

Derry City & Strabane
District Council

Climate Change Adaptation Plan 2020-2025



CLIMATE

Adapting to Change



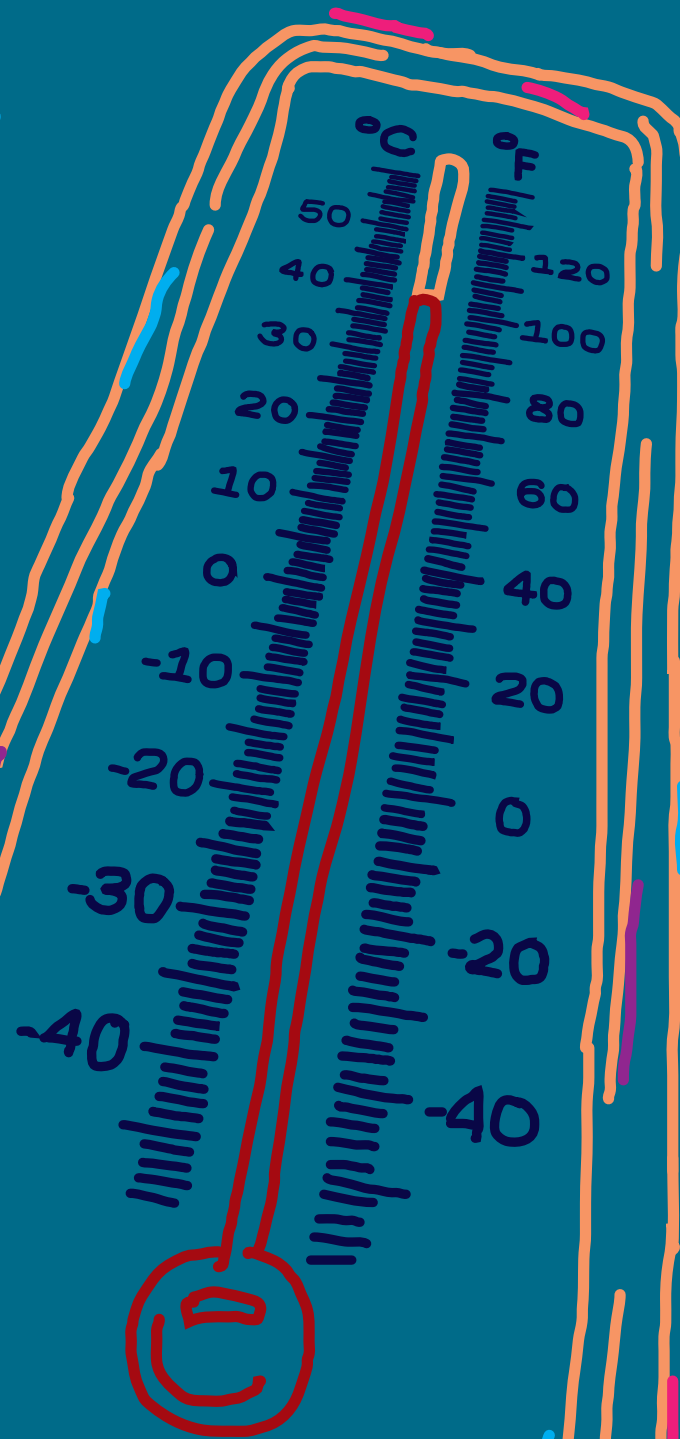
Derry City & Strabane
District Council
Comhairle
Chathair Dhoire &
Cheannair an tSrátha Báin
Derry Cille & Strabane
Districc Council



Northern Periphery and
Arctic Programme
2014-2020



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Acknowledgements

Derry City and Strabane District Council would like to acknowledge the funding secured from the EU Northern Periphery and Arctic Programme in supporting the CLIMATE Programme and delivery of the adaptation plan.

In addition Derry City & Strabane District Council would like to express gratitude to the following for their assistance and contributions to the Climate Adaptation Plan:

- The Derry City and Strabane District Council Climate Adaptation Working Group
- Climate Northern Ireland & Northern Ireland Environment Link
- University College Cork & Climate Ireland
- CLIMATE Programme Partners

Forward - Chief Executive

Climate change is one of the most serious global threats which affects us here in the North West. We have already seen the impact of severe weather with a number of significant flood events in the last decade as well as disruption from heatwaves and storms.

As demonstrated during the COVID-19 global pandemic councils are uniquely positioned to lead at times of crisis adapting services and supporting local resilience where needed most, the same is true when responding to the impacts of climate change. We are close to our communities providing front line services on a daily basis while planning for the sustainable growth of our City and District.

At a time when global action is required, we in Derry City and Strabane District Council have decided to act locally while thinking globally. We have recently declared a Climate Emergency, established an All Party Working Group and developed a Climate Change Pledge committing us to climate action.

A dedicated Climate Adaptation Working Group has taken forward the development of our initial 5 year Climate Change Adaptation Plan to ensure the preparedness and resilience of Council services, operations, estate, environment, businesses and communities. The plan also provides the opportunity to work collaboratively with others to encourage adaptation and influence the wider climate action agenda across Northern Ireland.

We are at the start of our climate action journey and there is much work to do, this Climate Change Adaptation Plan is the first step in our commitment to ensure the Council and wider region is prepared for and resilient to the impacts of climate change.

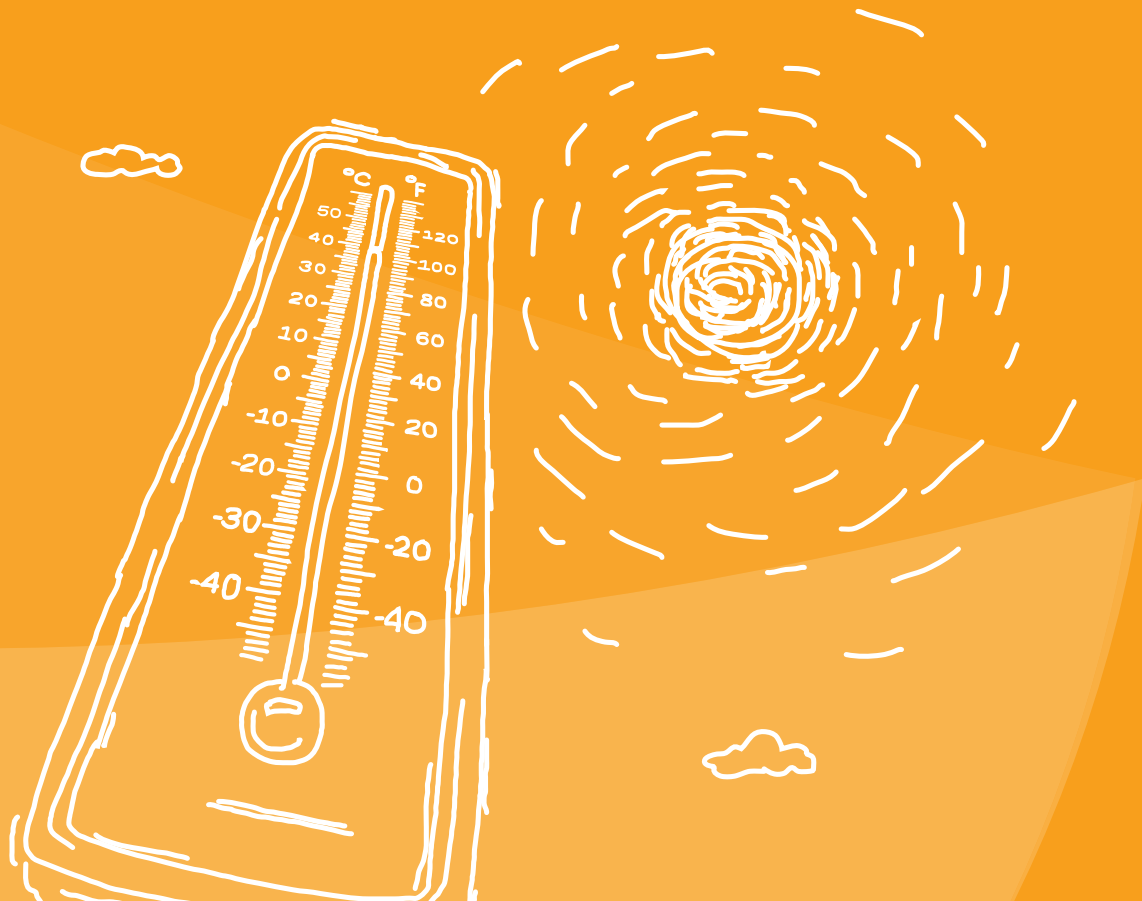
I hope you will find it useful and that you will support and join us in our efforts to tackle climate change.



Council Chief Executive
John Kelpie

A handwritten signature in black ink that reads "John Kelpie". The signature is written in a cursive style with a large, looping initial "J".

Executive Summary



Executive Summary

Climate Change & The North West

The Intergovernmental Panel on Climate Change (IPCC) Synthesis report 2014 highlighted that warming of the climate system is unequivocal and that human activities are extremely likely to have been the dominant cause since the mid-20th Century (IPCC, 2014).

The Earth's climate has already become warmer, with scientists predicting further increases in global temperatures. Due to our long history of emitting greenhouse gasses, a level of climate change is now guaranteed until at least the end of century. We need to adapt society to the climate of today and the climate of the future.

The UK Met Office 2018 Climate Change Projections state that for the UK there is;

“A greater chance of warmer, wetter winters and hotter, drier summers”

(Met Office 2019)

In addition, the UK is projected to experience more frequent and severe weather events as well as rising sea levels, all of which will affect our City and District with risks posed to our people, the natural environment, infrastructure, the built environment and business.

We have already experienced the effects of severe weather events with extensive flooding in the Strabane area in 2015, across the North West in 2017, the 2018 heatwave, as well as numerous storms leading to damage and disruption across the City and District.

“Adaptation will be crucial in reducing vulnerability to climate change and is the only way to cope with the impacts that are inevitable” (Stern, 2007)

Climate change affects Council services, from the buildings and assets we manage to the services we deliver, from our public spaces to our role in emergency planning and response, as well as impacts on local residents and business. Early preventative actions are significantly more cost effective than reactive disaster response efforts.

The COVID-19 crisis demonstrates that global emergencies affect us all and here in the North West we adapted to protect our most vulnerable members of society. We have responded with a sense of togetherness and collaboration, with local councils rising to the challenge and at the forefront of efforts.

The crisis has emphasised the importance of preparing for and being responsive to risks. Derry City and Strabane District Council rapidly adapted ways of working to deliver essential services such as waste management, emergency planning, business and community support, and management of parks and open spaces so critically important to the health and wellbeing of our communities.

The COVID-19 crisis has also highlighted inequalities in our society and the need to support our most vulnerable. Climate change has and will continue to disproportionately affect those most in need.

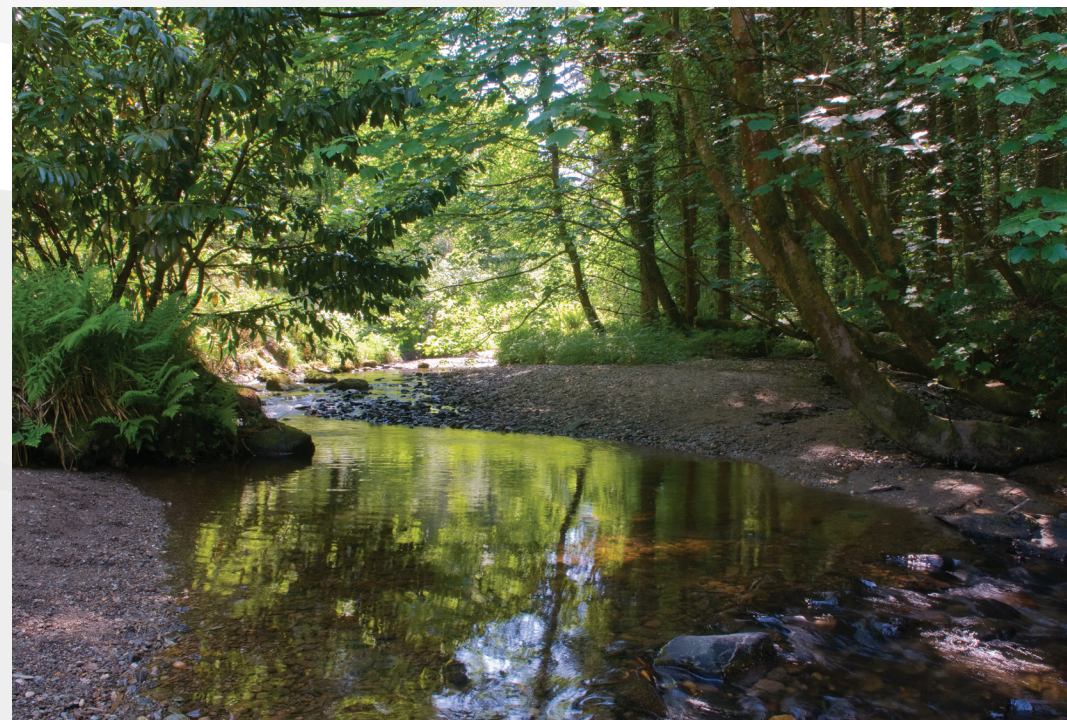
The dynamic and rapid adaptability of Council has demonstrated how we can respond in times of global crisis.

Climate adaptation will increase the resilience of the Council to the impacts of climate change, but climate resilience is not just about managing severe weather. Effective long-term planning for a changing climate is an integral part of ensuring business continuity, safeguarding people and places, protecting and enhancing the natural environment, and contributing to a resilient economy.

As the first Council adaptation plan, we recognize that this is the beginning of our adaptation journey and as such, the scope of the five-year plan focuses on:

- *'getting our own house in order' and*
- *'leading by example'.*

These principles will guide the work of Council, for example in areas such as ensuring continued service delivery during severe weather events, protection of assets and property, supporting local communities and businesses and development of resilient buildings and landscapes through our Planning, building control and green infrastructure functions.



Executive Summary



Our Vision

"Derry City & Strabane District Council is prepared for and resilient to the effects of climate change, creating a safe and sustainable region for all"



Our Aims

- Increase capacity to respond to climate change ensuring resilience of our services, people, operations, assets and estate to the impacts of climate change.
- Raise awareness of the impacts of climate change across the City & District to deliver effective adaptation.
- Lead by example and work collaboratively to ensure resilience and deliver climate adaptation.



Priority Themes

Cross Cutting



Delivery & Collaboration

Ensure governance and resources of Derry City & Strabane District Council are adequate to deliver adaptation planning and actions, and work with others to strengthen the resilience of the District, within North West region.



Communication & Awareness

Increase awareness and understanding of climate change contributing to the ability of Council and communities to adapt.



Knowledge & Information

Ensure a robust understanding of climate change impacts and Council adaptation options.

Functional Themes



Policy & People

Mainstream climate adaptation into policies and plans and prepare Council staff for the effects of climate change.



Green Infrastructure

Prioritise Green Infrastructure for climate adaptation within Council property.



Assets & Capital Development

Prepare for and address the impacts of climate change ensuring protection of Council assets, property and infrastructure.



Heritage & Culture

Identify and address the impacts, risks and opportunities of climate change to local heritage assets, collections, cultural programs, festivals and events.



Operations & Services

Ensure continued service delivery and maintain Council operations and resilience to climate change.



Planning & Building Control

Ensure that all new built developments and land uses across the District will be designed and built to adapt to climate change.

