Sustainable travel solutions should be encouraged and provision made for safe and attractive walking and cycling opportunities.

4.49 Addressing climate change is necessary if we are to ensure future economic, environmental and social wellbeing. While communities can benefit from decentralised energy directly, they can also build a resilient economic future by anticipating and responding to climate change that is now inevitable. Communities that ignore the challenge will find the cost of impacts and of insurance rising sharply, threatening their economic and social fabric.

Design of Buildings and Climate Change

5.1 As our climate changes and the occurrence of more extreme weather systems become more frequent it is necessary that we take into consideration any potential impacts on building fabric and look towards adaptation in an attempt to mitigate against any negative effects.

5.2 Reduction of carbon emission is the only way to limit climate change and mitigate its effects on health. Planning can help through the promotion of sustainable design of buildings and places.

Sustainable design

5.3 Benefits of sustainable design.

- uses service space efficiently, minimising energy and resources
- uses renewable energy and sustainable materials
- exploits planting and greenery to increase cooling and water run-off
- uses passive design techniques such as thermal massing, natural ventilation and natural lighting to reduce energy use, and to improve long-term value for money
- means locating services in accessible places that can be reached on foot, bicycle or public transport.

Green building

5.4 Green building refers to both a structure and the using of processes that are environmentally responsible and resource efficient. It involves finding the balance between home building and sustainable environment. The objective of green building is to reduce the overall impact of the built environment on human health and the natural environment.

Green Roofs

5.5 While there is no standard classification for green roofs, they can be divided into two basic types:

Intensive Living Roofs - these incorporate plants from between 1 to 15 feet high, including shrubs and trees. They require deep levels of soil to support them and a weight-loading roof. They support a high level of plant and wildlife diversity, but require ongoing maintenance and extensive irrigation. They are not suitable for most domestic buildings.

Extensive Living Roofs - these incorporate low-lying plants from 2 to 6 inches high. They require only a few inches of soil to support them, and only need a low weight-loading roof. They are low maintenance and can be used for any kind of roof, including sheds, garages, houses, balconies, extensions and outhouses, and also commercial buildings.

5.6 Both types of green roofs can be used for flat or pitched roof construction. Flat roofs are the most common and the easiest to establish and maintain, but green roofs can have a pitch up to 45 degrees. With sloped roofs, there are design issues affecting drainage and soil loss that need to be carefully considered.

5.7 There are a number of social, economic and environmental benefits to green roofs, including:

- Increasing home energy efficiency - cooling in summer, insulation in winter
- Filtering and cleaning toxins from both air and water
- Reducing carbon dioxide emissions
- Retaining rainwater before it evaporates, reducing the likelihood of flooding
- Reducing urban temperatures and associated smog
- Insulating against sound and noise
- Preserving and enhancing biodiversity

- Providing aesthetic appeal and 'green space' recreational opportunities
- Using recycled materials like aggregates and plastic sheets

Solar Orientation

5.8 A big source of heat in buildings comes from the sun therefore orientating the building with the position of the sun in mind is important.

A passive solar home means a comfortable home that gets at least part of its heating, cooling, and lighting energy from the sun. Passive solar homes collect heat as the sun shines through south-facing windows and retain it in materials that store heat.

5.9 Historic Environment Scotland has produced a short Guide called ‘Climate change adaptation for traditional buildings’. This document considers how buildings can be improved or adapted to increase a buildings resilience to extreme weather events. The table overleaf provides further information.

Table 1: Common impacts to traditional buildings associated with climate change, showing potential damage and a summary of the adaptation measures

