

Comhairle Cathrach Chorcaí  
Cork City Council



*Draft*

**Climate Change Adaptation Strategy 2019-2024**

**July, 2019**

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## Abbreviations

CARO: Climate Action Regional Office  
CASG: Climate Action Steering Group  
CCiC: Cork City Council  
CCEA: Cork City Energy Agency  
CCET: Cork City Energy Team  
CCMA: County and City Management Association  
CDP: City/County Development Plan  
CFRAMS: Catchment Flood Risk Assessment and Management Study  
CODEMA: City of Dublin Energy Management Agency  
COM: Covenant of Mayors  
CSO: Central Statistics Office  
DCCAE: Department of Communications, Climate Action and Environment  
DEHLG: Department of the Environment, Heritage and Local Government  
DTTAS: Department of Transport, Tourism and Sport  
EPA: Environmental Protection Agency  
ESB: Electricity Supply Board  
FEWS: Flood Early Warning System  
GDP: Gross Domestic Product  
HSE: Health Services Executive  
IPPC: Intergovernmental Panel on Climate Change  
KPIs: Key performance Indicators  
LAP: Local Area Plan  
LGMA: Local Government Management Agency  
LLFRS: Lower Lee Flood Relief Scheme  
MaREI: Marine and Renewable Energy Ireland  
NAF: National Adaptation Framework  
NASA: National Aeronautics and Space Administration

NCCAF: National Climate Change Adaptation Framework  
NEEAP: National Energy Efficiency Action Plan  
NMP: National Mitigation Plan  
NOAA: National Oceanic and Atmospheric Administration  
NRA: National Roads Authority  
OPW: Office of Public Works  
OSI: Ordnance Survey Ireland  
SEAI: Sustainable Energy Authority of Ireland  
SECAP: Sustainable Energy and Climate Action Plan  
SMT: Senior Management Team  
SPCs: Strategic Policy Committees  
SuDS: Sustainable Drainage Systems  
TII: Transport Infrastructure Ireland  
WERLA: Waste Enforcement Regional Lead Authorities  
WMO: World Meteorological Organization

## EXECUTIVE SUMMARY

This Cork City Climate Change Adaptation Strategy 2019-2024 is a response to the impact that climate change is already causing and will continue to cause into the foreseeable future on the citizens and infrastructure of Cork city. Cork City Council is committed to leading the way in dealing with this recognised global issue at the local level. The two main goals of this strategy are:

- To make Cork city as climate-resilient as possible, reducing the impacts of current and future climate change-related conditions and events; and
- To pro-actively engage with all citizens on the subject of climate action, such as climate change, climate adaptation and climate mitigation.

This strategy sets out 55 adaptation action items, grouped into appropriate objective areas, across the following seven key thematic areas that are of equal priority:

1. Local Adaptation Governance and Business Operations;
2. Infrastructure and Built Environment;
3. Land Use and Development;
4. Drainage, Water and Flood Management;
5. Nature, Natural Resources and Cultural Infrastructure;
6. Citizen Safety, Health and Wellbeing; and
7. Partnerships with other Sectors and Agencies.

These adaptation actions are Cork City Council's template for the future development of climate change resilience, improving our understanding of climate disruption and allowing us to respond appropriately. Cork City Council will build on past and current climate mitigation actions and progress and enhance early stage adaptation measures. This draft climate change adaptation strategy will assist in the development of future City Development and Local Area Plans. It is proposed to set up appropriate oversight structures involving the elected representatives of Cork City Council, the Council's management team and project teams to implement specific initiatives as appropriate. Key performance indicators will be established and used to monitor progress and evaluate the effectiveness of the adaptation actions, with the realisation that climate change is a dynamic process. Cork City Council will use all available communication platforms to build awareness of the challenges faced from climate disruption, and involve all relevant stakeholders in encouraging greater participation and behavioural change to tackle what has been described as the greatest environmental threat to our current way of life on planet Earth.

***Submissions should be made before 5pm on 13<sup>th</sup> September, 2019 by:***

**Email: [climateaction@corkcity.ie](mailto:climateaction@corkcity.ie)**

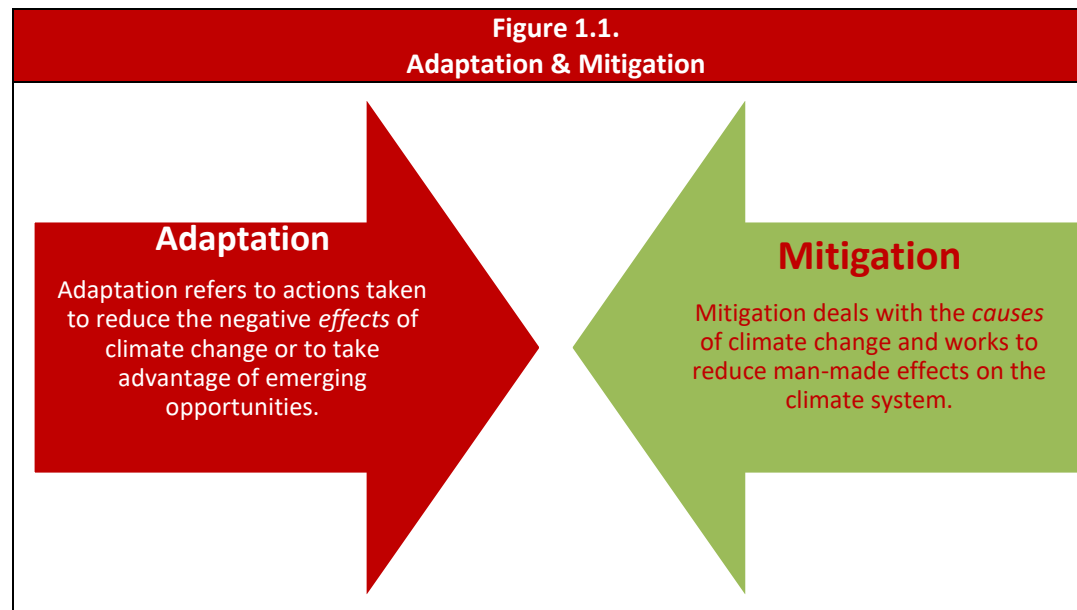
**Online Portal: at [www.corkcity.ie](http://www.corkcity.ie)**

**Write to: Climate Change Adaptation Strategy,  
Strategic & Economic Development,  
Cork City Council, City Hall, Cork T12 T997**

## 1. INTRODUCTION

### INTRODUCTION

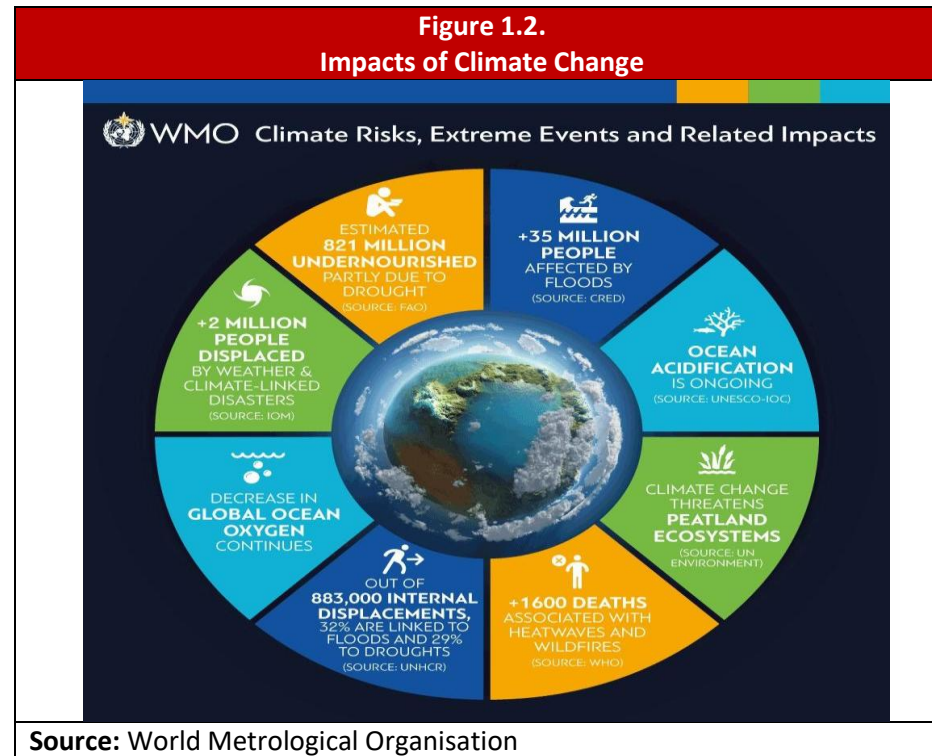
- 1.1. This draft Climate Change Adaptation Strategy 2019 – 2024 represents the first such strategy prepared for Cork City. That stated, as presented later, it builds on significant work conducted by Cork City Council in both adapting and mitigating for climate change. The strategy sets out the risks that climate change will pose to Cork City along with key goals, and actions that the City Council seeks to implement for Cork City to adapt to climate change. **As presented later, this climate change adaptation strategy will inform a separate climate change mitigation strategy which will be prepared by Cork City Council in due course.** Adaptation seeks to address the resilience of the city against the impacts of climate change, while the mitigation strategy will seek to reduce Cork City's impact on the climate.