The Climate Change Adaptation Plan vision is delivered by a supporting Action Plan. This outlines the short, medium and long-term actions to be delivered within the initial 5-year period by Council. Actions are allocated to each theme and categorised as those that are enabling by building adaptive capacity and those that deliver planning & adaptation action.

The Climate Adaptation Working Group will continue to meet every quarter to monitor progress and maintain momentum towards delivering the actions. A monitoring and evaluation program will ensure the Council's adaptation efforts are delivered and kept up to date with emerging research, risks, tools and guidance.

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Introduction



Climate change is one of the most serious threats facing society. Globally the consequences of our greenhouse gas emissions will continue to leave a legacy of flooding, famine, drought, migration, coastal flooding and erosion, and mass species extinction in the decades to come. Yet the impacts of climate change are affecting people in the City and District today.

Introduction

The build-up of greenhouse gases in the atmosphere from human activity is trapping the sun's heat, resulting in warming of the planet and changes in weather patterns around the world.

Climate change refers to slow onset, long term shifts in average temperatures and weather patterns typically over a 30-year period, as well as increases in extreme weather events.

Weather refers to the conditions we experience over shorter periods of time from hours to days.

The 2015 Paris Agreement saw a global commitment to keep temperature rise this century 2°C below pre industrial levels, and pursue further efforts to limit the rise to more than 1.5°C. However, global warming is likely to reach 1.5°C from as early as 2030 and reach 4°C by 2100. (Met Office, 2020)

Climate-related risks to health, livelihoods, food, water supply, human, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C. Even if vigorous efforts to limit the emissions of greenhouse gases from human activities are undertaken, the world is locked into further climatic changes.

The North West has seen how climate change has led to increases in the frequency, intensity, duration and timing of extreme weather and climate events.

The impacts of which will continue without substantial intervention by government, the public & private sectors and individuals.

Within the City and District, recent flood events have served to increase awareness of the risks and impacts that climate change and associated severe weather events can have, such as damage and disruption to business, community, infrastructure, agriculture and the natural environment, health, water supply, productivity and daily life.

The Climate Change Adaptation Plan provides a framework for cohesive adaptation action within Derry City and Strabane District Council. It outlines the case for taking action within the context of existing and future climate change risks for both the UK as a whole and for those specific to the Council. The strategic policy context is outlined alongside explanation of the roles and responsibilities for central and local government in Northern Ireland. Additional information is provided in a separate supplementary information document detailing the regional profile, climate challenge and strategic context in more depth.

A risk analysis carried out as part of the adaptation planning process enabled identification of adaptation responses across Council. These responses will form a key contribution to the District's Community Plan vision to deliver a *'thriving, prosperous and sustainable City and District with equality of opportunity for all.'*

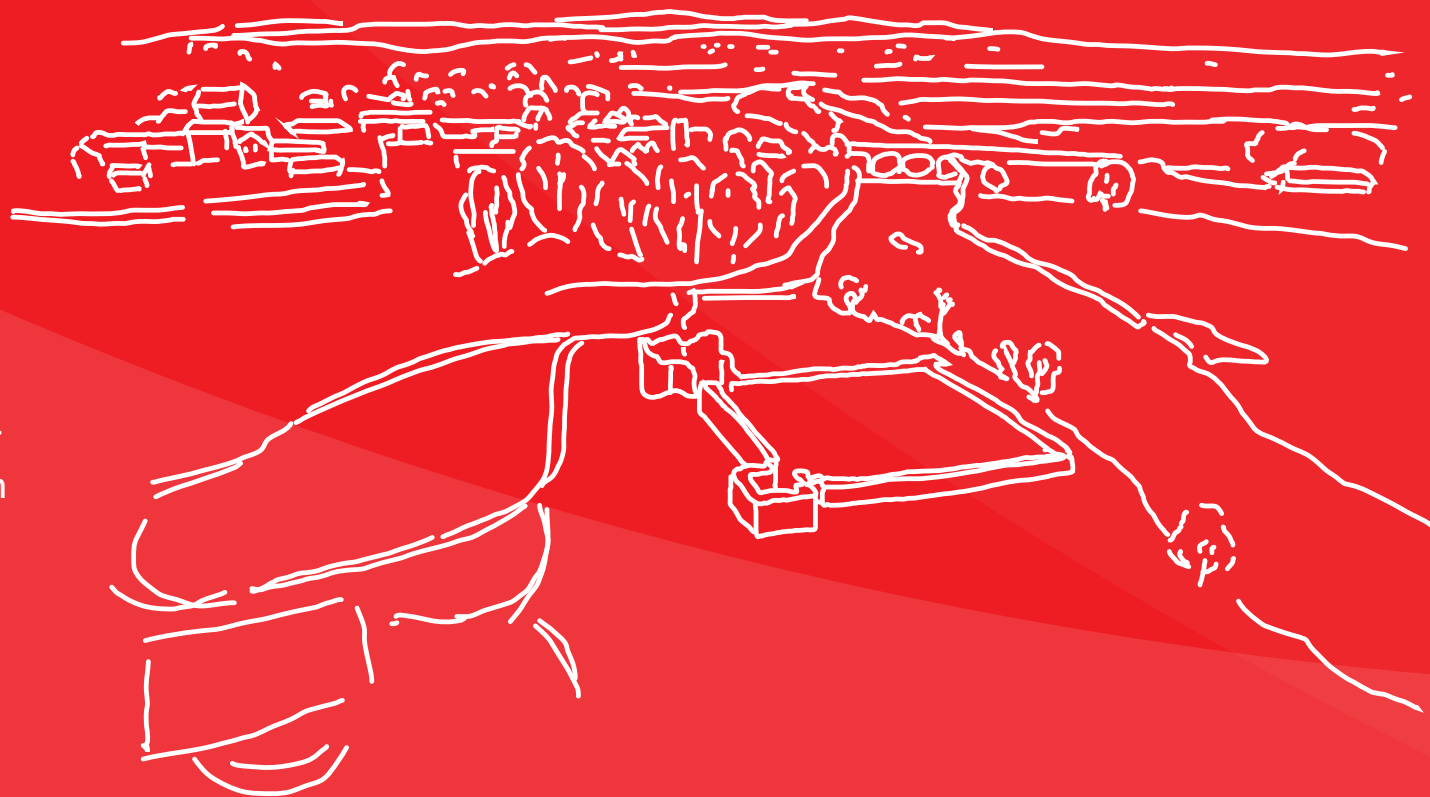


The thematic priorities and objectives provide the framework for the supporting Climate Adaptation Action Plan which will be delivered over the initial 5 year period.

A monitoring and evaluation program will ensure the Council's adaptation efforts are delivered and kept up to date with emerging research, risks, tools and guidance.

Regional Profile

The landscape of the Council area includes mountain ranges, rivers, agricultural land, and coasts, offering vital habitats for species, destinations for tourism and recreation, a rich cultural heritage as well as settlements for local communities.



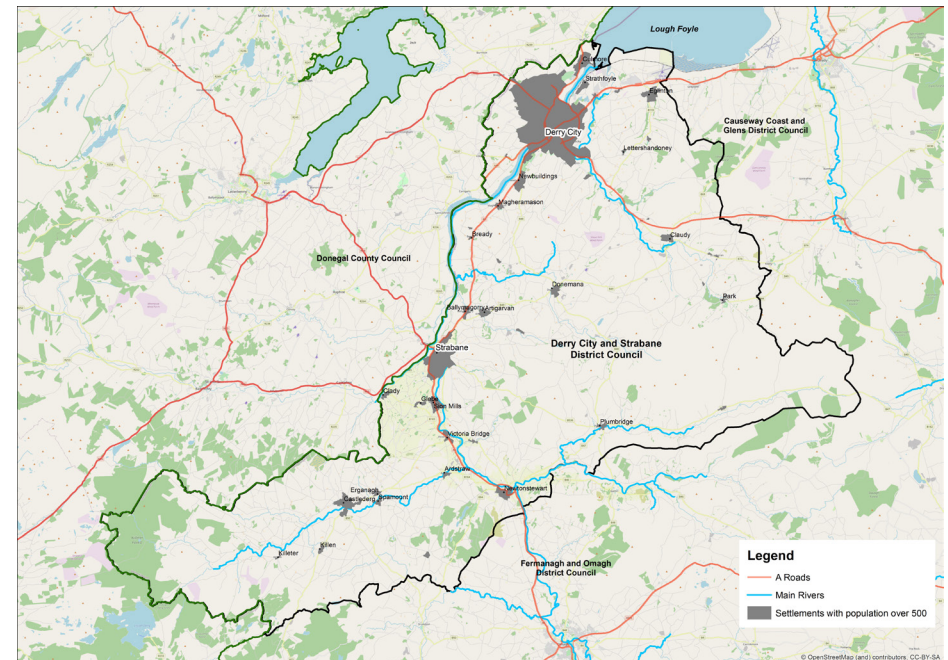
Area: 1,245 km²

Population: 150,680 of which 71% live in urban areas

Settlements: 47

Border with Donegal County Council, Republic of Ireland: 140km

Neighbouring Councils: Causeway Coast & Glens Borough Council / Mid-Ulster and Fermanagh & Omagh District Council



Derry City & Strabane District Council Area

Urban areas include the regional city of Derry connected to a number of vibrant towns including Strabane and a wide number of villages.

Ireland's geographical situation explains our changeable weather. The dominant influence on Ireland's climate is the Atlantic Ocean which produces mild/wet weather and a moderate climate. Winters tend to be cool and windy, summers mild and less windy.

The City and District's infrastructure includes Foyle port and harbour, city airport, rail links, multi-modal transport hub, roads and greenways. Northern Ireland's second largest acute hospital is located in the city, Altnagelvin.

Ulster University, Magee Campus is located in the city as well as two campuses of North West Regional College in Derry and Strabane.

Climate Challenge



Observations & Projections

Observed Changes

The build-up of greenhouse gases (GHG) in the atmosphere since the start of the industrial revolution has resulted in levels 30% higher than at any time during the last 800,000 years. (Climate Ireland, 2020.)

Since the late 19th century, average global temperatures have increased by approximately 1°C, with global warming likely to reach 1.5°C between 2030 and 2052. (Met Office, 2020)

Northern Ireland's climate is changing in line with global patterns with average temperatures rising across all seasons. Northern Ireland is also seeing a rise in sea levels as well as a change in the frequency and intensity of extreme weather events.

Projections

The UK Met Office 2018 Climate Change Projections state that for the UK there is;



"A greater chance of warmer, wetter winters and hotter, drier summers"
(Met Office, 2019)




Climate projections present a range of low to high future scenarios, (Representative Concentration Pathways - RCP) based on the degree to which society reduces greenhouse gas emissions and therefore projected global temperatures.

For the purpose of this plan scenarios RCP2.6 (Low Emission) and RCP8.5 (High Emission) which relate most closely to 2°C and 4°C global warming by the end of the century respectively, relative to preindustrial era. We use these two RCPs in order to represent both a most optimistic and most pessimistic level of action (other RCP scenarios represent "middle ground" between RCP2.6 and RCP8.5 in terms of the level of action on climate change and therefore associated impact).



See Appendix 1 Representative Concentration Pathways Table

Climate Challenge

Parameter	Observed	Projected	Example of Impacts
Temperature 	For the period 2009-2018 average temperature was 0.9°C warmer than the 1961-1990 average All the top 10 warmest years for the UK from 1884 have occurred since 2002 Summer 2018 was among the warmest, driest and sunniest summers experienced by the UK for over 100 years (Kendon et al., 2019)	By 2070 (Compared to 1981-2000) Low Emission Scenario up to 2.8°C hotter High Emission Scenario up to 4.9°C hotter The chance of a summer heatwave like 2018 is around 50% more likely by 2050 (Met Office, 2019)	Increased heat-related mortality and illness Reduced air quality Transport and energy infrastructure affected Increased visitor numbers to parks and open spaces Increased risk of pest and disease and spread of invasive species
		Cold snaps like -18.7 °C at Castlederg in 2010 will still occur but are projected to be less frequent as winters become warmer on average	Health and wellbeing benefits of warmer winters as well as reduction in fuel / heating costs
Winter Precipitation 	Winters were on average 12% wetter during the period 2009-2018 when compared with 1961-1990 (Kendon et al., 2019)	By 2070 (Compared to 1981-2000) Low Emission Scenario up to 17% increase rainfall High Emission Scenario up to 25% increase rainfall (Met Office, 2019)	Flooding property damage – residents, business & Council estate Damage to infrastructure – roads rail, power, & green infrastructure Business trading loss Risk to public safety, mental health and wellbeing Increased pollution and reduced water quality

Parameter	Observed	Projected	Example of Impacts
Summer Precipitation 	<p>During 2009-2018 summers were on average 13% wetter than the 1961 -1990 average (Kendon et al., 2019)</p> <p>Northern Ireland Water experienced a 'High Demand Incident' leading to the first hosepipe ban in two decades during the heatwave of summer 2018</p>	<p>By 2070 (Compared to 1981-2000) Low Emission Scenario up to 28% decrease</p> <p>High Emission Scenario up to 38% decrease</p> <p>However future increases in the fluctuation and intensity of heavy summer rainfall events are projected (Met Office, 2019)</p>	<p>Reduced river flows affecting biodiversity and water quality</p> <p>Reduced water supply</p> <p>Increased risk of wildfire</p>
Rising Sea Levels 	<p>Mean sea level around the UK has risen by about 16 cm since the start of the 20th century (when corrected for land movement) (Kendon et al., 2019)</p>	<p>Northern Ireland is locked in to at least 11cm sea-level rise by 2100, but unless global emissions decline, that number could be as much as 94cm (Met Office, 2019)</p> <p>Increased risk of coastal storm surge and storm tide inundation</p>	<p>Significant impact on flood defences, coastal habitat, urban centres, agricultural land and infrastructure</p>
Frost & Snow 	<p>2009–2018 has had 15% fewer air and ground frost days compared to 1961–1990 (Kendon et al., 2019)</p> <p>Widespread and substantial snow events have occurred in 2018, 2013, 2010 and 2009, but their number and severity have generally declined since the 1960s (Kendon et al., 2019)</p>	<p>A decrease in the frequency of frost and snow is projected</p>	<p>Decrease in transport disruption</p> <p>Property damage & transport disruption may occur with instances of severe frost and snow however projections indicate increase in average temperatures</p> <p>Potential benefits to health and wellbeing and reduced costs for heating and treatment of roads & paths</p>

Climate Challenge

Parameter	Observed	Projected	Example of Impacts
Growing Season 	Northern Ireland's Growing Degree Days (Conditions suitable for plant growth) 2008-2018 saw an increase of 11.8% days compared to the 1961-1990 period (Kendon et al., 2019)	An increase in the duration of the growing season is likely with spring occurring earlier	Impact on biodiversity as well as Council grounds maintenance regimes
Relative Humidity 		RH is likely to increase especially during winter months (Nolan, 2019)	Increased mould growth on buildings and museum collections

(Observed changes data: years 2009–2018 is a non-standard reference period, but it provides a 10-year "snapshot" of the most recent experience of the UK's climate compared to historical records.)

"Changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events."

(IPCC, 2012)

"Climate change will amplify existing risks and create new risks for natural and human systems in Europe, in particular through increased damages from river and coastal floods, increased water restrictions, and increased damages from heat events and wildfires."

(IPCC, 2014)

UK Climate Change Risk

Climate change risks interact and impact across multiple sectors including; buildings, infrastructure, health, service delivery (including effects on staff, buildings and equipment), communities, and individuals.