Climate Change	Impact on Buildings	Potential damage	Adaption Measures
Warmer winters	Higher internal humidity.	Greater prevalence of insect pests and fungal attack. Warping of timber elements.	Improved ventilation.
	Increased moss and algal growth.	Staining and discolouring of masonry, dampness.	Improved weathering detailing.
Wetter Winters	Rising ground water levels.	Dampness in basements and wall footings.	Enhanced drainage adjacent to buildings. Improved water vapour handling on retaining walls.
	Prolonged saturation of masonry.	Algal growth, vegetation	Improved weathering details. Repointing of masonry. External coatings.
Hotter, drier, summers	Increased thermal stress on building fabric.	Cracking of hard materials	Repair with flexible traditional materials such as lime mortars
	High internal temperatures.	Thermal discomfort for occupants. Warping /splitting of timber elements	Improve natural ventilation. Install traditional blinds and/or canopies.
	Ground shrinkage.	Movement of foundations	Adapt surface drainage and landscaping/planting.
More frequent intense rainfall	Water penetration into fabric	Masonry decay and binder loss, rot, and decay of internal woodwork, staining, reduced thermal efficiency	Improved weathering details. More frequent maintenance. Repair of mortar joints,
	Blockage of gutters.	Water overflows into/onto fabric.	Increase size at critical points. More frequent maintenance.
	Splash back from hard surfaces.	Wetting of adjacent masonry.	Remove hard surfaces adjacent to walls. Improve drainage around the site.
	Run off from adjacent areas.	Flooding of under-floor or basements.	Minimise hard landscaping. Improve natural drainage of driveways and pavements.
	Flash flooding from	Physical damage,	Attend to culverts and

	watercourses and roads.	saturation of fabric. Damage from hasty clearing up. Sewage contamination.	adjacent burns. Routes for surge waterflows round buildings.
Wind Driven Rain	Penetration of render/harling.	Progressive wetting of walls.	Better detailing.
	Water penetration under roof covering.	Roof leaks.	Improved slating and detailing. Vapour open materials to disperse water.
High wind storms	Impact damage to fabric.	Damage to slates/leadwork.	Additional fastenings at ridges and slates. Higher codes of lead Improved clips and raggle details.
	Collapse of unstable masonry.	Chimney damage	Maintenance of chimney fabric. improved haunching of chimney cans.

Case Studies/Examples

6.1 Within Northern Ireland there are some examples of Passive Houses. A Passive House was built in Crawfordsburn in 2013. It was approved as a Replacement Dwelling in a cluster of agricultural buildings under Countryside Policies. It achieves the German 'PassivHaus' standard, an ultra low energy rating. A Passive House is a very well-insulated, virtually air-tight building that is primarily heated by passive solar gain and by internal gains from people, electrical equipment, etc. Energy losses are minimized. Any remaining heat demand is provided by an extremely small source. It was constructed using Structural Insulated Panels, with superior insulation, structural strength and airtightness. Structural Insulated Panels offer extremely high thermal performance. Special attention was paid to the detailing of openings and junctions to reduce heat loss. Triple glazing was used with specially designed window frames that had thermal breaks and a low thermal conductivity. Large south facing windows capture the heat of the sun adding considerably to the dwellings heating efficiency. The master bedroom balcony provides appropriate shading in the summer to prevent overheating. Ventilation is achieved using mechanical ventilation with heat

recovery and this allows the heat produced within the building to be ‘recovered’ and reused ‘passively’, heating the dwelling.

6.2 Passivhaus design has many advantages over conventional construction and design techniques, it offers a modern and comfortable dwelling with no cold drafts, no temperature variations from room to room, a quiet internal environment and significantly reduced utility costs.

6.3 At £192,000 the cost of the Crawfordsburn passive house dwelling was just 8.3% more expensive than the ‘typically constructed’ dwelling. This could be further reduced as passive homes become more popular. As passive houses move into the mainstream, construction costs should reduce, with increasing competition among suppliers, and designers and contractors becoming familiar with the most cost-effective routes to meeting the standard. However, estimated running costs of Passivhauses are estimated to be a minimum of 70% lower than those of a conventional home. There are 38 certified buildings spread across Ireland, including 8 in Northern Ireland. The house referred to above is the only example in the Ards and North Down Borough.

6.4 Zero Carbon Homes are designed and built to the Government's new definition of zero carbon. The government's definition of a zero-carbon home is one where there are zero net emissions from all energy used over one year. The energy needed for heating, lighting, hot water and all electrical appliances must be obtained from renewable sources. The construction of zero carbon homes takes into account the surrounding environment which maximises daylight and encourages a sustainable lifestyle. They use green technology solutions - wood pellet boilers, air source heat pumps and solar panels as opposed reliance on oil and gas. They can be open planned to take full advantage of daylight and natural ventilation which minimises energy consumption.

6.5 The Climate Change Act mandates an 80% reduction in CO2 from the 1990 levels by 2050. The Energy Performance of Buildings Directive (EPBD)

targets all new buildings in the EU to be 'Nearly Zero-Energy Buildings' from 2020.