- 1.2. Cork City should be agile in its response to climate change. To that extent, this is a ***dynamic Climate Change Adaptation Strategy and will be subject to constant review and updating as conditions change.***
- 1.3. This Climate Change Adaptation Strategy has been prepared to inform a consultation process. Submissions are welcome from members of the public and other key stakeholders. These submissions will be evaluated before the strategy is finalised. Cork City Council is obliged to adopt a Climate Change Adaptation Strategy by **30<sup>th</sup> September, 2019.** **Submissions should be made by Friday, 13<sup>th</sup> September, 2019.**

**BACKGROUND**

- 1.4. Climate change refers to a change in climate patterns that has been apparent from the mid to late 20<sup>th</sup> century onwards. This is largely attributed to the increased levels of atmospheric carbon dioxide (CO<sub>2</sub>) produced by the use of fossil fuels, resulting in numerous global climatic shifts. There is broad scientific consensus that human activities, most notably the burning of fossil fuels for energy, has led to the rapid build-up in atmospheric greenhouse gases, which is causing average global temperatures to rise as presented in Appendix A.
- 1.5. Impacts from this warming have already been observed and include increases in global average air and ocean temperatures, accelerated melting of snow and sea ice, widespread retreat of glaciers, rising global average sea level, and extensive changes in weather patterns, including changes in precipitation levels and increased storm intensity. Climate change is the greatest environmental threat confronting the world and is impacting on the lives of hundreds of millions of people globally as illustrated in Figure 1.2





1.6. Observations show that Ireland's climate is also changing and projected physical climate changes include:

- Increase in average temperature (surface air temperature, sea surface temperature);
- Changes in precipitation patterns;
- Ongoing mean sea level rise; and
- Changes in the character of weather extremes such as storms, flooding, sea surges and flash floods.

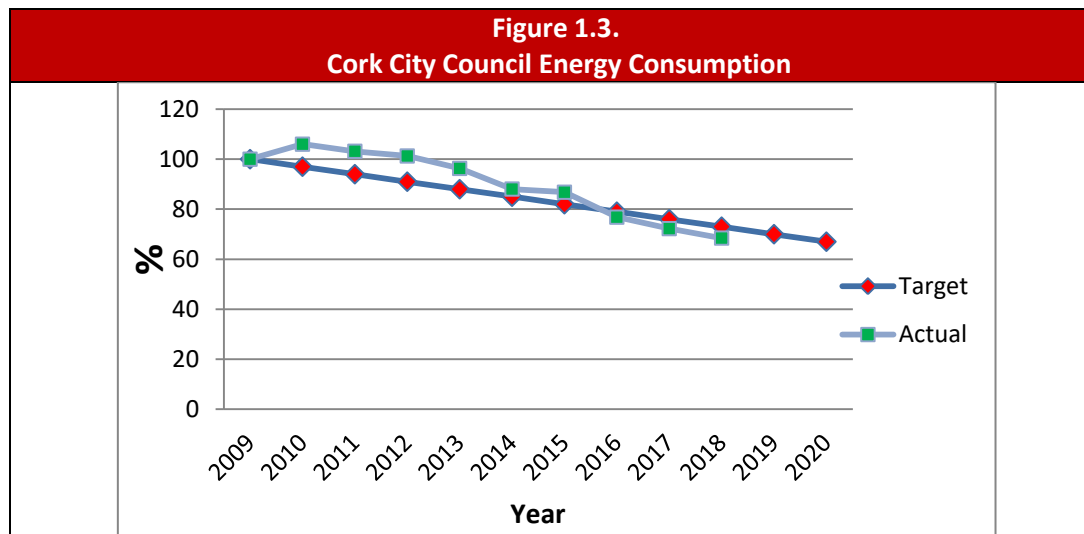
1.7. As illustrated later these impacts are evident in Cork City.

#### EXISTING CORK CITY COUNCIL CLIMATE ACTIONS

1.8. This draft strategy was not prepared on a blank canvass. Cork City Council has put in place a number of actions aimed at adapting to and mitigating climate change.

1.9. Cork City Council signed up to the **Covenant of Mayors for Climate and Energy** in 2016, joining the mainstream European movement by local & regional authorities in addressing climate change. As the vast majority of energy is consumed in city territories, Cork city has a key burden-sharing role to play in meeting the voluntary commitment of signatories to reduce CO<sub>2</sub> emissions within their territories by at least 40% by 2030. As part of the Covenant of Mayors (COM) commitment, Cork City Council prepared and submitted the Sustainable Energy and Climate Action Plan (SECAP) in 2018 and has also committed to reporting every 2 years on the implementation of the mitigation and adaptation actions in the plan. The Covenant of Mayors commitment will play a key enabling role towards the long-term commitment of Cork City Council to transition to a low carbon society and economy.

1.10. In 2009, Ireland developed The National Energy Efficiency Action Plan 2009-2020 (NEEAP). This NEEAP set an overall national goal of 20% improvement in energy efficiency by 2020, within which the public sector is committed to a 33% improvement in energy efficiency by 2020. By the end of 2018 Cork City Council achieved a 31.5% energy reduction and is on target to reach this 2020 target. Figure 1.3. shows the City Council's progress towards reaching this target. Much of this success is a result of Cork City Council's directorates carrying out energy efficient projects.



1.11. The Cork City Energy Agency (CCEA), with the Cork City Energy Team (CCET), is committed to achieving ISO 50001 (the international standard for establishing, implementing, maintaining and improving an energy management system) accreditation for Cork City Council by 2020.

1.12. Adaptation measures that have been already implemented by Cork City Council are presented in Table 1.1.

Table 1.1. Climate Change Adaptation Measures Put In Place by Cork City Council	
Category	Measures
<b>Support existing initiatives.</b>	<p>Major Emergency Plan and Severe Weather Plans in place.</p> <p>A number of early warning systems are in place, for example:</p> <ul style="list-style-type: none"> <li>• a new electronic river Lee level gauge provided at Parnell Bridge;</li> <li>• a Flood Early Warning System (FEWS) is currently being progressed for the Lee and it's major tributaries;</li> <li>• existing river Lee levels and flow data available from the Lee Road water treatment plant;</li> <li>• OPW Coastal Surge warning protocol for Cork and Bantry Harbours;</li> <li>• ESB protocol for water discharge from Lee Valley dams; and</li> <li>• IceCast Road Weather Information System for National Roads.</li> </ul> <p>The OPW are progressing many flood defence schemes with Cork City Council, including the Lower Lee Flood Relief Scheme (LLFRS) and the Blackpool Flood Relief Scheme. Other schemes began in the Cork County Council area prior to the boundary extension will be either completed by the County Council or transferred to Cork City Council, including schemes in Togher and Glanmire.</p>
<b>Investigate, review and prepare guidance.</b>	<p>Sustainable Drainage Systems (SuDS) being reviewed to determine its suitability for Cork city.</p> <p>CODEMA to publish guidance on CO<sub>2</sub> Inventory compilation.</p>

Table 1.1. Continued Climate Change Adaptation Measures Put In Place by Cork City Council	
Category	Measures
<b>Prepare inventories and undertake vulnerability assessments of assets.</b>	Property Interest Register has details of Council-owned properties.  Roads database holds records of road classifications and condition.  Eirspan bridge data base has records of Regional and Local road bridges, including rated condition and damage type.
<b>Identify opportunities.</b>	The Cork City Council Local Enterprise Office (LEO) has expertise in project/product development with business and industry.
<b>Raise awareness.</b>	Cork City Council has built up experience of climate change. Existing mainstream and social media channels widely used by Communications Unit.
<b>Further develop relationships.</b>	Important relationships include: <ul style="list-style-type: none"> <li>• stakeholders such as Irish Water, SEAI, EPA, ESB; and</li> <li>• 3<sup>rd</sup> level institutions with research specialisations in climate change.</li> </ul>

**PURPOSE OF THIS STRATEGY**

1.13. This adaptation strategy forms part of the National Adaptation Framework (NAF), published in response to the provisions of the Climate Action and Low Carbon Development Act 2015. As the level of Government closest to local communities and enterprise, and as first responders in many emergencies, Cork City Council is uniquely placed to effect real positive change with respect to delivery of the national objective to transition to a low carbon and a climate resilient future. This adaptation strategy takes on the role as the primary instrument at local level to:

- Ensure a proper comprehension of the key risks and vulnerabilities of climate change;
- Bring forward the implementation of climate resilient actions in a planned and proactive manner; and
- Ensure that climate adaptation considerations are mainstreamed into all plans and policies and integrated into all operations and functions of the local authority.