The UK National Risk Register of Civil Emergencies lists climate change and severe weather events as major risks to society. This includes flooding, storms, heatwaves, poor air quality and wildfires (UK Government, 2017).

The UK government issues a Climate Change Risk Assessment every five years part of which includes a Northern Ireland detailed technical evidence report which in turn informs the Northern Ireland Climate Change Adaptation Programme –prepared by the Department for Agriculture, Environment and Rural Affairs.

Top six areas of inter-related climate change risks for the United Kingdom			
HIGH	Flooding and coastal change risks to communities, businesses and infrastructure (Ch3, Ch4, Ch5, Ch6)	MORE ACTION NEEDED	
	Risks to health, well-being and productivity from high temperatures (Ch5, Ch6)		
MEDIUM	Risk of shortages in the public water supply, and for agriculture, energy generation and industry (Ch3, Ch4, Ch5, Ch6)		
	Risk to natural capital including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity (Ch3)		
LOW	Risk of domestic and international food production and trade (Ch3, Ch6, Ch7)		RESEARCH PRIORITY
	New and emerging pests and diseases, and invasive non-invasive species, affecting people, plants and animals (Ch3, Ch6, Ch7)		

NOW -----> RISK MAGNITUDE -----> FUTURE

(ASC, 2016)

See Appendix 2 summary table of NI Risks

Further details of Northern Ireland climate change risks are contained in the Adaptation Plan Supplementary Information Document.

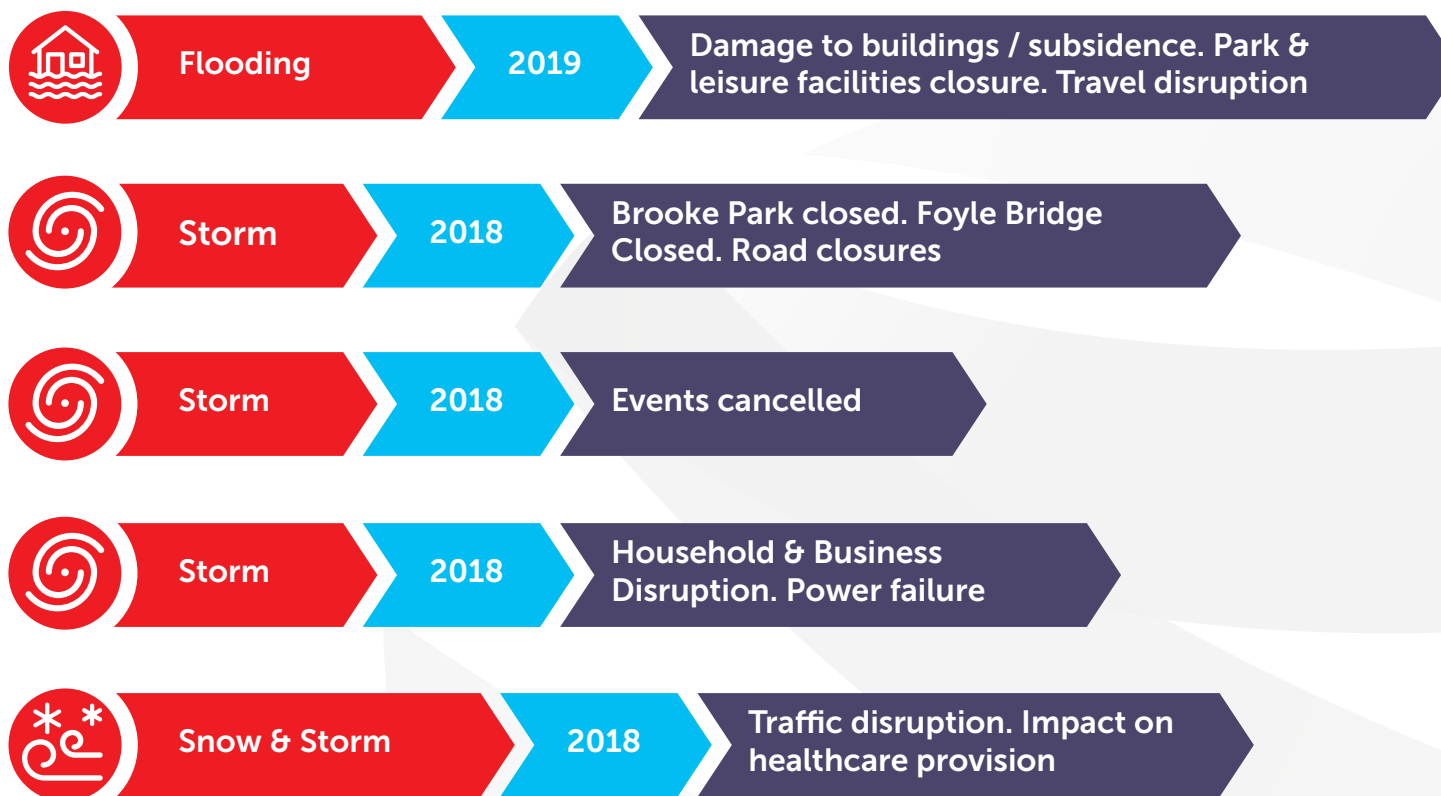
Climate Impact Profile



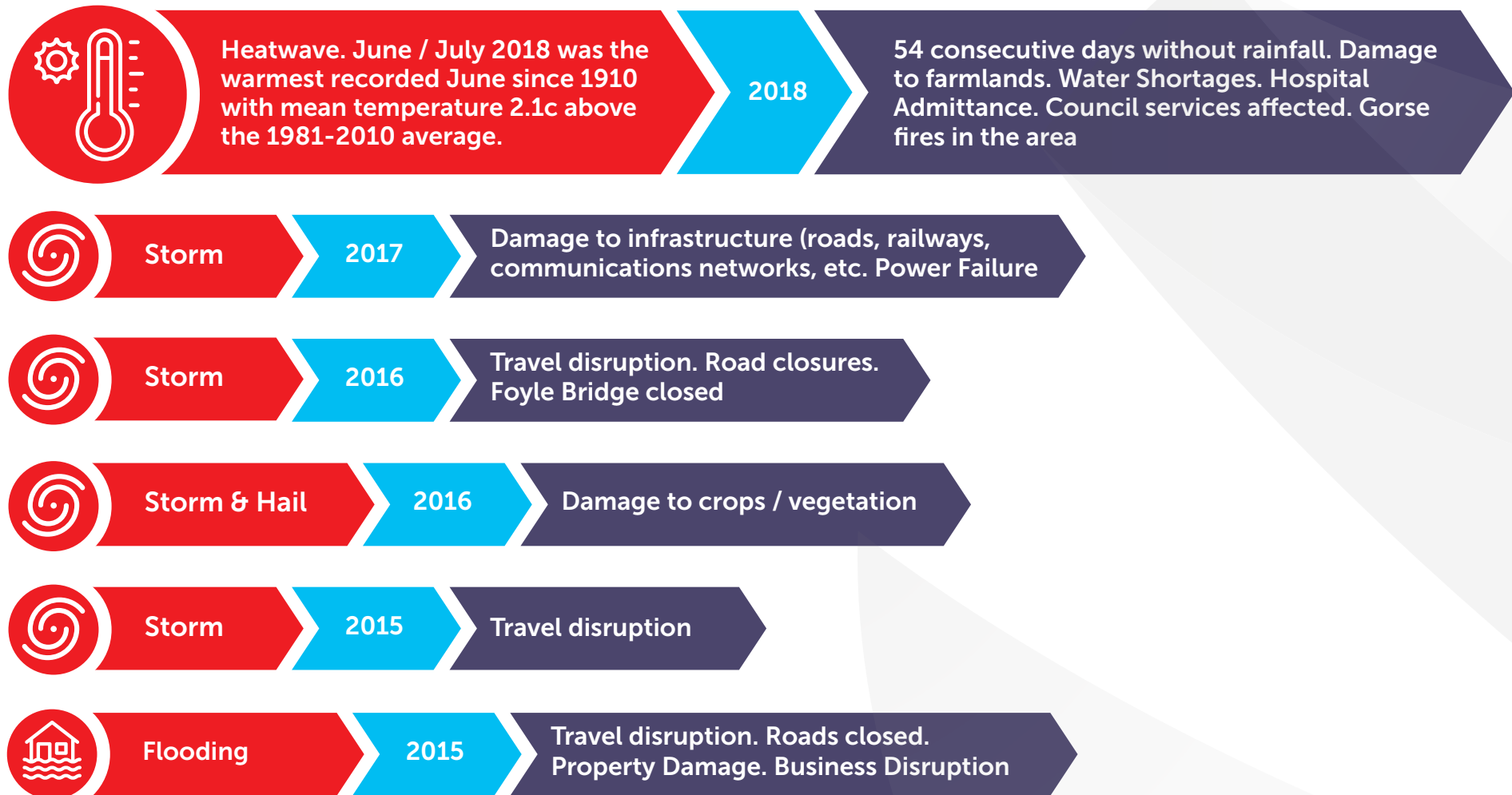
Within the City and District, recent flood events and the 2018 heatwave have served to increase awareness of the risks from climate change.

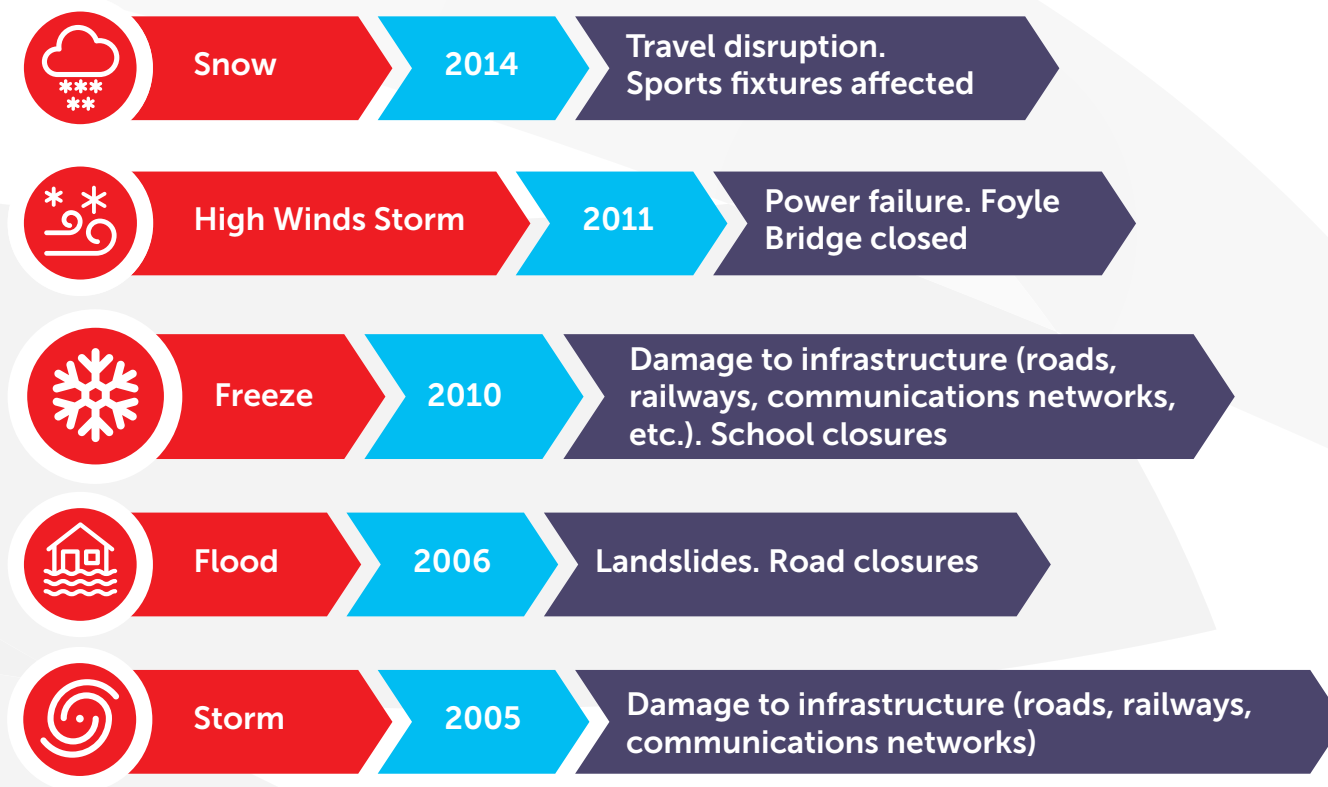
Although it is hard to attribute each severe weather event directly to climate change, it is clear that the patterns and intensity of events is consistent with expected climate change projections.

A local Climate Impact Profile has begun to be developed for the City and District; this charts the effect of severe weather events and will be further developed to include incremental effects. Initial research has revealed the following:



Climate Impact Profile





Flooding continues to cause significant disruption to the City and District, with both localised and general impacts, including infrastructure damage, service closures, insurance claims and anxieties about recurrence.

The effects of storms has been similar with general disruption to travel and essential services, as well as localised damage to premises and natural assets as well as the potential threat to life.

There are increasing numbers of local severe weather incidents requiring a multi-agency emergency planning approach.

Climate Impact Profile

North West Flood August 2017

One of the most significant recent events over the last 15 years occurred during August 2017 when 60–70mm of rain (63% of August rainfall) fell in 9 hours.

This severe rainfall event resulted in flooding in the following local rivers:

- River Faughan estimated total peak flow 5.4 meters
- Muff River total peak flow height 3.1 meters
- Burndennet River total peak flow height 6.5 meters

This resulted in extensive flooding across the local area with homes, businesses, agriculture, infrastructure, services, heritage and biodiversity adversely affected. The estimated costs to the Department for Infrastructure is in excess of £12 million. Approximately £36,000 was incurred directly by Council on a range of emergency costs (e.g. emergency householder payments, waste disposal costs and clean-up and community centre opening costs). In addition a significant amount of staff time as well as a further £350,000 on capital repair costs to Council assets and facilities was incurred.



Residential Flooding August 2017

The North West Flooding Review 2018 was undertaken and reported the following impacts across various areas in the city and district:



August 2017 Flood Event Residents Comments

“The smell...oh the devastation was unbelievable. Everybody was just standing in disbelief”

“This is one of the worst things that I’ve ever had to see. It’s not very nice having this happen to you.”

Climate Impact Profile

The review acknowledged that the combined multi-agency response was timely and effective but that the severe flooding had a profound, and in many cases lasting, impact on the lives of local people, businesses and agricultural land in the areas affected.

North West Flood Risk

Recent research undertaken by the Newcastle University found that Derry City could experience an 80% increase in the current one in ten-year flood events.

"Derry City - is potentially more at risk from climate change than other parts of the UK" Dr Selma Guerreiro.

The research highlights the urgent need to design and adapt our cities to cope with these future conditions."

Professor Richard Dawson. (Guerreiro et al., 2018)

Derry City has also been identified by the Department for Infrastructure as an Area of Potential Significant Flood Risk where significant flood risk exists now or is likely to occur in the future while Strabane is listed as a Transitional Area of Potential Significant Flood Risk. (Department for Infrastructure, 2018b.)

According to the North West Flood Review 2018 the risks and impacts associated with flooding cannot be eliminated. This has, and will continue to prompt organisations involved in managing flood risk to adopt a range of approaches to reduce the impacts of flooding where possible.