6.6 Green Future Architects built a Zero Carbon House in Rostrevor. It was designed to maximize space and layout and bay windows were also incorporated to make best use of natural light. A car port constructed with its roof used to display the solar thermal panels as space was limited on the roof of the home.

6.7 Homeowners can earn money through the Government Renewable Obligation Certificate Scheme. Grants and Incentives for Renewable Energy Systems include –

- NIE Household Grant for Solar Photovoltaic (Solar Electricity)
- NI Smart Program Grant (Solar Hot Water)
- Council Rate Rebate

Climate change and Health

7.1 Extremes in weather patterns and climate change is thought to have a significant effect on both the physical and overall mental health of a population. The aging population of Ards and North Down are at particular risk.

7.2 A significant overlap between planning policies that tackle climate change and those that can improve health has been identified by The Royal Town Planning Institute (RTPI) good practice note, 'Delivering Healthy Communities (2009). The Marmot review: Implications for Spatial Planning (2010) recommended that prioritisation of polices and interventions that both reduce health inequalities and mitigate climate change. Key planning policy areas identified by these documents include:

- promoting active travel, such as walking and cycling (increases physical activity and reduces carbon emissions);
- delivering energy efficient homes (reduces poor health from cold and hot homes and reduces carbon emissions);
- delivering mixed use development and multi-use community buildings (increases physical activity, improves mental wellbeing and reduces carbon emissions);
- providing good quality parks and open spaces increases physical activity, improves mental wellbeing and adapts urban areas to a changing climate by reducing flood risk and lowering temperatures);
- improving the quality of food in local areas (there is anecdotal evidence that local access to healthy foods improves diets.

Figure 10: Overview of the potential health impacts of ongoing climate change split by rural, urban and coastal communities

Source: [Under the weather, Sustainable Development Unit, 2014]

Key Findings and the way forward

8.1 The importance of recognising the threat of environmental change to our society cannot be underestimated. Mitigation and adaptation to the threat will pave the way for the encouragement to adapt to a low carbon way of life. Adapting to climate change provides the opportunity to drive innovation, support growth, develop effective and resilient infrastructure and minimise the disruption caused by flooding, water scarcity and other climate change risks. Striving to reduce Greenhouse gases and achieving economic growth need not be at odds with each other. The advancement of sustainable energy technologies can be viewed as pro-growth.

8.2 Environmental change should be engrained into the thrust of any Planning Policy. This includes the restriction of buildings within areas at risk. A reduction of properties located within coastal areas will subsequently mean communities will become more resilient to flood risk.

8.3 Advanced technologies are helping to cut greenhouse gas emissions. The power sector worldwide is making steps towards becoming de carbonised and the move towards sustainable lower emission transport shall aid this. Again Planning Policy should, where possible aim to reduce Greenhouse gas emissions through the encouragement of innovative energy efficiency measures.

8.4 Consideration of cost may be a determining factor in the implementation of any adaption or mitigation measures to combat the climate change effect. The risks of the worst impacts of climate change can be substantially reduced if GHG in the atmosphere are reduced to 80% by 2015. This is of

course a major challenge, but sustained long tern action can achieve it at costs that are low in comparison to the risks of inaction. Costs are even lower than that if there are major gains in efficiency or it the strong co benefits, for example from reduced air pollution and subsequent improvements in health.

8.5 The spatial plan provides the council with an opportunity to shape places in order to create compact town centres linked by good sustainable transport systems and cycle networks or greenway linkages. All of these elements combine together to enable people and business to carry out their everyday activities without the need for a private car, therefore helping to reduce emissions. The incorporation of both green and blue infrastructure networks will link areas of employment and the town areas to the countryside.

8.6 Mixed use areas which aim to locate commercial, residential, schools and office spaces in close proximity to one another allows the public to walk and cycle more easily between destinations.

8.7 A policy may be included in the development plan that limits the type of industry to be accommodated in the future and to encourage the growth of industry that is less resource intensive.

Conclusion

9.1 In order to assist legislative commitments Ards and North Down Borough Council's Local Development Plan must address climate change. The best option to do this is to have regard to future climate change scenarios

throughout all policy formulation within the plan. This will ensure that any future development in the Borough shall seek to encourage sustainability along with adaptation and mitigation against potential negative effects of new development.