**ADAPTATION POLICY CONTEXT**

1.14. This strategy is set within a policy framework at international and national levels as illustrated below.

**International Context**

1.15. Climate change has been on the international political and policy agenda for a number of decades. In 1992 the United Nations agreed a framework on climate change. The Kyoto Protocol, which was agreed in 1997 is based on the principle of common responsibilities to address climate change. By 2013 the EU published a white paper on a climate change adaptation strategy which seeks to contribute to a more climate resilient Europe. Specific targets were set in the 2015 Paris Agreement to limit global warming to 2% above pre industrial levels and to build resilience and mitigate climate change. In addition, 9000 cities and local governments, including Cork City Council, are signatories to the Global Covenant of Mayors for Climate Change.

## Irish Policy Context

- 1.16. The 2012 National Climate Change Adaptation Framework (NCCAF) was Ireland's first step in developing a national policy on adaptation actions to combat the impacts of climate change. The 2014 National Policy Position on Climate Action and Low Carbon Development restated the policy position of the NCCAF. The Climate Action and Low Carbon Development Act 2015 provides the statutory basis for the national transition objective laid out in the National Policy Position. Further to this, it made provision for and gave statutory authority to both the National Mitigation Plan (NMP), published in 2017 and the National Adaptation Framework (NAF) published in 2018. The NAF has also identified twelve sectors across seven government departments/agencies which are required to develop specific climate adaptation strategies, which will include actions to be implemented at a local level. See **Appendix B** for a table of the sectors and their parent departments. As previously stated, this draft Climate Change Adaptation Strategy represents Cork City Council's part of the National Adaptation Framework. In June, 2019 the Government published the '**Climate Action Plan 2019 – to Tackle Climate Breakdown**' which presents a suite of actions designed to address climate change.

## Regional Context

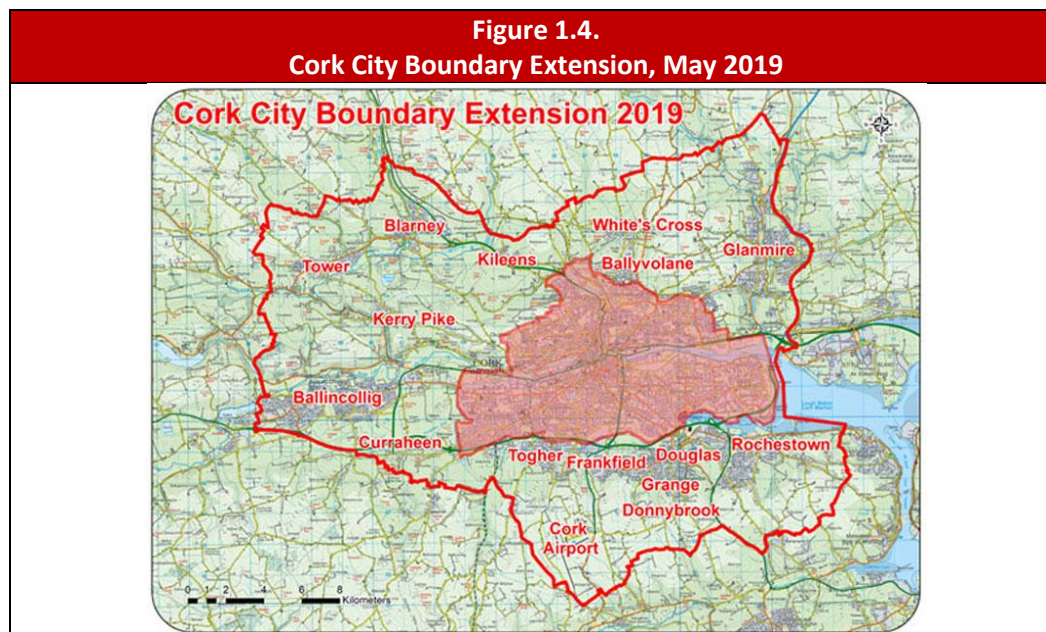
- 1.17. The Southern Regional Assembly is currently preparing a Regional Spatial and Economic Strategy (RSES) for the Southern Region, for the period 2019-2031. The RSES will provide a long-term regional level strategic planning and economic framework, which will support the implementation of the National Planning Framework for the future physical, economic and social developments for the Southern Region. The following key themes of the draft RSES are directly related to Cork City's Climate Change Adaptation Strategy:
- Adaptation transition to a low carbon and climate resilient society; and
  - Sustainable management of water and other environmental resources.

## Climate Action Regional Offices (CAROs)

- 1.18. To assist local authorities prepare and implement climate change adaptation plans Climate Action Regional Offices (CARO) have been established for four regional areas: Atlantic Seaboard North, Dublin Metropolitan, Eastern and Midlands, and Atlantic Seaboard South. Cork County Council was appointed as the lead local authority to manage the CARO for the Atlantic Seaboard South region and the five constituent local authorities in the Atlantic Seaboard South region are Cork City Council, Limerick City and County Council, Cork County Council, Kerry County Council and Clare County Council. The role of the CARO is to assist and coordinate the preparation of all local authority climate change adaptation strategies in its region.

## Cork City Context

- 1.19. Cork City Council is responsible for developing, communicating and delivering this Cork City Council Climate Change Adaptation Strategy. Following the boundary extension that came into effect on 31<sup>st</sup> May 2019, the population of Cork is 211,000. The geographic area has expanded almost five-fold as illustrated in Figure 1.4. below. The red-hatched area in Figure 1.4 below shows Cork City Council's jurisdiction pre-31<sup>st</sup> May 2019. The Draft Regional Spatial Strategy population projections are forecasting a population increase to between 274,000 and 286,000 by 2031 and the NPF sets a population target for Cork City in the region of 350,000 people by 2040.



**ENVIRONMENTAL ASSESSMENT**

1.20. Cork City Council conducted the following screening of this draft Climate Change Adaptation Plan:

- **Screening Strategic Environmental Assessment (SEA):** Under the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004 as amended by S.I. 200 of 2011), all plans which are likely to have a significant effect on the environment must undergo screening to determine whether a Strategic Environmental Assessment (SEA) is required. This draft strategy has been screened for SEA and this screening determined that a full SEA is not required.
- **Screening for Appropriate Assessment (AA):** Screening of this draft strategy has been undertaken in accordance with the requirements of Article 6(3) of the EU Habitats Directive (directive 92/43/EEC) and the screening has determined that the Climate Change Adaptation Strategy is not likely to significantly affect Natura 2000 sites (i.e. Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) within or surrounding the plan area.