Bridge Collapse August 2017 Flood Event

In addition Council's Climate Impact Profile and baseline analysis increased the understanding of the current level of impacts across DCSDC, which included:



Heatwaves

Planting and water supply shortage
 Increased air pollution
 Increased visitor numbers to parks and open spaces
 Increased anti-social behaviour in parks

Increased waste collections and street cleansing
 Increased cooling in buildings – additional units purchased and increased energy costs



Storms

Closure of parks and open spaces
 Cancellation of Walled city and Strabane Town centre markets
 Increased waste collections and street cleansing
 Damage & Loss of trees

Bridge closures – Peace Bridge & Foyle Bridge
 Road closures affecting waste collection
 Path erosion
 Clean up costs; Staff and contractors



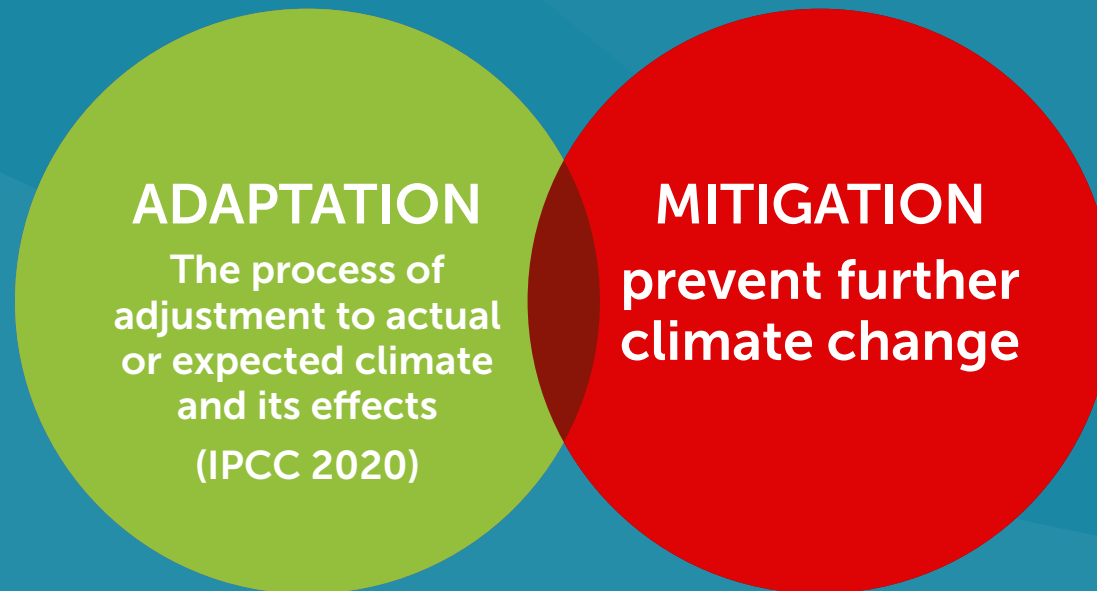
Flooding

Emergency response to flooding
 Multi agency meetings
 Community liaison
 Communications and Media Relations
 Clean up and waste collection
 Environmental Health support and inspections

Closure of parks, greenways and open spaces
 Local business closures
 Damage to recreation provision
 Closure, disruption and damage of recycling centers

Climate Action

Climate action requires two interlinked approaches:



Vulnerability to climate change is determined by three factors:

1. Exposure to hazards such as increased temperatures, rainfall and storms (E.g. houses located in flood plains are exposed to increased rainfall)
2. Sensitivity to these hazards (E.g. the level to which a house is prepared for flooding such as having flood gates in place)
3. Capacity to adapt to these hazards (for example, where emergency response measures are in place);

Adaptation actions aim to reduce vulnerability to climate change by lowering sensitivity or building adaptive capacity

Planned and pre-emptive adaptation is required to cost-effectively minimise potential climate change risks.

Adaptation actions can be 'grey'; relying on technological or engineering solutions, 'green'; making use of nature, and 'soft'; aiming to alter human behaviour and styles of governance.

In reality, adaptation will involve a mix of adaptation responses or 'combined adaptation actions' that will include grey, green and soft adaptation actions, autonomous and planned adaptation. (Climate Ireland, 2020.)

Government response in the UK includes the Climate Change Act 2008 and the Northern Ireland Climate Change Adaptation Programme 2019.

In addition to government and policy direction, climate action is growing among the general public as can be seen by climate strikes and climate activists such as the Extinction Rebellion movement. The focus of such movements are to call on government and industry to prioritise climate action and the reduction of greenhouse gas emissions. The most recent NI public perception survey revealed that climate change was the biggest environmental concern for households in Northern Ireland in 2019/20. (DAERA, 2020)

Case for Local Government Climate Adaptation



Many Councils throughout the UK and Ireland are already responding with mitigation and adaptation planning and measures. In Northern Ireland it is not currently a statutory requirement for local authorities to undertake adaptation planning, however Derry City & Strabane District Council is leading the way with the CLIMATE Programme which enabled the development of this Climate Change Adaptation Plan.

Climate change affects all Council activities, from the buildings we manage, services we deliver, our open spaces and the roles we undertake in emergency planning and response. It also has a wide range of impacts on local businesses and residents, particularly the most vulnerable.

The better we prepare and adapt, the lesser the potential impacts associated with any given degree of climate change. In addition, unlike emissions reduction, adaptation can provide immediate local benefits as any measures will help residents to cope better with current climate variability and extreme weather.

Ultimately, climate change adaptation planning can help protect people, property, environment and resources essential to the sustainable growth of our region.



Roles & Responsibilities

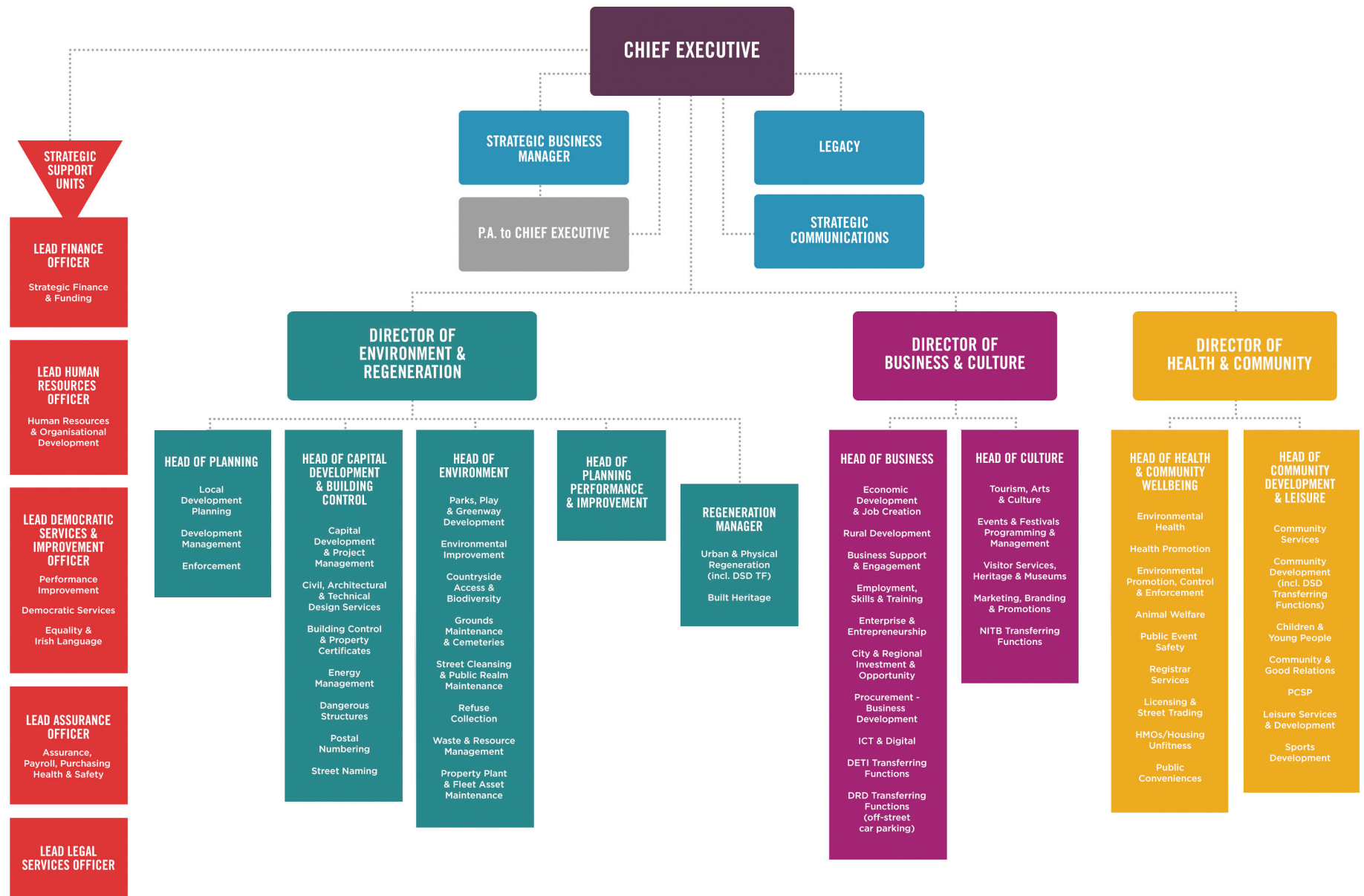
Northern Ireland's Councils are critical to public service provision, shaping local places, providing essential services, social cohesion and solutions to global problems such as climate change.

Derry City and Strabane District Council is one of 11 Local Council's in Northern Ireland providing a range of services from waste services, green infrastructure development, tourism and economic development, Planning, building control and environmental health.

A full list of council functions are included in Appendix 3

In 2019 Derry City and Strabane District Council employed 904 people. Council ownership extends to over 1,000 hectares of land and property.





Roles & Responsibilities

Within Council all directorates have a part to play in considering climate change through their decision making and operations in line with corporate policy and risk management. Progress on any plans, policies and strategies is reported through the committee reporting structures.

At a central government level, the Department for Agriculture, Environment and Rural Affairs (DAERA) is responsible for coordinating government response including the development of the Northern Ireland Climate Change Adaptation Programme. This includes co-ordinating the Cross-Departmental Working Group on Climate Change and chairing the Adaptation Sub Group. Central government recognizes that the role of local authorities in Northern Ireland is vital to climate resilience.

“Councils lead local action to protect communities and businesses from risks posed by severe weather events and are responsible for protecting local areas from development which could increase vulnerability to flooding.” (Department for Agriculture, Environment & Rural Affairs, 2019.)

Climate adaptation requires a whole of society approach within which Council can lead the way, however it is recognised that certain responsibilities lie outside of Council control such as rivers, water management, road and rail infrastructure, education, public housing and social services.

It is therefore critical that all levels of government, businesses, the third sector and communities work together to adapt to the impacts of climate change.

DCSDC have initiated a cross sectoral approach with the establishment of the North West Multi Agency Climate Group in 2019. Additional collaborative actions are outlined in the Climate Adaptation Action Plan.

Council has also worked closely with Donegal County Council in the development of their adaptation plan and the North West Regional Energy Strategy. This has been further developed with the commencement of a cross border partnership to deliver a multi-agency cross border North West Climate Action Plan.

Climate Northern Ireland (NI) is a cross-sectoral adaptation network which supported DCSDC through the adaptation planning process. Climate NI aims to raise awareness of the impacts of climate change and the actions necessary to address these. This is achieved through comprehensive policy development and increased adaptation awareness and action. In addition, Climate NI are currently supporting local Councils in development of adaptation plans through the Climate NI Local Government Climate Action Network (LGCAN). DCSDC are involved in LGCAN by sharing learning and best practice of our adaptation planning with other councils.

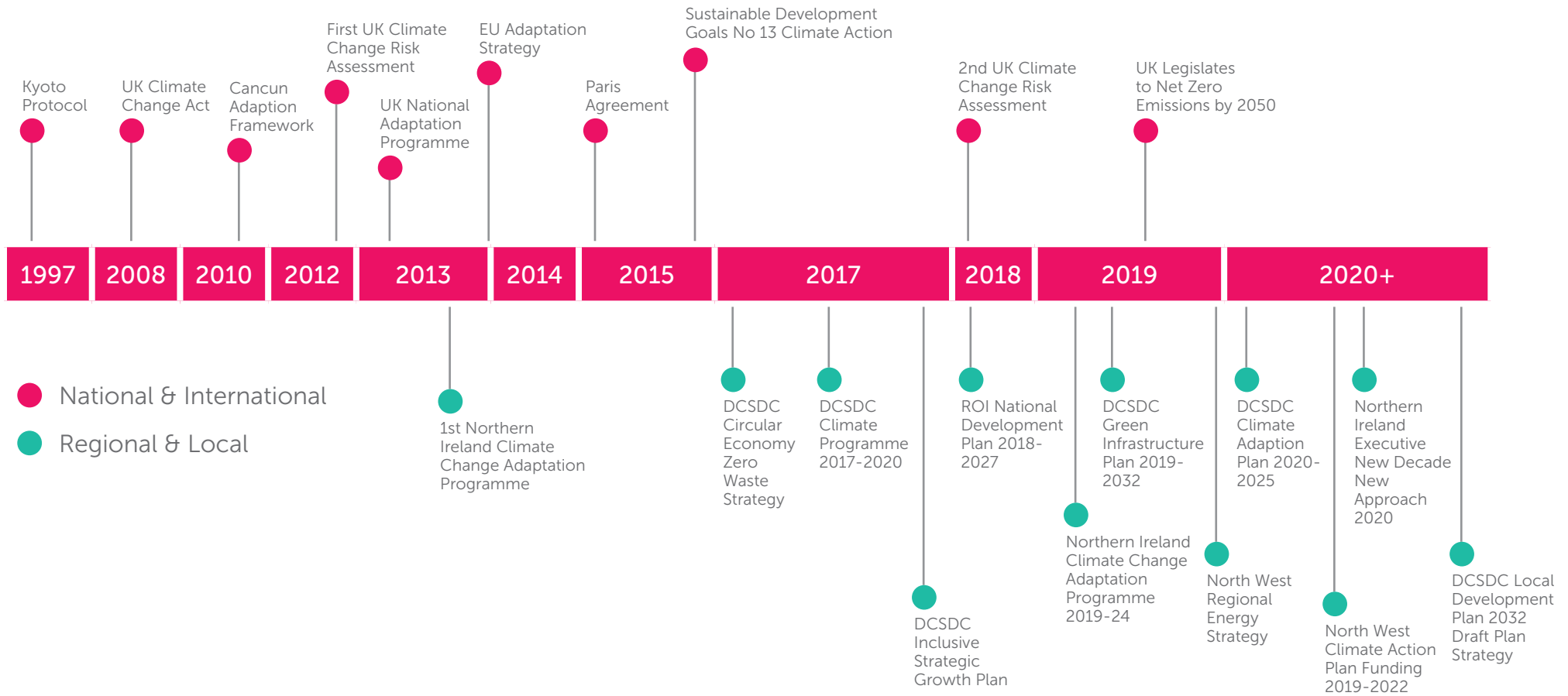


Strategic Context

Council's Adaptation Plan is influenced by and contributes to a number of international, national and local policies and plans. Appendix 4 outlines the current relevant strategic context and headline statements pertaining to climate change.



Key strategies, policies and plans include:



Further strategic context analysis is provided in the Supplementary Information Document.

Adaptation Planning Process



The Climate Adaptation Plan has been produced following a five step process developed by the CLIMATE Project. Working with partners from Climate Northern Ireland and Climate Ireland the process includes establishment of a Council Climate Adaptation Working Group.

Including representation across a broad range of Council services and departments the Working Group held a series of workshops and meetings following the adaptation planning process below.



As the first Council adaptation plan, we recognize that this is the beginning of our adaptation journey and as such, the scope of the five-year plan focuses on:

- *'getting our own house in order'* and
- *'leading by example'*.

Adaptation planning is an iterative process which involves ongoing review and updates with the emergence of new risks, research and changing local conditions.



DCSDC Climate Adaptation Working Group

Derry City & Strabane District Council Risk Analysis



The global risks and impacts from climate change will continue to pose challenges to Derry City & Strabane District Council. In order to understand the necessary climate adaptation actions required to offset these, a local risk analysis was undertaken. This was important to understand threats to specific areas as well as ranking of risks to tailor responses accordingly.

Analysis of current events affecting the North West highlight the following climate hazards and associated impacts:

- Increased Temperature / Low Rainfall
- Increased Precipitation / Sea Level Rise & Flood Risk
- Storm Events
- Winter Average Temperature Increase

Workshop discussions highlighted a wide variety of potential impacts, these are summarised as follows:

- Disruption and/or cancellation of festivals and events due to flooding / storms
- Increased emergency response requirements
- Damage to property and estate
- Risk to personnel from increased temperatures
- Risk to personnel during emergency response
- Reduced productivity due to severe weather disruption
- Extended growing season means that buildings are more likely to have fungal and plant growth in gutters etc. requiring more regular maintenance as well as impacts on grounds maintenance regimes
- More frequent instances of heavy rainfall affecting building maintenance, particularly historic buildings
- Reduced economic activity and growth due to damage and disruption

- Increased invasive species
- Disruption to construction work and maintenance due to severe weather
- Reliability and operation of the electrical network through impacts on transmission from extreme heat, damage to power lines from strong winds, flooding of infrastructure such as sub stations and lightning strikes affecting overhead lines
- Other potential impacts include coastal flooding and damage to power plants / generators, reduced water supply reducing available water necessary for cooling generators. These impacts may result in power loss affecting Council, homes and businesses in the City & District



Derry City & Strabane District Council Risk Analysis

Through a series of Climate Adaptation Working Group workshops and analysis of the UK Risk Assessment NI Evidence Report the following risks have been identified;

(See Appendix 7 detailed risk analysis)



Risk to health, well-being, productivity, assets and ecosystems from increased temperatures



Risk to Council personnel, communities, infrastructure, ecosystems and Council assets, services and operations from increased precipitation and flooding



Risk of storm damage to infrastructure and Council assets, services and operations and risk to Council personnel



Risk of intense cold periods affecting infrastructure, communities and Council assets, services and operations



As well as protection of Council assets and estate it is essential that consideration is given to the current and projected socio economic profile of the City and District when planning the resilience of our services.

The DCSDC area consists of 47 designated settlements, 71% of which are considered an urban area. An estimated 84% of the population resides in these settlements. Settlement patterns influence how we deliver services and need to be considered when ensuring continued service delivery such as during extreme weather events.

The city and surrounding area is projected to need an additional 12,000 homes by 2032; such development will

require careful planning and development to prepare for a continually changing climate and ensure resilience.

By 2041 the number of people aged over 65 is expected to increase to over 24% of the population in the City & District while those aged under 16 will decrease to 19%. This will have implications for future planning and climate change adaptation. An ageing population will place additional demands on health and community services requiring careful adaptation planning to avoid climate change impacts in particular during heatwaves.

In addition, the DCSDC area ranks lower than the NI average across a range of health indicators.

Risks are unevenly distributed and are generally greater for disadvantaged people and communities. It is recognised that people on low incomes are less able to prepare for, respond to and recover from extreme weather events in particular heatwaves, cold snaps and flooding. The Northern Ireland Multiple Deprivation Measure 2017 results show that 20 of the 100 most deprived Super Output Areas (SOAs) in Northern Ireland are located in our District. It also has the highest proportion of the working age population who are employment-deprived (29.5%).

The resilience of our local business sector to climate change is a key consideration of climate adaptation.

In 2019, there were 5,260 VAT and/or PAYE registered businesses across the district, which provided 58,200 employee jobs in 2018. In 2018, there were 1,771 farms within DCSDC supported by an agricultural labour force of 3,510.

The Tourism Industry is a significant driver for the local area sustaining over 4,685 jobs (DCSDC, 2018). Therefore, risks and opportunities to the tourism assets, products, festivals and events is critical to the economic development of the region. The Council's highly successful events programme also needs to be able to respond to the potential heatwaves, flooding and storms.



August 2017 Flood Event

Vision & Aims

The Climate Adaptation Plan vision is that:

“Derry City & Strabane District Council is prepared for and resilient to the effects of climate change, creating a safe and sustainable region for all”

The following aims will guide our work as we seek to:

- Increase capacity to respond to climate change ensuring resilience of our services, people, operations, assets and estate to the impacts of climate change.
- Raise awareness of the impacts of climate change across the City & District to deliver effective adaptation.
- Lead by example and work collaboratively to ensure resilience and deliver climate adaptation.

Themes & Priorities



Themes & Priorities

The Climate Change Adaptation Plan contains two broad categories:

1. Cross Cutting

The focus of the cross cutting themes is to create the capacity for climate action focusing on the necessary structures, awareness, resources, collaboration, and information required.

2. Functional

The functional themes reflect the services and responsibilities of Council relevant to climate adaptation.

The Cross Cutting and Functional Categories support and contribute to achieving the adaptation plan vision and aims. These categories consist of nine themes and associated priorities.

The themes provide an overall framework for delivery of climate adaptation actions. Under each priority is a range of objectives and actions.



Our Vision

“Derry City & Strabane District Council is prepared for and resilient to the effects of climate change, creating a safe and sustainable region for all”



Our Aims

- Increase capacity to respond to climate change ensuring resilience of our services, people, operations, assets and estate to the impacts of climate change.
- Raise awareness of the impacts of climate change across the City & District to deliver effective adaptation.
- Lead by example and work collaboratively to ensure resilience and deliver climate adaptation.



Themes

The Climate Change Adaptation Plan vision is delivered by a supporting Action Plan. This outlines the short, medium and long-term actions to be delivered within the initial 5-year period by Council. Actions are allocated to each theme and categorised as those that are enabling by building adaptive capacity and those that deliver planning and adaptation action.

Appendix 8 outlines the objectives under each theme, these will then inform the actions to be taken forward by Council.

Cross Cutting



Delivery & Collaboration



Communication & Awareness



Knowledge & Information

Functional Themes



Policy & People



Assets & Capital Development



Operations & Services



Green Infrastructure



Heritage & Culture



Planning & Building Control

Themes & Priorities

1. Cross Cutting Themes

1.1 Delivery & Collaboration

Ensure governance and resources of Derry City & Strabane District Council are adequate to deliver adaptation planning and actions, and work with others to strengthen the resilience of the District, within North West region

It is critical that we ensure the necessary governance structures and resources to deliver the adaptation plan vision, objectives and actions. This includes staffing, financial resources and the necessary governance structures to support implementation, monitoring, reporting and review.

Climate change impacts involve a wide spectrum of agencies, sectors, communities and businesses therefore adaptation requires a multi-agency collaborative approach involving a wide range of stakeholders across the City and District.

We recognise that innovative resilience solutions can be achieved cross-sectorally for example between higher education, energy sector, IT services, transport, housing, health and logistics. Understanding these interdependencies requires dialogue with stakeholders and a collaborative approach looking beyond statutory requirements.

It is also imperative that we seek to influence and inform local, regional and national policies and plans in relation to climate adaptation in order to ensure the necessary context, legislative frameworks and support to deliver resilience.

1.2 Communication & Awareness

Increase awareness and understanding of climate change contributing to the ability of Council and communities to adapt

Raising awareness across the Council and local communities is vital to the delivery of the adaptation plan actions. We recognise the importance of creating awareness of climate change impacts within Council teams to enhance personal resilience and wider ownership of the adaptation actions. Increasing staff awareness also provides the opportunity to encourage employees to engage with others about climate change as well as develop their own initiatives with colleagues and local communities.

We will also seek to increase local capacity beyond Council to deliver climate adaptation through communication and engagement programmes in order to increase awareness and knowledge to strengthen preparedness.

Through initiatives such as the proposed North West Climate Assembly, the Council has the opportunity to foster greater engagement of local communities in decision making about responses to climate change as this has been proven to ensure greater adaptive capacity particularly for vulnerable groups (Lindley et al, 2011).

Council also has a role to play in increasing the capacity of our local business sector to be aware of the impacts of climate change and undertake their respective business resilience and continuity planning. Support and information will be crucial to help businesses transition to a low carbon economy and adapt to the changing global circumstances, as well as avail of opportunities for innovation within climate action.



DCSDC Climate Change & Green Infrastructure Conference 2019

1.3 Knowledge & Information

Ensure a robust understanding of climate change impacts and Council adaptation options

Delivering climate adaptation both in the short and long-term means operating within a degree of uncertainty, not least due to the challenging nature and frequency of projected changes but also in terms of the frequency and intensity of severe weather events as well as socio-economic trends. It is essential to generate information and knowledge in order to make informed decisions for action now as well as provide information for future decision-making. In addition, analysis of social deprivation and climate risk will help inform targeted communications, emergency planning and Green Infrastructure (GI) development across the City & District.

There is a requirement to improve our data, records and information in relation to climate impacts through a centralised reporting system. Understanding locally specific impacts can also lead to a more efficient use of public resources and services.

We recognise that climate change is an extensive field of research requiring a range of expertise and information; therefore we will seek to build upon our existing partners in Climate NI and Climate Ireland to create an advisory group informing climate action across the North West.

We will also continue to identify best practice to improve our approach to adaptation.

Themes & Priorities

2. Functional Themes

2.1 Policy & People

Mainstream climate adaptation into policies and plans and prepare Council staff for the effects of climate change

The impacts of climate change are so wide-ranging that adaptation should be incorporated in decision-making, policy development and service planning (Maiden, 2017).

We therefore recognise that integrating and mainstreaming climate adaptation into policies is an effective mechanism to ensure resilience and preparedness. For example, the inclusion of climate adaptation considerations / 'screening' of Council's existing and emerging policies will ensure the future direction and procedures of services are prepared for climate impacts.

In addition we understand that Council personnel working in certain areas are more vulnerable to the impacts of climate change for example higher temperatures combined with longer and more frequent exposure to heat, will increase risks of heat stress, air pollution and UV exposure, particularly among outdoor staff. The inability to provide reasonably comfortable or safe temperatures may cause reduced working efficiencies and the closure of workplaces in the future.

Extreme weather events may also affect staff involved in emergency, rescue and clean-up efforts. Effective risk management, health and safety policies, procedures and staff awareness will seek to address the risks to Council personnel.



2.2 Assets & Capital Development

Prepare for & address the impacts of climate change ensuring protection of Council assets, property and infrastructure

Councils' assets and estate including property, fleet and IT systems are at risk of damage from severe weather events and rising sea levels. This will result in increased costs for repair, insurance premiums and loss of services. We will seek to ensure that our asset management and future developments are climate resilient. It is critical that all our new developments, infrastructure projects and building refurbishments are built with changes in future weather patterns in mind.



2.3 Operations & Services

Ensure continued service delivery and maintain Council operations and resilience to climate change

The Council has already taken action to manage some of the projected climate change risks to reduce the impacts on Council services and to support residents and communities, however we recognise the need for further adaptation action in this area.

Service delivery is at risk from disruptions to energy supply, transport networks, staff access to places of work and impacts on productivity.

We will seek to ensure that our operations, services and digital infrastructure are prepared and resilient to the effects of climate change including waste management, recreation and leisure facilities and ongoing daily operations across all services.

In addition, we will ensure our severe weather response and emergency planning is prepared for the continued and increased climate change risks facing the City and District. We will promote active citizenship through community resilience plans enabling individuals and communities to become more resilient and responsive when severe weather events occur.



Themes & Priorities

2.4 Green Infrastructure

Prioritise Green Infrastructure for climate adaptation within Council property

Green Infrastructure (GI) is an interconnected network of multi-functional green and blue spaces, which provide multiple environmental, economic and social benefits, linked throughout urban and rural landscapes. (DCSDC, 2019a)

Green Infrastructure is more flexible and resilient to climate change than its gray counterpart. (Browder et al, 2019)

Council recognises the critical role of GI in the environmental, economic and social success of the region and has developed the Green Infrastructure Plan 2019 - 2032 as a framework to value and maximise the benefits for all. A key strategic theme of the GI plan is climate change and the opportunities across Council property to deliver adaptation. Council GI assets include allotments, amenity space, greenways, parks and gardens, play parks, cemeteries, and woodland as well as our species and habitats.

Climate Change will be a driver for more widespread changes and impacts on the City and District's GI, it is therefore critical that we seek to protect and enhance GI against climate change risks through site management plans and practices.

It is widely accepted that nature based solutions delivered through green infrastructure offers 'no regret' responses to climate change delivering multiple benefits to society and



the environment. For example, trees and vegetation can contribute to improved air quality, reduce the risk of flooding, and provide a sustainable source of fuel and habitats for wildlife as well as health and wellbeing benefits.

See Appendix 9 Green Infrastructure Adaptation Benefits.

We will seek to ensure the protection and enhancement of our green infrastructure against climate change impacts while maximising the benefits and opportunities GI provides to adaption to climate change.



2.5 Heritage & Culture

Identify and address the impacts, risks and opportunities of climate change to local heritage assets, collections, cultural programs, festivals and events

The Council's heritage assets and museum collections provide a valuable cultural resource and tourism product with over 360,000 visitors annually. (The recent DCSDC Tourism Strategy emphasised the vital role museums and heritage play in attracting visitors with 56% of visitors exploring history (Derry City & Strabane District Council, 2018.)

Assets include the iconic Guildhall, Tower Museum, Derg Castle, Castledearg, Strabane Union Workhouse, and St Columb's Park House & Demesne as well as the museum collection consisting of a variety of social history, archaeology, industrial and textile artefacts and archives dating from pre-history to present day.

The risks from increased temperature, relative humidity, mould growth as well as damage from flooding, intense rain – erosion and wind have the potential to significantly affect the heritage assets of the Council. We will seek to ensure greater understanding of the risks posed to the Council's heritage assets and develop appropriate adaptation responses for each.

Council's cultural programmes and events are world famous attracting thousands of visitors to the City and District each year driving economic development and enhancing the

Themes & Priorities

reputation of the North West. It is vital that we ensure the resilience of the cultural programmes to impacts from severe weather and potential disruption. However, we also recognize the opportunity presented by the possible extension of the tourism season and increased visitor numbers.

2.6 Planning & Building Control

Ensure that all new built developments and land uses across the District will be designed and built to adapt to Climate Change

Population, socio – economic profile, settlement and land use influence the impacts of climate change, therefore, Council has a critical role in mitigating and preventing the effects of climate change as well as adapting to them, particularly through its Planning function.

The Council will seek to ensure that all new built developments and land uses across the District will deliver climate adaptation by applying current Planning Policies and Building Control, and put in place the Council's own new climate change Planning policies through the new Local Development Plan.

In deciding on Planning applications, the Council will continue to apply existing regional Planning policies so as to ensure that all public and private developers across the District are undertaking sustainable forms of development e.g. by ensuring that new buildings or land uses are not located in flood plains where they would flood or cause flooding elsewhere. Similarly,

the Council's Building Control function will apply the latest standards in all developments, consistent with Climate Change Adaptation best-practice.