1.21. These are presented in detail in Appendix E and Appendix F respectively.



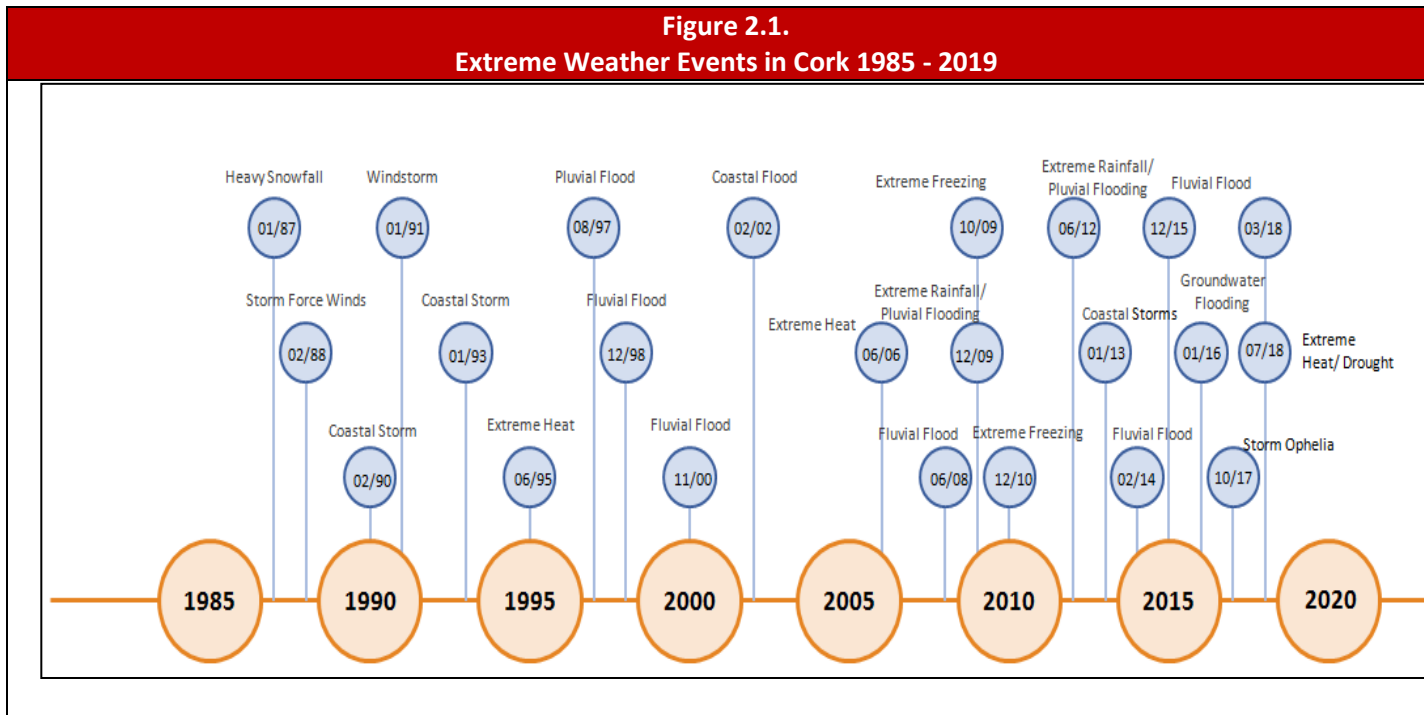
## 2. CLIMATE CHANGE IN CORK

- 2.1. A review of extreme weather events in the strategy area over the period 1987 to 2018 has been undertaken using published Met Éireann data and has been categorised under the following headings for the Cork in Table 2.1 and shown graphically in Figure 2.1.

Table 2.1. Climate Change in Cork	
Extreme Weather Events	Description
Coastal flooding	<ul style="list-style-type: none"> <li>February 2002: Cork city flooding</li> </ul>
Coastal storms	<ul style="list-style-type: none"> <li>January 1993: severe gusts and heavy rainfall</li> <li>February 1990: severe gusts and heavy rainfall</li> </ul>
Extreme heat and drought	<ul style="list-style-type: none"> <li>Summer 2018: warmest weather since 2006</li> <li>Summer 2006: warmest weather since 1995</li> <li>Summer 1995: warmest weather since 1955</li> </ul>
Extreme rainfall	<ul style="list-style-type: none"> <li>June 2012: 58mm 1-day total recorded in Bandon</li> <li>November 2009: 55mm 1-day total recorded in Ballyvourney</li> </ul>
Fluvial flooding	<ul style="list-style-type: none"> <li>December 2015: River Bandon</li> <li>February 2014: River Lee</li> <li>November 2009: River Lee; major flooding in Cork city</li> <li>August 2008: River Blackwater</li> <li>November 2000: River Lee</li> </ul>
Freezing conditions	<ul style="list-style-type: none"> <li>December 2010: Cork recorded -7.2 degrees</li> </ul>
Groundwater flooding	<ul style="list-style-type: none"> <li>January 2016: N25 flooded between Killeagh and Castlemartyr</li> </ul>
Heavy snowfall	<ul style="list-style-type: none"> <li>Feb/March 2018: Storm Emma</li> <li>January 1987: 12cm of snow at Roche's Point</li> </ul>

Table 2.1. Continued Climate Change in Cork	
Extreme Weather Events	Description
Pluvial flooding	<ul style="list-style-type: none"> <li>• June 2012: Douglas</li> <li>• August 1997: Freemount</li> </ul>
Storm force winds/ windstorms	<ul style="list-style-type: none"> <li>• October 2017: Hurricane Ophelia, with gusts up to 84 knots recorded at Roche's point</li> <li>• January 1991: gusts in excess of 68 knots recorded at Roche's point</li> <li>• February 1988: gusts in excess of 84 knots recorded at Cork airport</li> </ul>

- 2.2. It is evident that the main category of extreme weather events reported has been flooding (coastal, fluvial and pluvial). This is followed by windstorms and coastal storms and there is a general similarity in the numbers of the remaining event types. As illustrated in Figure 2.2. there is an acceleration of extreme weather events over recent years.
- 2.3. Cork City Council has a comprehensive Major Emergency Plan in place to ensure that staff at all levels are aware of their responsibilities and that appropriate actions are initiated in a timely and effective manner to deal with major emergencies. The Major Emergency Plan, which describes actions required in the event of severe weather events, has come into operation on a number of occasions, with the most recent activations being Hurricane Ophelia in October 2017 and Storm Emma in February / March 2018.




### 3. CLIMATE RISK IDENTIFICATION


#### INTRODUCTION


3.1. This section presents the risks that climate change may have on Cork City based on trends of the climate variables that are changing.


#### CLIMATE VARIABLES


3.2. The tables below provide an overview of the seven climate variables that have been investigated in preparation of this strategy.


	<b>Hydrology</b>
<b>Observed</b>	<p>The analysis of river flows is complex and subject to large variability, so it is difficult to identify impacts of climate change. During the period 1954 to 2008, summer mean flows were dominated by decreasing flows while for winter there is a tendency for increases in mean flows. Annual and winter high flows are also dominated by increasing trends.</p> <p>Drier summers could have effects on summer base-flows of rivers in Cork and the recharge of underlying aquifers. This ultimately has implications for the provision of drinking water, as was evident in many areas during the prolonged drought period of summer 2018.</p>
<b>Summary of Change</b>	<p>Increasing seasonality in hydrological regimes can be expected with likely decreased summer and increased winter flows.</p> <p>Flood risk will increase due to a combination of higher river-flows and increases in extreme precipitation events. These events are likely to play a greater role in climatic events in the future. An example would be high tides coupled with fluvial and pluvial events, especially in the lower reaches of the River Lee and Cork Harbour.</p>
<b>Climate risks for Cork</b>	<p>Groundwater flooding, which is the emergence of groundwater at the surface away from river channels and watercourses, under conditions where the 'normal' ranges of groundwater level and flow are exceeded.</p> <p>Pluvial, or surface-water flooding, which results from rainfall-generated overland flow that may occur during or immediately after intense rainfall events and before the runoff enters Cork city's watercourse or drainage system.</p> <p>Fluvial or river flooding, which occurs when excessive rainfall causes the River Lee to exceed its capacity.</p>


	<b>Rainfall</b>
<b>Observed</b>	Throughout Ireland, annual average rainfall amounts have increased by roughly 5% relative to the 1961-1990 baseline period, with this increase observed across all seasons. However, spatially, rainfall intensity and amounts vary with no clear direction of change yet apparent.
<b>Summary of Change</b>	Increasing seasonality in precipitation can be expected with drier summers likely. An increase in the occurrence and magnitude of extreme rainfall events is also likely.
<b>Climate risks for Cork City</b>	Groundwater flooding Pluvial flooding Fluvial flooding

	<b>Sea Level</b>
<b>Observed</b>	Satellite observations indicate that sea level around Ireland has risen by approximately 0.04m to 0.06m since the early 1990s.
<b>Summary of Change</b>	Sea levels are expected to increase for all Irish coastal areas.
<b>Climate risks for Cork City</b>	Coastal flooding, which occurs when normally dry, low-lying land is flooded by seawater.  Coastal erosion, which is the process of wearing away material from the coast line due to imbalance in the supply and export of material from a certain section.