The Council is preparing our own Local Development Plan 2032, which when adopted, will govern all Planning applications and guide development across the District in a sustainable manner. It will embed Climate-SMART Planning by establishing strategies and policies that will;

- Protect our natural and built environment
- Ensure high-quality design
- Promote well-being
- Facilitate regeneration / sustainable economic growth
- Avoid and/or mitigate against flooding
- Encourage a modal shift away from the use of the private car to alternative modes of transport
- Allow renewable / low carbon energy developments in appropriate locations
- Incorporate zero waste / circular economy principles
- Ensure designs create attractive, distinctive, liveable places for people.

Adaptation Action Plan

Building on the framework provided by the adaptation aims, themes and objectives a separate adaptation action plan has been developed. This outlines the actions to be delivered within the first 5-year period.

Actions are categorised as those that are 'enabling by building adaptive capacity' and those that 'deliver planning & adaptation action'.

An options analysis exercise ensured the identified actions are appropriate, proportionate and cost-effective in the long term.

This involved assessment of the options under the following criteria:

- Adaptation impact
- Reduction of risk
- Costs
- Complexity
- Maladaptation potential

- Barriers and dependencies
- Flexibility in light of levels of uncertainty
- Northern Ireland Outcome Objective Mapping (Identification of the relevant NICCAP Outcome Objective for each action)

Different types of maladaptation should be avoided, including:

- Actions that conflict with mitigation (e.g. installation of energy intensive air conditioner)
- Actions that use resources unsustainably
- Actions that distribute the benefits of adaptation unequally across society
- Actions that achieve their objectives at higher costs than benefits.

The Adaptation Action Plan is a working document which can be viewed via the Council website: www.derrystrabane.com/climate

Implementation

The Climate Adaptation Plan is the start of our climate action journey in Council. An Implementation Plan outlining timescales and associated key performance indicators will be developed.

The Adaptation Action Plan will be delivered by the relevant teams across Council. Implementation will be monitored by the Climate Adaptation Working Group established in 2019. The Working Group will continue to meet quarterly and is chaired by the Climate Programme Manager.

Membership includes representation from key areas across the Council, and will be kept under review to ensure that personnel with responsibility for delivering the policies and proposals in the Action Plan are appropriately represented.



Monitoring & Evaluation



Adaptation is an ongoing process for which systematic monitoring and evaluation is vital. This will ensure that the focus remains on the prioritised impacts of climate change and adaptation responses across Council.

Monitoring & Evaluation

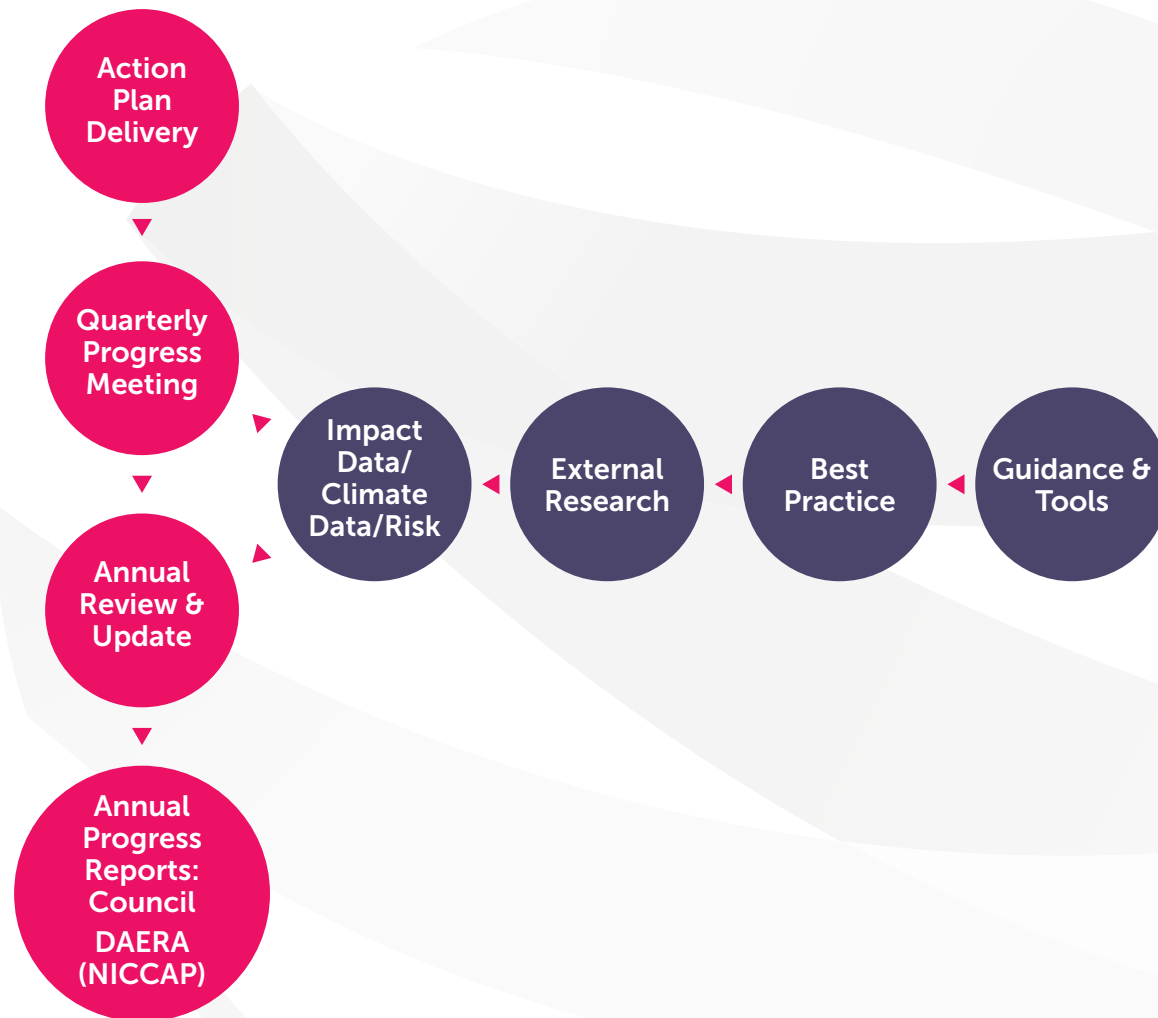
A quarterly progress review will be undertaken and an annual report produced by the Climate Programme Manager. The adaptation plan will be updated annually as our knowledge and understanding of the issues improves and as further research, guidance and tools are developed.

The annual review process will include the following:

- Targets /KPIs met
- Adaptive Capacity Assessment
- Policy and Procedural Review

Reports will be submitted to the Environment and Regeneration Committee and Full Council meetings where appropriate as well as the All Party Climate Emergency Working Group.

The Climate Programme Manager will report progress within the Civil Society and Local Government Adapts programme of the Northern Ireland Climate Change Adaptation Programme.



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Appendices

Appendix 1 Representative Concentration Pathways

In order to predict the potential impacts of climate change in the future, many different variables must be considered. One of the key pieces of data is the emission of greenhouse gases, including carbon dioxide. This in turn must take account of several other factors which affect these emissions such as; population, economic activity, lifestyle, energy use, land use patterns, technology and climate policy.

Representative Concentration Pathways (RCP) provide a measure of greenhouse gas forcing (Radiative Forcing -the difference between the incoming and outgoing radiation at the top of the atmosphere) and represent different scenarios for reduction of greenhouse gas emissions ranging from no/low effort RCP8.5 to transformational societal change and reduction in emissions RCP2.6.

Name	Radiative Forcing	CO2 Levels
RCP8.5	8.5 Wm ² in 2100	High Levels Rising (~1370 ppm CO2 eq) by 2100
RCP6.0	6 Wm ² post 2100	Medium Low Mitigation (~850 ppm CO2 eq) at stabilization after 2100
RCP4.5	4.5 Wm ² post 2100	Medium High Mitigation (~650 ppm CO2 eq) at stabilization after 2100
RCP2.6	3 Wm ² before 2100 declining to 2.6 Wm ² by 2100	Very Low Levels Peak & Decline (~490 ppm CO2 eq) before 2100 and then decline

Appendix 2 Northern Ireland Risk Summary

The table below outlines the main risks as detailed in the Northern Ireland Evidence Report 2017 highlighting their respective categories/scoring for action. This information has helped inform the Council's climate risk register as detailed in appendix 7.

Natural Environment

Infrastructure

People & Built Environment

Business & Industry

International

Urgency Score			
More Action	Research	Sustain	Watch
NE1 Risks to Species and habitats due to inability to respond to changing climatic conditions.	NE3 Risks and Opportunities from changes in agricultural & forestry productivity & land suitability.	NE9 Risks to agriculture, forestry, landscapes & wildlife from pests, pathogens & invasive species.	NE11 Risks to aquifers, agriculture land & habitats from salt water intrusion
NE2 Opportunities from new species colonisations.	NE7 Risks to freshwater species from higher water temperatures.	NE10 Risks to agriculture, forestry, wildlife & heritage from change in frequency and/ or magnitude of extreme weather & wildfire events.	NE14 Risks & opportunities from changes in landscape character.
NE4 Risks to soils from increased seasonal aridity & wetness.	NE13 Risks to & opportunities for marine species, fisheries & marine heritage from ocean acidification & higher water temperatures.	IN9 Risks to public water supplies from drought & low river flows.	IN7 Risks to hydroelectric generation from low or high river flows.

Appendices

Urgency Score			
More Action	Research	Sustain	Watch
NE5 Risks to natural carbon stores & carbon sequestration.	IN3 Risks to infrastructure services from coastal flooding & erosion.	IN13 Risks to transport, digital & energy infrastructure from extreme heat.	IN8 Risks to subterranean & surface infrastructure from subsidence.
NE6 Risks to agriculture & wildlife from drought & flooding.	IN5 Risks to bridges & pipelines from high river flows & bank erosion.	IN14 Potential benefits to water, transport, and digital & energy infrastructure from reduced extreme cold events.	IN10 Risks to electricity generation from drought & low river flows.
NE8 Risks of land management practices exacerbating flood risk.	IN11 Risks to energy, transport & digital infrastructure from high winds & lightning.	PB13 Risks to health from poor water quality.	IN12 Risks to offshore infrastructure from storms & high waves.
NE12 Risks to habitats & heritage in the coastal zone from sea-level rise: & loss of natural flood protection.	PB1 Risks to health & wellbeing from high temperatures.	PB14 Risk of household water supply interruptions.	PB2 Risks to passengers from high temperatures on public transport.
IN1 Risks of cascading failures from interdependent infrastructure networks.	PB5 Risks to people, communities & buildings from flooding.	BU3 Risks to business operations from water scarcity.	PB3 Opportunities for increased outdoor activities from higher temperature.
IN2 Risks to infrastructure services from river, surface, water and groundwater flooding.	PB6 Risks to the viability of coastal communities from sea level rise.	BU6 Risks to business from disruption to supply chains & distribution networks.	PB12 Risk of foodborne disease cases/outbreaks.
IN4 Risks of sewer flooding due to heavy rainfall.	PB7 Risks to building fabric from moisture, wind & driving rain.		BU4 Risks to business from reduced access

Urgency Score			
More Action	Research	Sustain	Watch
IN6 Risks to transport networks from slope & embankment failure.	PB8 Risks to culturally valued structures & the wider historic environment.		BU7 Risks & opportunities for business from changes in demand for goods & services.
PB4 Potential benefits to health & wellbeing from reduced cold.	PB9 Risks to health & social care delivery.		
IT1 Risks from weather-related shocks to international food production & trade.	PB10 Risks to health from changes in air quality.		
	PB11 Risks to health from vector-borne pathogens.		
	BU1 Risks to business sites from flooding.		
	BU2 Risks to business from loss of coastal locations & infrastructure.		
	BU5 Risks to business from reduced employee productivity, due to infrastructure disruption & higher temperatures in working environments.		
	It2 Imported food safety risks.		
	It3 Risks & opportunities from long-term, climate related changes in global food production.		

(Northern Ireland Climate Change Adaptation Programme 2019-2024. 2019)

Appendices

Appendix 3 Council Services & Functions

Services

- Waste collection & disposal
- Recycling & waste management
- Civic amenity provision
- Grounds maintenance
- Street cleaning
- Cemeteries
- Public conveniences
- Environmental Health
- Health and safety
- Environmental protection and green infrastructure development
- Estates management
- Building control-inspection & regulation of new buildings
- Dog control
- Licensing, such as entertainment licensing
- Enforcement byelaws (e.g. litter)

- Sports, leisure services & recreational facilities
- Parks, open spaces & playgrounds
- Community centres
- Arts, heritage & cultural facilities
- Registration of births, deaths & marriages
- Tourism development and promotion
- Emergency Planning

Planning

- Local Development Plan functions
- Development Management

Roads

- Off-street parking (except Park and Ride)

Local Economic Development

- Supporting growth and investment

Appendix 4 Strategic Context

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
International & EU	Paris Agreement 2015	United Nations (United Nations Framework on Climate Change) 195 Global Signatories	<ul style="list-style-type: none"> > Requires ambitious mitigation action to reduce GHG emissions to hold the global temperature rise 'well below 2°C above pre-industrial levels', and to pursue efforts to limit the rise to 1.5°C. > Adaptation goal; 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change'.
	European Union Climate Change Adaptation Strategy 2013	European Union	<ul style="list-style-type: none"> > Promoting action by EU Member States: the EU Commission encourages all Member States to adopt comprehensive adaptation strategies and provides funding to help build up adaptation capacities and take action. > Climate-proofing by further promoting climate change adaptation in key vulnerable sectors. > Better informed decision-making by addressing gaps in knowledge about adaptation and further developing the European climate adaptation platform (Climate-ADAPT) as the 'one-stop shop' for adaptation information in Europe.

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Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
International & EU	United Nations 2030 Sustainable Development Goals (SDG 13)	United Nations	<ul style="list-style-type: none"> > Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries; > Integrate climate change measures into national policies, strategies and planning; > Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning; > Mobilise and distribute 50% of the UN Framework Convention on Climate Change Green Climate Fund to adaptation projects in developing countries; and > Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small-island developing States, including focusing on women, youth and local and marginalised communities.
UK	Climate Change Act 2008	UK Parliament	<ul style="list-style-type: none"> > Set UK GHG target (Net zero by 2050) > Sets legally binding carbon budgets (cap over 5 yr period – set 12 yrs in advance) ¹First 3 carbon budgets met, not on track for the 2050 target. > Established Committee on Climate Change. > Requires 5 year assessment of risk and opportunities for the UK CCRA 2017 (NI Evidence Report & Summary) > National Adaptation Programme

1. 2018-22 budget currently 2,544 MtCO₂e - 37% reduction below 1990 levels by 2020.
 2023-2027 budget 1,950 MtCO₂e - 51% reduction below 1990 levels by 2025.
 2028-2032 budget 1,725 MtCO₂e - 57% by 2030

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
UK	UK Climate Change Risk Assessment 2017 Evidence Report – Northern Ireland Summary	Committee on Climate Change	<ul style="list-style-type: none"> > Areas of Risk & Opportunity: <ul style="list-style-type: none"> • Natural Environment • Infrastructure • People & Built Environment • Business & Industry • International
Northern Ireland	New Decade New Approach Deal Jan 2020	NI Executive	<ul style="list-style-type: none"> > The Executive will tackle climate change head on with a strategy to address the immediate and longer term impacts of climate change > The Executive will introduce legislation and targets for reducing carbon emissions in line with the Paris Climate Change Accord. > The parties recognise the need for a coordinated and strategic approach to the challenge of climate change within the Programme for Government. Actions and interventions will be required across a wide range of areas in order to address both the immediate and longer term impacts of climate change in a fair and just way. > To this end: <ul style="list-style-type: none"> • The Executive’s strategies to reduce carbon emissions will be reviewed in light of the Paris Climate Change Accord and the climate crisis. • A new Energy Strategy will set ambitious targets and actions for a fair and just transition to a zero carbon society.