	<b>Sea Temperature</b>
<b>Observed</b>	The seas around Ireland have been warming at a rate 0.6° C per decade since 1994, which is unprecedented in the 150 year observational record. The greatest warming has been observed over the Irish Sea.
<b>Summary of Change</b>	In line with global trends, the seas around Ireland are expected to continue warming. Warm seawater has a greater volume than cold seawater. As ocean temperatures increase, so will the total ocean volume. Any increased volume will cause the level of the water in the oceans to rise.
<b>Climate risks for Cork City</b>	Coastal flooding. Coastal erosion.

	<b>Surface Air Temperature</b>
<b>Observed</b>	Observations indicate an increase in the surface temperature for Ireland of 0.8°C since 1900. In addition, the number of warm days has increased while the number of frost days has decreased.
<b>Summary of Change</b>	Surface air temperatures are expected to increase everywhere compared to the present. An increase in the intensity and duration of heat waves is expected.
<b>Climate risk for Cork City</b>	Heat waves may lead to severe drought and violent thunderstorms which impact upon human health, physical infrastructure, river water levels and fires. Fewer frost days and milder night-time temperatures are expected.

	<b>Waves and Surges</b>
<b>Observed</b>	Analysis of satellite data for the period 1988 to 2002 shows a general increase in wave height in the northeast Atlantic.
<b>Summary of Change</b>	The magnitude and intensity of storm wave heights are expected to increase for spring and winter.
<b>Climate risks for Cork City</b>	Coastal flooding; Coastal erosion.

	<b>Wind Speed and Storms</b>
<b>Observed</b>	For Ireland, observations indicate a high degree of yearly variability in wind speeds and, due to a lack of correlation in the available data, analysis of long term trends cannot yet be determined with confidence.
<b>Summary of change</b>	Projections indicate a decrease in wind speeds for summer and increases for winter. An increase in the intensity of extreme wind storms is expected.
<b>Climate risks for Cork City</b>	Wind storms or high winds, that are defined as a having a wind speed greater than 50 km/h which equates to a Force 7 (28–33 knots) on the Beaufort wind force scale.

### **FLOODING RISKS IN CORK CITY**

- 3.3. There is a long history of flooding in Cork city and the River Lee valley. There were some 292 floods reported over the period 1841–1988. A number of severe floods have affected the city, most recently in November 2009, February 2014 and Winter 2015/16. The November 2009 event was exceptionally severe, with major damage caused to commercial and residential buildings in Cork city. It has been estimated by the OPW that the damages caused in the 2009 river flood and 2014 tidal flood amounted to €90m and €40m respectively. The National Planning Framework identified that flood management must be addressed as part of any future growth strategy for Cork. Thus, the plans for the development of Cork City, including Cork Docklands, must consider the impact of flooding.
- 3.4. The Lee Catchment Flood Risk Assessment and Management Study (Lee CFRAMS), which was carried out by the OPW between 2006 and 2013, identified a preferred scheme to manage flood risk including a combination of a flood forecasting and warning system, revised ESB dam operating procedures and waterside defences. Following on from this, the Lower Lee Flood Relief Scheme (LLFRS) has been developed, which is a modified version of the measures proposed in the Lee CFRAMS together with a flow control structure on the south channel to rebalance flows between the north and south channels. This scheme is designed to protect over 2,100 properties, including 900 homes and 1,200 businesses against tidal and river flooding.

### **INFRASTRUCTURE**

- 3.5. It will be necessary to conduct a detailed vulnerability assessment due to climate change of the 930km of roads and 190 bridges in Cork City.

### **RISKS TO BIODIVERSITY**

- 3.6. In the case of the natural environment, the National Biodiversity Action Plan for 2017-2021 states that there is evidence that climate change is negatively impacting Irish habitats and is driving ocean acidification. Expected increases in temperature, changes in precipitation patterns, weather extremes (storms and flooding, sea surges, flash floods) and sea-level rise will affect the abundance and distribution of Irish species and possibly encourage the spread of alien invasive species.

### **REGIONAL AND NATIONAL CONSEQUENCES OF ADVERSE CLIMATE CHANGE IN CORK CITY**

- 3.7. With a population of 211,000, Cork is Ireland's second largest city and a key driver of the regional and national economy. The negative impacts of climate change pose a significant risk to citizens, the economy, the environment and the delivery of local government services. This is especially relevant considering the risks from pluvial, fluvial and tidal flooding in Cork city and its environs. Cork City Council is directly responsible for over 10,000 public housing units. The Council also owns many municipal buildings and other facilities whose functions encompass the full range of local government activity and vary from area offices and libraries to civic amenity sites, parks, cemeteries, leisure centres and a major water treatment plant at the Lee Road.



3.8. Cork metropolitan area has many natural and developed advantages, which make it an attractive area to live, to visit and to carry out business in. These include:

- One of the largest natural harbours in the world;
- A significant power generation station and an oil refinery;
- A Tier 1 seaport and an international airport, plus important rail and road links/hubs;
- Well developed digital infrastructure;
- A critical mass of excellent educational institutions;
- Major hospital and medical/health sector facilities;
- A vibrant cultural, sporting and recreational scene;
- A strong economic sector (over 150 Foreign Direct Investment (FDI) companies); and
- Significant commercial and retail facilities.

3.9. However, when viewed through the lens of risk assessment climate change could make a significant impact on the economy and society of Cork and the Southern region. For example, the likelihood of a major flood event multiplied by the consequences of such an event in terms of danger and damage to citizens and infrastructure is greater in Cork city than many other cities. Having such a critical mass of infrastructure in the second largest city in Ireland means that when current and future climate change-related conditions and events become either the norm or occur at greater frequency and severity, many people, businesses and organisations will be negatively affected unless measures are put in place to adapt to climate change.

## 4. ADAPTATION ACTIONS & IMPLEMENTATION

### INTRODUCTION – GUIDING PRINCIPLES

4.1. A total of 55 actions under 7 themes have been identified to support Cork city's adaption to climate change and address the risks presented in Section 3. The seven key thematic areas, together with their objectives and actions, have been developed with the following four guiding principles, to ensure an understanding of the role of adaptation and that a coherent approach to the impacts of climate change is considered in the service delivery of Cork City Council.

- **Mainstream Adaptation:** That climate change adaptation is a core consideration and is mainstreamed in all Cork City Council services and activities. Additionally, it aims to ensure that Cork City Council is well positioned to benefit from economic development opportunities that may emerge due to a commitment to a proactive climate change adaptation and community resilience.
- **Informed Decision Making:** That effective and informed decision making within Cork City Council is based on reliable and robust information having regard to key impacts, risks and vulnerabilities of the county. This will support long term financial planning, effective management of risks and help to prioritise actions.
- **Building Resilience:** That improved awareness and appreciation of climate change will encourage communities to adapt to the anticipated impacts and promote a sustainable and robust action response and that the needs of vulnerable communities are prioritised and addressed.
- **Capitalising on Opportunities:** Predicted climate change can sometimes result in additional benefits and opportunities for the local authority. A register of opportunities will enable Cork City Council to encourage communities, stakeholders and interested parties to collaborate on the potential benefits of climate change.

## THEMES & ACTIONS

4.2. The 7 themes, which are of equal priority, are listed below.

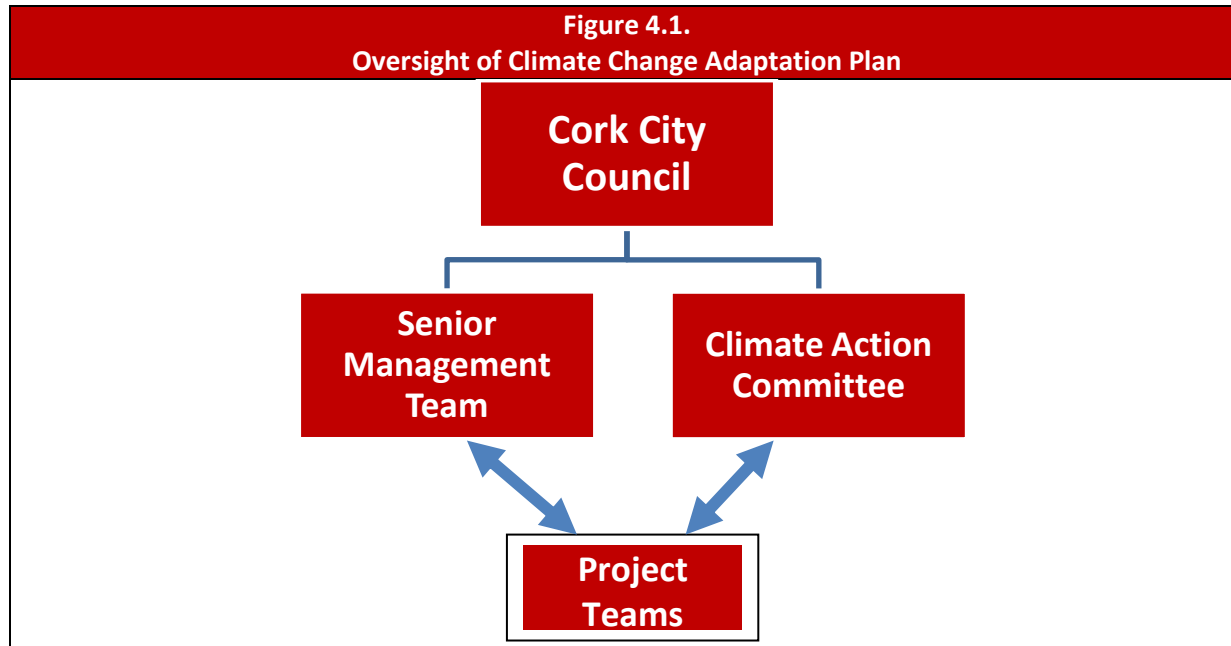
- 1) **Local Adaptation Governance and Business Operations:** To support implementations of adaptation planning in all Council activities and operations and to build resilience within Cork City Council to support service delivery.
- 2) **Infrastructure and Built Environment:** To increase resilience of roads and transport infrastructure and of Council owed assets, including municipal buildings, depots and the public housing stock.
- 3) **Land Use and Development:** To integrate climate action considerations into land-use planning.
- 4) **Drainage, Water and Flood Management:** To adapt to the increased risk and impact of flooding and to liaise and work with other bodies responsible for management of water resources.
- 5) **Nature, Natural Resources and Cultural Infrastructure:** To develop approaches to protect the natural and key cultural assets in Cork City Council.
- 6) **Citizen Safety, Health and Wellbeing:** To build capacity & resilience within communities in regard to climate adaptation.
- 7) **Partnerships with other Sectors and Agencies:** To collaborate with other Sectors and Agencies in programs relating to climate action and adaptation planning.

4.3. The seven thematic areas are presented in detail in the next section of the document, with proposed adaptation objectives and corresponding adaptation actions for the five year duration of this strategy.

4.4. The actions proposed in this strategy may be amended following submissions during the public consultation process. While some actions can be implemented as proposed, others will need further preparatory work prior to implementation. The proposed actions may also be modified to take account of actions proposed in other sectoral adaptation strategies and from other recent and future key publications such as the 'All of Government ' Climate Action Plan 2019.

**IMPLEMENTATION**

- 4.5. Cork City Council will establish suitable structures to oversee the implementation of this Climate Change Adaptation Strategy as illustrated in Figure 4.1. below. This governance is proposed until such time as the Strategic Policy Committees of Cork City Council are established, at which stage it is recommended that the members of Cork City Council review the governance structure for this strategy.
- **Cork City Council:** The elected members of Cork City Council are responsible for adoption of the Climate Change Adaptation Strategy. The City Council will approve any amendments to the strategy.
  - **Climate Action Committee:** One of the first actions of the newly elected City Council was to establish a Climate Action Committee. This committee will have oversight of the implementation of this strategy and make recommendations to Cork City Council in relation to any amendments to the plan.
  - **Senior Management Team:** The Senior Management Team will be responsible for the day –to-day delivery of the Climate Change Adaptation Strategy.
  - **Project Teams:** Project Teams will be established, where appropriate to implement the actions of the strategy. These teams may include members from directorates and other stakeholder organisations as outlined in the actions below.



## MONITORING

4.6. This adaptation strategy will be monitored by the elected members and senior management of Cork City Council to keep a record of progress made in implementing specific adaptation actions. Monitoring will be undertaken using key performance indicators (KPIs), which may evolve over time as the adaptation process matures and is mainstreamed. These indicators will be used to:

- Monitor the implementation of adaptation policies, measures and actions;
- Target, justify and monitor funding for adaptation programmes;
- Mainstream adaptation through links between sectors and related indicators;
- Communicate adaptation to policy and decision-makers and other stakeholders;
- Compare adaptation achievements across sectors, regions and countries; and
- Inform and report climate change adaptation progress to Government.

## EVALUATION

4.7. Evaluation of the adaptation strategy will be a systematic and objective process to determine the effectiveness of adaptation actions. Given the complexity and long-term nature of climate change, it is essential that adaptation is designed as a continuous and flexible process, and subjected to periodic review, both in terms of the validity of the underlying scientific assumptions and the appropriateness of projects, policies and programmes. Lessons learned and good practices identified during the monitoring and evaluation of ongoing and completed projects, policies and programmes should inform future actions, creating an iterative and evolutionary adaptation process. This means that adaptation actions will be informed by latest climate change data and projections. As a result, monitoring, and evaluation can help improve the efficiency and effectiveness of adaptation efforts within Cork City Council. Part of the monitoring will also involve documenting climate events themselves, which will inform future adaptation and mitigation policies.

**COMMUNICATION**

- 4.8. Public communication and outreach are essential to inform and educate residents of Cork to climate mitigation and adaptation measures. Cork City Council will build awareness on the challenges of climate change, keep the public informed on the implementation of this strategy and improve information flows during extreme weather events. A specific Communications Plan to support the implementation of the climate adaptation strategy will be developed to disseminate outcomes and updates to the various stakeholders. This will assist in the development of community forums to engage with the public so as to encourage greater participation and behavioural change in all aspects of climate adaptation and mitigation.

## CORK CITY COUNCIL ADAPTATION ACTIONS

## Local Adaptation Governance and Business Operations

## Objective 1: To support the successful and practical implementation of climate adaptation planning.

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
1.1	Establish a Climate Action Steering Group with representatives from all the key functions of Cork City Council, to oversee the implementation of the actions of this climate change adaptation strategy. This Team will implement actions, report and review the progress of the strategy and will encourage local innovation.	Strategic and Economic Development	Climate Action Steering Group		Short	In Progress
1.2	Integrate climate action into Cork City Council Service Delivery Programmes and provide for its translation into Team Development Plans and Personal Development Plans, to enable actions to be directly pursued by all relevant business units.	Senior Management Team	All Directorates Climate Action Steering Group		Short	Yes
1.3	Ensure that climate action is a regular standing item on the agenda of Senior Management Team (SMT) meetings and relevant Strategic Policy Committees (SPCs), with bi-annual progress reports submitted to the Climate Action Steering Group, as required.	Senior Management Team	All Directorates Strategic Policy Committees		Short	Yes
1.4	Liaise with the Climate Action Regional Office (CARO) and provide appropriate progress reports. Assist the local CARO in its development as a 'Centre of Excellence' for the region.	Strategic and Economic Development	Climate Action Steering Group	CARO	Short - Medium	Yes
1.5	Ensure that climate action is a key consideration in the assessment of all planning applications and provide guidance on climate action to developers in Cork City.	Strategic and Economic Development	Climate Action Steering Group Community, Culture and Placemaking	Southern Regional Assembly	Short	In Progress



Objective 2: To ensure that climate adaptation is mainstreamed into all relevant activities and operations of Cork City Council.						
No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
2.1	<p>The Climate Action Steering Group will be tasked with managing and overseeing the effective mainstreaming of climate adaptation measures into all plans, projects, programmes, strategies and policies of Cork City Council:</p> <p>(a) build and strengthen partnerships and promote inter-departmental communications and co-operation;</p> <p>(b) compile a list of all plans, projects, strategies and policies, including expected review/update timelines and ensure that climate action considerations are integrated into all reviews.</p> <p>(c) provide a framework for climate action projects to be included into future service delivery programmes;</p> <p>(d) report to SMT on progress; and</p> <p>(e) include climate adaptation within the following:</p> <ul style="list-style-type: none"> <li>• Corporate Plan</li> <li>• City Development Plan</li> <li>• Biodiversity Plan</li> <li>• Heritage Plan</li> <li>• Severe Weather Plan</li> <li>• Winter Maintenance Plan</li> <li>• Roads Programme</li> <li>• Housing Strategy</li> <li>• Local Economic and Community Plan</li> <li>• Tourism Strategy</li> <li>• Health &amp; Safety Plan</li> <li>• Energy Management Plan</li> <li>• Sustainable Energy and Climate Action Plan (SECAP).</li> </ul>	Climate Action Steering Group	<p>Senior Management Team</p> <p>All Directorates</p>	CARO	Short - Medium	In Progress