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Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland			<ul style="list-style-type: none"> • The Executive should bring forward a Climate Change Act to give environmental targets a strong legal underpinning. • The Executive will establish an Independent Environmental Protection Agency to oversee this work and ensure targets are met. • The Economic Strategy will support clean and inclusive growth and create jobs as part of a Green New Deal. • The Executive will create a plan to eliminate plastic pollution. • RHI will be closed down and replaced by a scheme that effectively cuts carbon emissions
	Northern Ireland Climate Change Adaptation Programme 2019-2024	Department for Agriculture, Environment & Rural Affairs	<p>Aim <i>'A resilient Northern Ireland which will take timely and well-informed decisions to address the socio-economic and environmental impacts of climate change'.</i></p> <p>Key objectives</p> <ul style="list-style-type: none"> > Fulfilment of statutory duties including production of an adaptation programme > Working in partnership to strengthen and develop policies, strategies and actions which will cope with the risks and exploit the opportunities identified by the NI Evidence Report; > Raise awareness of the likely effects of climate change, promoting climate change dialogue, networking and action;

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland			<ul style="list-style-type: none"> > Promote and support the enhancement of scientific evidence and sector specific data collection > Ensure the sharing of climate change adaptation best practice > Support Climate NI to provide a cross-sectoral network
	Northern Ireland Regional Development Strategy 2035	Department for Regional Development 2010	<ul style="list-style-type: none"> > Protect and enhance the environment for its own sake > Take actions to reduce our carbon footprint and facilitate adaptation to climate change
	Strategic Planning Policy Statement for Northern Ireland. Planning for Sustainable Development	Department for the Environment 2015	<ul style="list-style-type: none"> > Section 3.10 A central challenge in furthering sustainable development is mitigating and adapting to climate change, whilst improving air quality.
	Valuing Nature A Biodiversity Strategy for Northern Ireland to 2020	Department for the Environment 2015	<ul style="list-style-type: none"> > Reduce the impact of climate change in order to meet the challenge of halting biodiversity loss. > Value of key ecosystem services and the benefits they can provide to regulating and adapting to climate change

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Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland	Making Life Better – A Whole System Strategic Framework for Public Health 2013-2020	Department of Health	<ul style="list-style-type: none"> > Vision All people are enabled and supported in achieving their full health and wellbeing potential. The aims are to achieve better health and wellbeing for everyone and reduce inequalities in health.
	Sustainable Water, A Long Term Strategy for Northern Ireland 2015-2040	Department for Regional Development 2015	<ul style="list-style-type: none"> > FRMD Policy 1A To ensure land-use planning decisions are informed to help minimise flood risk > FRMD Policy 1B: Make space for surface water management in development plans > FRMD Policy 1C: Sustainable Drainage Systems > FRMD Policy 1D: Design for drainage exceedance to be incorporated into all new drainage infrastructure
	Managing Storm Water. A Strategy for Promoting the use of Sustainable Drainage Systems (SuDs) within NI	Northern Ireland Environment Agency 2011	<ul style="list-style-type: none"> > Promotes the use of SuDs as a response to climate change and increased flood risk

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Northern Ireland	North West River Basin Management Plan	Department for Agriculture, Environment & Rural Affairs 2015	<ul style="list-style-type: none"> > Designated Significant Flood Risk Areas > Invasive Species control > Use of SUDS in PPS 15 planning applications > Protection of freshwater, coastal and marine environments – capacity building for planning departments and teams.
	Draft Marine Plan for Northern Ireland	Department for Agriculture, Environment & Rural Affairs 2018	<ul style="list-style-type: none"> > Public authorities, where appropriate, must consider the potential impact of proposals on greenhouse gas emissions and the proposals ability to adapt to a changing climate.
	Northern Ireland Rural Development Programme 2014-2020	Department for Agriculture, Environment & Rural Affairs	<ul style="list-style-type: none"> > Contributes to the protection of soil from erosion and the maintenance of soil organic matter and soil structure.
	Invasive Alien Species Strategy for Northern Ireland	Department for Agriculture, Environment & Rural Affairs 2013	<ul style="list-style-type: none"> > Addresses invasive alien species that will reduce the resilience of natural habitats, to climate change;
	Multi-Agency Severe Weather Emergency Response Plan	Department for Infrastructure	<ul style="list-style-type: none"> > Provides for coordinated inter agency response to potential and actual severe weather events

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Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Derry City & Strabane District's Inclusive Strategic Growth Plan 2017 -2032	DCSDC	<p>Vision</p> <p><i>'A Thriving, prosperous and sustainable City and District with equality of opportunity for all'</i></p> <p>Relevant outcomes and actions for consideration include:</p> <ul style="list-style-type: none"> > We prosper through a strong, sustainable and competitive economy. > We live sustainably – protecting and enhancing the environment > We connect people & opportunities through our infrastructure. <p>Within the DCSDC the Strategic Growth Plan importance is given to climate change and supporting environment:</p> <p>"The Planet Matters:</p> <p>"We care deeply about our local environment and climate change. We understand that we are ultimately dependent on the natural world as a support system and we need to live sustainably: to produce and consume within our planetary boundaries. We believe we can have a circular economy and a low carbon society. We need to promote renewable energy. Develop an integrated, sustainable transport system and connect our rich waterways and greenways."</p>

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Delivering Inclusive Growth, City Deal for the Derry~ Londonderry City Region 2018	DCSDC	<ul style="list-style-type: none"> > Unlock the economic potential of the region by: <ul style="list-style-type: none"> • Connecting towns and cities. • Investing and growing economic innovation assets whilst tackling major barriers to productivity and growth. • Maximising resources through strong partnership > Priorities: <ul style="list-style-type: none"> • Innovation & Digital • Enabling Infrastructure & Regeneration • Private Sector
	Local Development Plan 2032 Draft Plan Strategy	DCSDC	<ul style="list-style-type: none"> > Vision To make Derry City and Strabane District a thriving, prosperous and sustainable area – Planning for balanced and appropriate high-quality development, whilst protecting our environment, and also promoting wellbeing with equality of opportunity for all. > The LDP will guide land use development and will outline policies and guidance for the development of the city and district. > The LDP General Development Principles and policies states that development should demonstrate how they “mitigate against the effects of climate change, adapt to its impacts, and to ensure resilience.”

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Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council	Green Infrastructure Plan 2019-2032	DCSDC	<p>Vision</p> <p>“By 2032 the environmental, economic and social benefits of Green Infrastructure are valued and maximised by all”</p> <p>Climate Change Strategic Aim:</p> <p>GI will be maximised to mitigate against and adapt to the effects of climate change</p>
	Air Quality Action Plan & 2015 Updating Screening and Progress Reports	DCSDC	> Establishes targets for air quality improvement
	North West Greenway Plan (2015)	DCSDC	Provides a plan for the development of a network of Greenways throughout the North West of Ireland.
	Derry City and Strabane District Tourism 2018-2025: A New Level of Ambition.	DCSDC	<p>Core Themes:</p> <ul style="list-style-type: none"> > History and heritage > Creativity > Culture > Activity & Adventure.

Area	Strategy/ Policy / Legislation/ Document Title	Organization/ Department/ Agency	Relevant Statement(s)
Derry City & Strabane District Council			Strategic Framework to deliver <ul style="list-style-type: none"> > Product and experience > Visitor Servicing > Investment in destination marketing
	Derry City and Strabane District Local Food and Drink Strategy and Action Plan 2018-2021	DCSDC	Aim Establish the City & District as a food destination Sustainable Food Culture
	A Circular Economy / Zero Waste Strategy for Derry City and Strabane District Council 2017	DCSDC	Derry City and Strabane District Council (DCSDC) is pursuing a clear vision for a Zero Waste Circular Economy. This is defined in the community plan as an economy where: "resources are used for as long as possible, have maximum value extracted from them and are recovered and regenerated at the end of their service life to achieve a Zero Waste Circular Economy". Focus on development placed on a more sustainable and resilient footing by bringing economic activity within the earth's carrying capacity, notably the constraints of climate change.






Appendices

Appendix 5 Sustainable Development Goals Mapping Relevant to Climate Adaptation



Appendix 6

Northern Ireland Climate Change Adaptation Programme Priority Areas & Objectives

NICCAP2 Key Priority Areas	NICCAP2 Outcome Objectives and Visions
<p>NC Natural Capital, including Terrestrial Coastal/Marine/Freshwater ecosystems, soils and biodiversity.</p> 	<p>NC1: We will have species, habitats and water bodies that are resilient to the impacts of climate change.</p> <p>NC2: We have coastal communities, habitats, landforms and infrastructure that are resilient to impacts of climate change.</p> <p>NC3: We have soils and woodland that are resilient to the impacts of climate change.</p>
<p>IF Infrastructure Services.</p> 	<p>IF1: We have Transport & Network Services that are resilient to the impacts of Flooding & extreme weather.</p>
<p>P People & Built Environment.</p> 	<p>P1: We have people, homes, buildings and communities that are resilient to the impacts of Flooding & extreme of weather.</p>
<p>B Disruption to Businesses & Supply Chains.</p> 	<p>B1: We have businesses that can adapt to impacts of Climate Change & extreme weather.</p>
<p>I Food Security/ Global Food Production.</p> 	<p>I1: We have a food system that is resilient to impacts of climate change.</p>

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Appendix 7

Derry City & Strabane District Council Climate Change Risk Register 2019

Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
(IT) Risk to health, well-being, productivity, assets and eco systems from increased temperatures											
Increased Temperature / Low Rainfall	(IT1) Increasing frequency of high temperatures leading to staff discomfort, resulting in increased cooling costs, lower productivity, days off, changing shift patterns and PPE	<ul style="list-style-type: none"> Property Capital Development Health & Safety Human Resources 	4	2	8	✓	✓	✓	Business Continuity Plans Cooling Systems	More Action	
	(IT2) Increasing frequency of high temperatures creating greater water demand and increased drought risk impacting on water supply, quality, green infrastructure, landscapes, leisure and local communities	<ul style="list-style-type: none"> Property Capital Development Environment Leisure Emergency Planning Human Resources Streetscape 	4	3	12	✓	✓	✓		More Action	DFI NI Water

Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
Increased Temperature / Low Rainfall	(IT3) Increasing frequency of high temperatures and urban heat island effect impacting on vulnerable people requiring Council response	<ul style="list-style-type: none"> Emergency Planning Environmental Health Health & Safety Environment 	4	4	16	✓	✓	✓		More Action	Public Health Agency WHST
	(IT4) Extreme heat exacerbating air quality problems leading to public health issues	<ul style="list-style-type: none"> Environmental Health Emergency Planning Environment Health & Communities 	4	4	16	✓	✓	✓		More Action	Public Health Agency WHST
	(IT5) Changes in growing season, increased risk of pests/invasive species	<ul style="list-style-type: none"> Environment Capital Development Health & Safety Human Resources Emergency Planning Green Infrastructure & GI Plan 	4	3	12	✓	✓	✓		More Action	DAERA NIFRS
	(IT6) Increasingly frequent spells of hot weather leading to greater use of public amenity and outdoor leisure facilities, impacting on green infrastructure and heritage	<ul style="list-style-type: none"> Green Infrastructure Heritage & Regeneration Environmental Health Waste Management Environment 	4	2	8	✓	✓	✓		Research Priority	HED

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Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
Increased Temperature / Low Rainfall	(IT7) Increasingly frequent spells of hot weather leading to increases rate of waste decay / increased pests and disease	<ul style="list-style-type: none"> Environmental Health Waste Management 	4	3	12	✓	✓	✓		More Action	
	(IT8) Increase in visitor numbers at festivals and events due to increasingly frequent warm weather	<ul style="list-style-type: none"> Festivals & Events Health & Safety 	4	2	8	✓	✓	✓		More Action	
	(IT9) Temperature fluctuations, thermal stress, increased vegetation and increased risk from pests on heritage and museum collections	<ul style="list-style-type: none"> Heritage & Regeneration Museums & Visitor Services Capital Development Green Infrastructure Environment 	4	3	12	✓	✓	✓		Research Priority	NIMC HED

Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
Increased Precipitation / Sea Level Rise & Flood Risk	(IPF) Risk to Council personnel, communities, infrastructure, eco systems and Council assets, services and operations from increased precipitation and flooding										
	(IPF1) Increasing frequency and intensity of precipitation resulting in greater flood risk affecting Council assets and operations leading to financial losses, increased insurance costs and additional resource	<ul style="list-style-type: none"> Environment Health & Community Human Resources Health & Safety Risk & Assurance Leisure Services Marketing & PR Emergency Planning Heritage & Regeneration 	4	5	20	✓	✓	✓		More Action	DFI Insurance Sector
	(IPF2) Increasing frequency of flood events disrupting transport, energy, water and communication infrastructure and local communities requiring Council response and support	<ul style="list-style-type: none"> Environment Health & Community Human Resources Health & Safety Risk Leisure Services Marketing & PR Emergency Planning 	4	4	16	✓	✓	✓	Emergency Plan	More Action	RCRG DFI
	(IPF3) Increased precipitation and sea level rise leading to flood risk for future regeneration projects	<ul style="list-style-type: none"> Capital Development Regeneration Green Infrastructure 	4	5	20	✓	✓	✓		More Action & Research Priority	DFI

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Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
Increased Precipitation / Sea Level Rise & Flood Risk	(IPF4) Increased precipitation and sea level rise leading to flood risk for festivals and events	<ul style="list-style-type: none"> Festivals & Events Emergency Planning 	4	5	20	✓	✓	✓		More Action	
	(IPF5) Increased precipitation and humidity impacting heritage assets and museum collections	<ul style="list-style-type: none"> Heritage Museum Service Property Capital Development 	4	3	12	✓	✓	✓		Research Priority	NIMC
	(IPF6) Increased precipitation and frequency of flood events affecting landscapes and degrading natural assets, biodiversity and increased spread of invasive species	<ul style="list-style-type: none"> Environment Green Infrastructure & GI Plan 	4	3	12	✓	✓	✓	Green Infrastructure Plan	More Action	

Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
(IS) Risk of storm damage to infrastructure and Council assets, services and operations and risk to Council personnel											
Storms	(IS1) Increased frequency and intensity of storms resulting in damage to council assets leading to financial losses, increased insurance costs and additional resource	<ul style="list-style-type: none"> Environment Health & Community Human Resources Health & Safety Risk Leisure Services Marketing & PR 	4	5	20	✓	✓	✓	Emergency Plans	More Action	Insurance Sector
	(IS2) Increased frequency and intensity of storms resulting in disruption to service delivery	<ul style="list-style-type: none"> Waste Management Leisure Services Festivals & Events Green Infrastructure 	4	4	16	✓	✓	✓		More Action	
	(IS3) Increasing frequency and intensity of storms disrupting transport, energy, water and communication infrastructure and local communities requiring Council response and support	<ul style="list-style-type: none"> Environment Emergency Planning Health & Community Human Resources Health & Safety Risk Leisure Services Marketing & PR 	4	4	16	✓	✓	✓	Emergency Plan	More Action	RCRG
	(IS4) Increased frequency and intensity of storms resulting in damage and tree fall	<ul style="list-style-type: none"> Green Infrastructure Streetscape 	4	4	16	✓	✓	✓		More Action	

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Climate Hazard	Risk / Opportunity	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
(IC) Risk of intense cold periods affecting infrastructure, communities and Council assets, services and operations											
Winter Average Temperature Increase (Cold Snaps likely)	(IC1) Cold snaps resulting in damage to Council property and assets leading to financial losses, increased insurance costs and additional resource	<ul style="list-style-type: none"> Human Resources Health & Safety Risk Marketing & PR 	3	3	9	✓	✓	✓		Sustain Current Action	
	(IC2) Cold snaps resulting in disruption to service delivery	<ul style="list-style-type: none"> Environment Leisure Services Festivals & Events 	3	3	9	✓	✓	✓		Sustain Current Action	
	(IC3) Cold snaps disrupting transport, energy, water and communication infrastructure and local communities requiring Council response and support	<ul style="list-style-type: none"> Environment Health & Community Human Resources Health & Safety Risk Leisure Services Marketing & PR 	3	3	9	✓	✓	✓	Emergency Plan	Sustain Current Action	RCRG

DCSDC Corporate Risk Register	Risk Description	Service Area	Inherent Likelihood	Inherent Impact	Total Inherent Risk Score	Timing of Risk & Impact			Current Controls (includes policies, plans and procedures)	Urgency Category (Within 5 Yrs)	Relevant External Actors
						≤ 5yrs	5-10yrs	≥ 10yrs			
Climate Change	(CRR) Council fails to take effective action to address the causes and impacts of Climate Change, and respond to the Climate Emergency Declaration	All Council	4	5	20	✓	✓	✓		More Action	

Impact	5 High	Property destroyed or not safe for use/Fatality or multiple injuries; Financial loss >£500,000; Failure of key objectives; National media coverage;	Medium 5	High 10	Critical 20	Critical 20	Critical 20
	4 Medium-High	Serious damage to property/ Serious injury; Financial loss £100,000 to £500,000; Failure of key service; NI Media coverage	Low 4	Medium 5	High 10	Critical 20	Critical 20
	3 Medium	Moderate damage requiring repair/ Injury requiring medical treatment; Financial loss £10,000 to £100,000; Medium impact on achievement of objectives; Significant localised press coverage	Low 4	Medium 5	Medium 5	High 10	Critical 20
	2 Low-Medium	Minor damage/injury; Financial loss £1,000 to £10,000; Minor impact on achievement of objectives; Some Localised press coverage	Very Low 2	Low 4	Medium 5	Medium 5	High 10
	1 Low	No damage/injury; Financial loss < £1,000; No impact on achievement of objectives; Minimal damage to reputation	Very Low 2	Very Low 2	Low 4	Low 4	Medium 5
DERRY CITY & STRABANE DISTRICT COUNCIL RISK SCORING MATRIX			May occur only in exceptional circumstances	Might conceivably occur at some time	Could occur at some time	Will probably occur in most circumstances	Is expected to occur in most circumstances
			1 Low	2 Low – Medium	3 Medium	4 Medium – High	5 High
			Likelihood				

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Urgency Category

As adopted from UK Climate Change Risk Assessment NI Evidence Report

<div style="text-align: center;"> <div style="background-color: #008080; color: white; padding: 5px; margin-bottom: 10px;">More Urgent</div> <div style="display: flex; align-items: center; justify-content: center;"> <div style="border-left: 1px dashed black; border-right: 1px dashed black; height: 40px; margin: 0 5px;"></div> <div style="font-size: 2em; margin: 0 5px;">↑</div> <div style="border-left: 1px dashed black; border-right: 1px dashed black; height: 40px; margin: 0 5px;"></div> <div style="font-size: 2em; margin: 0 5px;">↓</div> </div> <div style="background-color: #008080; color: white; padding: 5px; margin-top: 10px;">Less Urgent</div> </div>	More Action Needed	New, stronger or different Council / external actor policies or implementation activities required
	Research Priority	Research required to fill evidence gaps or reduce uncertainty in current level of understanding in order to assess the need for additional action
	Sustain Current Action	Current or planned level of activity is appropriate, but continued implementation of these policies or plans is needed to ensure that the risk/impact continues to be managed in the future. This includes any existing plans to increase or change the current level of activity.
	Watching Brief	The risk/impact should be kept under review and further action taken if necessary

Impact Codes

Hazard / Risk	Code
Increased Temperature / Low Rainfall	Impact – Temperature IT
Increased Precipitation / Sea Level Rise & Flood Risk	Impact – Precipitation / Flooding IPF
Storms	Impact – Storms IS
Winter Average Temperature Increase (Cold Snaps likely)	Impact – Cold IC
Corporate Risk Register	CRR

Appendix 8

Adaptation Action Plan Objectives

1. Cross Cutting Category

Theme 1.1 Delivery & Collaboration	
Priority	Ensure governance and resources of Derry City & Strabane District Council are adequate to deliver adaptation planning and actions, and work with others to strengthen the resilience of the District, within North West region
Objectives	
1.1.1 Maintain effective governance and coordination to deliver and update the DCSDC adaptation plan	
1.1.2 Continually review progress in developing a more resilient DCSDC through monitoring, prioritising, and reporting adaptation activity	
1.1.3 Develop external partnerships to deliver climate adaptation actions	
1.1.4 Seek to deliver financial capacity to respond to climate change	
1.1.5 Influence relevant regional, national and sectoral policies and plans in relation to climate action	

Theme 1.2 Communication & Awareness	
Priority	Increase awareness and understanding of climate change contributing to the ability of Council and communities to adapt
Objectives	
1.2.1 Develop communication delivery frameworks	
Internal Awareness	
1.2.2 Enhance DCSDC ability to respond through increased awareness of climate change impacts and individual adaptation responsibilities	
External	
1.2.3 Raise awareness of the impacts of climate change & encourage adaptation action	

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Theme 1.3 Knowledge & Information

Priority

Ensure a robust understanding of climate change impacts and Council adaptation options

Objectives

1.3.1 Improve understanding of the impacts and costs of severe weather events by collecting, updating, synthesising and sharing information

1.3.2 Understand risk impact to assets & estates

1.3.3 Develop an evidence base for climate change adaptation to enable adaptation actions that will have the greatest benefit across the City & District.

1.3.4 Undertake necessary research and benchmarking to maintain up to date climate data, research, and best practice

2. Functional Category

Theme 2.1 Policy & People

Priority

Mainstream climate adaptation into policies and plans and prepare Council staff for the effects of climate change

Objectives

2.1.1 Integrate climate change adaptation into new and existing policies & plans where appropriate

2.1.2 Ensure safety and resilience of DCSDC personnel to the effects of climate change

Theme 2.2 Assets & Capital Development

Priority

Prepare for & address the impacts of climate change ensuring protection of Council assets, property and infrastructure or

Objectives

2.2.1 Improve resilience of DCSDC property & estates to effects of climate change

2.2.3 Ensure maintenance and asset management considers the impacts of climate change

2.2.4 Ensure Council capital development and regeneration projects respond and adapt to climate change

Theme 2.3 Operations & Services

Priority

Ensure continued service delivery and maintain Council operations and resilience to climate change

Objectives

2.3.1 Deliver effective emergency response to severe weather events

2.3.2 Strengthen the resilience of the Council by mainstreaming adaptation considerations into operations and service delivery

Theme 2.4 Green Infrastructure

Priority

Prioritise Green Infrastructure for climate adaptation within Council property

Objectives

2.4.1 Develop green infrastructure as preferred climate action response

2.4.2 Ensure adaptive capacity and resilience of DCSDC GI Assets

Theme 2.5 Heritage & Culture

Priority

Identify and address the impacts, risks and opportunities of climate change to local heritage assets, collections, cultural programs, festivals and events

Objectives

2.5.1 Ensure protection of Councils heritage assets

2.5.2 Ensure protection of Councils collections

2.5.3 Ensure resilience of Council cultural programmes

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Theme 2.6 Planning & Building Control

Priority

Ensure that all new built developments and land uses across the District will be designed and built to adapt to Climate Change

Objectives

2.6.1 Ensure that all plans are future proofed and adaptation opportunities maximised

Appendix 9 Green Infrastructure Climate Action Benefits

(Source: Derry & Strabane Green
Infrastructure Plan 2019 - 2032)

GREEN INFRASTRUCTURE	ADAPTATION BENEFITS	MITIGATION BENEFITS
Urban Tree Planting	<ul style="list-style-type: none"> • Cooling • Wind Protection • Flood alleviation • Air quality • Habitat & Species 	<ul style="list-style-type: none"> • Carbon storage • Energy reduction • Sustainable Materials • Sustainable travel
Parks & Open Spaces	<ul style="list-style-type: none"> • Cooling • Wind Protection • Flood alleviation • Air quality • Habitat & Species • Public awareness 	<ul style="list-style-type: none"> • Carbon storage • Energy reduction • Sustainable Materials • Sustainable travel
Permeable surfaces / SuDS	<ul style="list-style-type: none"> • Flood alleviation • Water Supply • Water quality 	<ul style="list-style-type: none"> • Energy reduction • Sustainable Materials
Woodland retention & development	<ul style="list-style-type: none"> • Flood alleviation • Soil erosion • Air quality • Water quality • Habitat & Species 	<ul style="list-style-type: none"> • Carbon storage • Energy reduction
Riparian planting	<ul style="list-style-type: none"> • Flood alleviation • Soil erosion • Air quality • Water quality • Habitat & Species 	<ul style="list-style-type: none"> • Carbon storage • Energy reduction
River 'naturalisation'	<ul style="list-style-type: none"> • Flood alleviation • Soil erosion • Water quality • Habitat & Species 	<ul style="list-style-type: none"> • Carbon storage • Energy reduction

GREEN INFRASTRUCTURE	ADAPTATION BENEFITS	MITIGATION BENEFITS
Wetland restoration, riparian buffer zones	<ul style="list-style-type: none"> Flood alleviation Water quality Coastal erosion Habitat & Species 	<ul style="list-style-type: none"> Energy reduction
Restoration of upland vegetation	<ul style="list-style-type: none"> Flood alleviation Soil erosion Air quality Water quality Habitat & Species 	<ul style="list-style-type: none"> Carbon storage
Food Production	<ul style="list-style-type: none"> Flood alleviation Soil erosion Air quality Water quality Habitat & Species 	<ul style="list-style-type: none"> Reduced emissions Carbon storage
Green Corridors	<ul style="list-style-type: none"> Habitat & Species 	<ul style="list-style-type: none"> Carbon storage
Sustainable Travel	<ul style="list-style-type: none"> Sustainable Travel 	<ul style="list-style-type: none"> Reduced emissions
Recreation provision	<ul style="list-style-type: none"> Manage visitor pressure at stressed sites 	<ul style="list-style-type: none"> Reduced emissions
'Greening' of buildings	<ul style="list-style-type: none"> Cooling Wind Protection Flood alleviation Air quality Water quality Water supply Habitat & Species 	<ul style="list-style-type: none"> Carbon storage Energy reduction
Private Gardens (reinstatement & enhancing biodiversity value)	<ul style="list-style-type: none"> Flood alleviation Air quality Water quality Water supply Habitat & Species 	<ul style="list-style-type: none"> Carbon storage Energy reduction

Glossary

Adaptation

The process of adjustment to the actual and anticipated effects of climate change to moderate harm and exploit beneficial opportunities.

Adaptive Capacity

The ability of a system, organisation or individual to adjust to climate change.

Climate

Climate refers to the average weather experienced in a region over a long period, typically at least 30 years. This includes temperature, wind and rainfall patterns.

Climate Change

A statistically significant variation in either the mean state of the climate or in its variability over time, whether due to natural variability or as a result of human activity.

Climate Change Mitigation

Measures to reduce greenhouse gas emissions and enhance carbon storage to prevent further global warming.

Climate Projections

Climate projections provide future climate data using models which simulate the response of the climate system to a range of scenarios based on the future emissions or concentration of greenhouse gases (GHGs) and aerosols.

Coastal Erosion

Coastal retreat or loss of materials from the shoreline.

Drought

A significant period of dry weather long enough to cause a serious hydrological imbalance.

Glossary

Emissions Scenarios

A range of scenarios representing the potential future greenhouse gas emissions based on human activities including mitigation. They are presented as Representative Concentration Pathways (RCP) ranging from no/low mitigation -RCP8.5 to transformational societal change and reduction in emissions - RCP2.6.

External Forcing

External forcing refers to a forcing agent outside the climate system causing a change e.g. Volcanic eruptions, solar variations and anthropogenic (Human driven) changes in the composition of the atmosphere and land-use.

Extreme Weather Event

A rare weather event at a particular place and time of year.

Flooding

Flooding is the inundation of land that is normally dry from one of several causes:

Fluvial - river floods

Pluvial - surface water run-off due to large quantities of rain in a short time

Coastal flooding - flooding from high sea levels, this can be through a combination of high sea levels and storms.

Groundwater - rising levels of subterranean water

Sewerage - caused by blocked sewers.

Global Warming

The gradual increase, observed or projected, in global surface temperature.

Green Infrastructure

Interconnected network of multi-functional green and blue spaces, which provide multiple environmental, economic and social benefits, linked throughout the urban and rural landscape.

Grey Infrastructure is hard engineering assets, for example, transport, utilities and commercial infrastructure.

Heatwave

A continuous spell of unusually hot weather, where day temperatures reach at least 30°C and night times are at least 15°C for at least 3 days.

Impacts

The effects of climate change on natural and human systems. Potential impacts are all impacts that may occur given a projected climate, without considering adaptation. Residual impacts are the impacts that would occur after adaptation.

Industrial Revolution

A period of rapid industrial growth, beginning in Britain during the second half of the 18th century and spreading to Europe and later to other countries including the United States. The industrial revolution marks the beginning of an increase in the use of fossil fuels.

Invasive species

Invasive non-native species are those that have been transported outside their natural range and that damage the environment, economy, and health.

Maladaptation

Action or investment that increases vulnerability to the impacts of climate change rather than reducing them.

Resilience

The ability of a person or organisation to absorb change or disturbance without significant loss of function while retaining the same basic structure and ways of functioning, alongside the capacity for adaptation, learning and transformation.

Risk Assessment

The structured analysis of hazards and impacts to provide information for decision making.

Sea level rise

Above average rise in sea level over a period of time.

Storm surge

A temporary increase in the height of the sea due to extreme meteorological and tidal conditions.

Vulnerability

The degree to which a system is susceptible to, and unable to cope with adverse conditions, including climate variability and weather extremes (the opposite of resilience).

Weather

The day to day condition of the atmosphere, including temperature, rainfall and wind.



Derry City and Strabane District Council

98 Strand Road
Derry
BT48 7NN

47 Derry Rd
Strabane
Tyrone, BT82 8DY

Tel: **(028) 71 253 253**

E: cathy.burns@derrystrabane.com

Website: www.derrystrabane.com/climate

Find us on

Facebook [derrycityandstrabanedistrictcouncil](https://www.facebook.com/derrycityandstrabanedistrictcouncil)

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Telephone: 02871253253

Text phone: 02871376747

Or email: equality@derrystrabane.com



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