Objective 3: To develop and maintain a resource and risk model for Cork City Council.						
No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
3.1	<p>Evaluate Cork City Council’s activities that may be affected by climate change. The risk assessments will include:</p> <ul style="list-style-type: none"> <li>• collection and collation of historic weather event data for the Cork City Council region;</li> <li>• collection and evaluation of international and national data on projected climate patterns and the potential risks to Cork city; and</li> <li>• compile a list of Cork City Council’s assets that are vulnerable to climate change. Examine the current Sustainable Energy and Climate Action Plan (SECAP) for existing data.</li> </ul>	Strategic and Economic Development	<p>All Directorates</p> <p>Climate Action Steering Group</p>	CARO	Short - Medium	In Progress
3.2	<p>Develop a system to document, monitor and analyse data on the impact of extreme weather events on Cork City Council. This will identify the actions required to adapt quickly and effectively to extreme weather events and to restore public services, taking into account the following baselines:</p> <ul style="list-style-type: none"> <li>• nature and extent of extreme weather events and its impact on public service delivery;</li> <li>• impact of extreme weather events on Cork City Council’s assets;</li> <li>• staff resources required (and any deficits identified) to deal in a resilient way with all aspects of the impact of extreme weather events;</li> <li>• financial implications of extreme weather events;</li> <li>• number of days of closure of Cork City Council buildings and facilities;</li> <li>• staff working-days lost, including lost activities due to reassignment or loss of resources;</li> <li>• number of activations of Severe Weather Assessment Team;</li> <li>• number of emergency road closures;</li> <li>• number of emergency call-outs, plus representations and calls for assistance from elected representatives, customers, other sectors and members of the public;</li> <li>• number (and dates) of call-outs to deal with wild fires;</li> <li>• number of Health and Safety incidents;</li> <li>• number of kilometres of road treated in freezing and high temperature conditions;</li> <li>• the nature, extent and cost of service provided to or obtained from other sectors; and</li> <li>• the proportion of the impacts that is deemed to derive from climate change.</li> </ul>	Roads and Environmental Operations	<p>Climate Action Steering Group</p> <p>Customer Services Unit</p> <p>Flood and Severe Weather Assessment Teams</p> <p>Major Emergency Management Team</p>	CARO	Short	In Progress

Objective 4: To build resilience within Cork City Council to support service delivery.						
No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
4.1	<p>Develop Business Continuity Plans to identify and address specifically the impacts associated with extreme weather events on all functions/services of Cork City Council and to explore potential opportunities to increase resilience. This will involve:</p> <ul style="list-style-type: none"> <li>preparation for and minimisation of the impacts of service disruption;</li> <li>assessment of Cork City Council’s back-up systems infrastructure (including power outage back-up procedures) to ensure resilience;</li> <li>assessment of the impact of climate events on outdoor working/ site visits and any impacts on deadlines and levels of service provision;</li> <li>assessment of staff working environments during extreme weather events, and a review of potential ways to maintain safe working conditions and the provision of alternative working locations; and</li> <li>development of plans for staff deployment and availability due to travel restrictions.</li> </ul>	Roads and Environmental Operations	Plant and Machinery  ICT Services  Severe Weather Assessment Team  Corporate Affairs and International Relations	CARO	Short - Medium	Not yet Identified
4.2	<p>Develop a Communications Contingency Plan to identify essential key staff to be able to access all essential council systems remotely, so as to reduce or eliminate impacts on statutory deadlines and backlog. This will include:</p> <ul style="list-style-type: none"> <li>maintaining the internal communication protocol for extreme weather events to increase staff awareness of potential risk to safety, and to ensure all staff travel only in safe conditions;</li> <li>development of internal back-up communication systems to ensure communication for emergency responders is maintained in the event of disruption to the main communication system(s); and</li> <li>development of external back-up communication systems to ensure effective communication with external partners during severe weather events.</li> </ul>	ICT Services	Severe Weather Assessment Team  Fire Services  Corporate Affairs and International Relations	Gardaí  Defence Forces  Port of Cork  OPW  Irish Water  Health Services Executive	Short - Medium	Not yet Identified

Objective 5: To build capacity within Cork City Council to respond effectively to extreme weather events.						
No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
5.1	Develop a climate change training programme to educate staff and elected members on the implications of climate change and how to effectively address the effects of climate change on Council operations and services and to build capacity within Cork City Council.	Training Department	All Directorates	CARO	Short - Medium	In Progress
5.2	Assist in building resilience and capacity within local businesses and communities to enhance the overall response to extreme weather events.	Community, Culture and Placemaking	Climate Action Steering Group	CARO Cork Chamber Cork Business Association	Short - Long	Not yet Identified
5.3	Support existing extreme weather event response arrangements and investigate further deployment of early warning systems (e.g. Flood Early Warning System (FEWS)), along with reviewing and collating information on existing early warning systems.	Roads and Environmental Operations	ICT Services Severe Weather Assessment Team	Met Éireann Office of Public Works ESB Transport Infrastructure Ireland	Short - Long	In Progress
5.4	Investigate the potential for technology-based solutions for the coordination of responses to climate events in the areas of ICT and GIS.	ICT Services	Fire Service Severe Weather Assessment Team	CARO	Short	Not yet Identified

Objective 6: To identify and support opportunities that may arise from pursuing adaptation efforts through the functions of Cork City Council						
No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
6.1	Identify, source and leverage funding streams for the implementation of climate change actions (including both adaptation and mitigation).	Strategic and Economic Development	All Directorates  Climate Action Steering Group	CARO  Southern Regional Assembly  Energy Cork	Short - Long	In Progress
6.2.	Support, encourage and develop the move to digital services and exploit new ideas which seek to capture opportunities associated with the environmental and technological advances that support climate actions. An example would be leveraging the progress achieved during the Smart Cities project.	Strategic and Economic Development	All Directorates  ICT Services  Cork City Energy Agency	CARO  Public Participation Network  Cork Environment Forum	Short - Long	In Progress

6.3	Collaborate and work with businesses in seeking new ideas to reduce the impact of climate change on Cork city.	Strategic and Economic Development	Cork City Energy Agency	CARO Local Community Development Committee Public Participation Network Cork Environment Forum Energy Cork Tidy Towns Environment Protection Agency Local Enterprise Office Cork Chamber Cork Business Association	Short - Long	To be Assessed
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## Infrastructure and Built Environment

### Objective 7: To increase the resilience of roads and transport infrastructure.

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
7.1	<p>Develop a system to document, monitor and analyse roads and transport infrastructure that is vulnerable to the impacts of climate change and severe weather events including roads, bridges, walking and cycling facilities, rail and bus networks, the airport and the seaport. The system shall take into account the following:</p> <ul style="list-style-type: none"> <li>review information available from past events &amp; liaise with any existing asset management systems;</li> <li>compile a vulnerable infrastructure inventory to aid works prioritisation and inform route prioritisation plans;</li> <li>establish a procedure for structural integrity assessments of infrastructure after extreme weather events;</li> <li>communicate with external stakeholders on assets that would be required during an extreme weather event;</li> <li>integrate climate considerations into the design, planning and construction of all transport infrastructures;</li> <li>develop a transport plan for a severe weather event and distribute to relevant external stakeholders; and</li> <li>integrate climate change adaptation (and mitigation) measures into the design, planning and construction of all roads and transport infrastructure, with a priority given to nature-based solutions e.g. Sustainable Drainage Systems (SuDS).</li> </ul>	Roads and Environment Operations	<p>Major Emergency Management Team</p> <p>Flood Assessment Team</p> <p>Planning Policy Team</p> <p>Local Enterprise Office</p> <p>Smart Cities</p> <p>Healthy Cities</p> <p>Learning Cities</p>	<p>Cork County Council, Civil Defence, Cork Airport, Port of Cork, Bus Éireann, Irish Rail, National Transport Authority, Transport Infrastructure Ireland, Cork Chamber, Cork Business Association, Public Participation Network, Irish Water, Eirgrid, Gas Networks Ireland.</p>	Short	To be Assessed

**Objective 8: To increase the resilience of Cork City Council buildings, housing stock, parks and cemeteries and other capital assets.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
8.1	<p>Develop a system, in the context of climate vulnerabilities, for the management of capital assets, including buildings, housing stock, fleet, recreation areas and public amenities:</p> <ul style="list-style-type: none"> <li>review information available from existing asset management systems;</li> <li>analyse information from past events and the impacts of climate change for future events;</li> <li>compile a vulnerable infrastructure inventory to aid works prioritisation;</li> <li>establish a procedure for structural integrity assessments of assets after extreme weather events;</li> <li>integrate climate change (adaptation and mitigation) measures into the design, planning and construction of all capital projects, with priority given to nature-based solutions; and</li> <li>analyse the suitability of the Council’s fleet to operate during extreme weather events.</li> </ul>	Roads and Environment Operations	<p>Infrastructure Development (Capital Delivery Office)</p> <p>Climate Action Steering Group</p> <p>Plant and Machinery</p>	CARO	Short - Medium	To be Assessed
8.2	Identify, resource and install new technologies (or update existing) in council buildings/housing assets to reduce the impacts of climate change on staff, customers, the general public and residents.	Housing & Corporate Affairs and International Relations	<p>Roads and Environment Operations</p> <p>Building Control City Architect</p>	CARO	Long	To be Assessed
8.3	Review the Social Housing Tenant’s Handbook to increase awareness of extreme weather events and provide climate change resilience information to the tenants.	Housing	Community, Culture and Placemaking	CARO	Short	To be Assessed
8.4	Support the rollout of electric vehicles and electric vehicle-charging infrastructure in Cork city, beginning with Cork City Council’s fleet.	Roads and Environment Operations	<p>Plant and Machinery</p> <p>Energy Team</p>	<p>Sustainable Energy Authority of Ireland (SEAI)</p> <p>Energy Cork Transport Infrastructure Ireland</p>	Short	To be Assessed



## Land Use and Development

**Objective 9: To integrate climate action considerations into land use planning policy and influence positive behaviour.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
9.1	<p>Identify and integrate climate change actions into the Development Plan and Local Area Plans.</p> <p>Integrate climate action as a guiding principle and strategic objective, thus tailoring planning policies to reduce the vulnerability of Cork city to the impacts of climate change, by:</p> <ul style="list-style-type: none"> <li>enhancing the role of the natural environment to promote climate adaptation by promoting nature-based solutions e.g. green infrastructure;</li> <li>continuing to take a minimised risk-based approach to development in areas at risk of flooding (coastal, tidal, fluvial, pluvial and groundwater);</li> <li>promoting climate resilient designs and materials; and</li> <li>promoting energy efficiency and renewable energy solutions and water conservation measures in new developments.</li> </ul>	Strategic and Economic Development	<p>All Directorates</p> <p>Climate Action Steering Group</p>	CARO	Short	In Progress
9.2	Engage with energy and service providers to ensure that energy infrastructure and services are resilient to the impacts of climate change.	Roads and Environment Operations	Climate Action Steering Group	<p>Eirgrid ESB</p> <p>Bord Gais</p> <p>Gas Networks Ireland</p>	Short	To be Assessed
9.3	Ensure that climate change is a key consideration in selecting locations for future developments and that this is reflected in land use zoning policy.	Strategic and Economic Development	Community, Culture and Placemaking	CARO	Short - Medium	Yes

## Drainage, Water and Flood Management

**Objective 10: To adapt to the increased risk and impact of flooding due to climate change.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
10.1	Develop a flood risk management system for council assets and services: <ul style="list-style-type: none"> <li>analyse information from past events and the impacts of flooding for future events;</li> <li>compile an inventory of vulnerable assets and services; and</li> <li>review current flood maps of areas vulnerable to flooding and indicate flooding levels for a range of future scenarios.</li> </ul>	Roads and Environment Operations	Climate Action Steering Group  Flood Assessment Team	CARO  OPW  ESB  Port of Cork	Short - Medium	To be Assessed
10.2	Work with the Office of Public Works (OPW) and other organisations to share information in relation to flood risk and in the development of major and minor flood protection and flood proofing schemes throughout Cork city.	Roads and Environment Operations	Climate Action Steering Group  Flood Assessment Team	OPW  Flood Early Warning System (FEWS) ESB  Port of Cork	Short	Yes
10.3	Ensure that flood event emergency response plans are reviewed on a regular basis to reflect the degree of flood risk.	Roads and Environment Operations	Flood Assessment Team  Fire Service	OPW  Flood Early Warning System (FEWS) ESB	Short	Yes

10.4	Identify natural floodplains in Cork city and incorporate nature-based solutions in any enhancement works where possible.	Roads and Environment Operations	Flood Assessment Team	OPW Flood Early Warning System (FEWS)	Medium – Long	To be Assessed
10.5	Identify areas susceptible to isolation as a consequence of flooding and establish measures to address this issue.	Infrastructure Development (Capital Delivery Office)	Flood Assessment Team Roads and Environment Operations Fire Service	OPW Flood Early Warning System (FEWS) Civil Defence Defence Forces HSE	Short	To be Assessed
10.6	Review the current drainage systems for which Cork City Council is responsible for, by: <ul style="list-style-type: none"> <li>• compiling an inventory of existing drainage districts;</li> <li>• identify areas that are susceptible to surface water flooding; and</li> <li>• adapting existing maintenance plans, taking into account impacts from climate change such as increased siltation and plant growth, and increased rainfall.</li> </ul>	Roads and Environment Operations	Infrastructure Development (Capital Delivery Office)	Irish Water	Short	In Progress
10.7	Develop a system for the upgrade of drainage networks, including the separation of sewer and surface water to increase resilience capacity.	Infrastructure Development (Capital Delivery Office)	Flood Assessment Team	Irish Water	Medium	In Progress
10.8	Investigate the use of smart monitoring in the management of the drainage systems for which Cork City Council is responsible for.	Roads and Environment Operations	ICT Services	Irish Water	Short	To be Assessed

**Objective 11: To provide adequate drinking water supply and waste water treatment during extreme weather events.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
11.1	Support Irish Water in the provision of treated water from major water treatment plants during extreme weather events.	Roads and Environment Operations	Major Emergency Management Team	Irish Water	Short - Long	To be Assessed
11.2	Ensure the emergency services have access to water during extreme weather events (snow, frost, ice and drought).	Roads and Environment Operations	Major Emergency Management Team Fire Service	Irish Water	Short - Long	In Progress

**Objective 12: To liaise and work with other bodies and agencies responsible for the management of water sources.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
12.1	Support Irish Water where possible in identifying public drinking water sources vulnerable to climate change. Support the implementation of source protection and or the identification of alternative sources, in order to maintain water quantity and quality levels.	Roads and Environment Operations	Healthy Cities	Irish Water	Short - Long	To be Assessed
12.2	Support Irish Water where possible to identify the impacts of power outages of varying durations on specific water and wastewater scheme operations. Support the identification of critical and vulnerable receptors.	Roads and Environment Operations	Healthy Cities	Irish Water	Short	To be Assessed
12.3	Liaise, support and work with Irish Water in the development, conservation and upgrade of the water supply systems so as to ensure Cork city has an adequate supply of water to address climate change demands.	Roads and Environment Operations	Healthy Cities	Irish Water	Short	To be Assessed

## Nature, Natural Resources and Cultural Infrastructure

### Objective 13: To protect and enhance and restore the natural environment.

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
13.1	Support and enhance a shrub and tree planting programme for Cork City in conjunction with an awareness campaign in the context of climate adaptation. The tree planting programme will include the protection of existing trees, increasing tree cover, identifying new sites for additional tree planting and the protection of trees on private land. Support the planting of native species.	Roads and Environment Operations	Community, Culture and Placemaking	Cork Environment Forum Coillte	Short – Medium	In Progress
13.2	Review roadside hedge maintenance programmes in conjunction with landowners.	Roads and Environment Operations	Community, Culture and Placemaking	Landowners	Short - Long	To be Assessed
13.3	Support and enhance a programme for monitoring and controlling the spread of alien invasive species. Alien invasives will become more of a problem due to climate change, thus increasing threats to native species, in addition to causing structural damage to infrastructure.	Roads and Environment Operations	Community, Culture and Placemaking	Landowners National Parks and Wildlife Service	Short - Long	To be Assessed
13.4	Support and enhance a pollinator plan, paying attention to the threats from climate change e.g. seasonal disruption, increased severe weather events.	Roads and Environment Operations	Community, Culture and Placemaking	Landowners National Parks and Wildlife Service	Short - Long	To be Assessed

13.5	<p>Identify potential ecological corridors and connectivity issues between areas. Identify the potential to open up culverted rivers and incorporate softer engineering solutions.</p> <p>Identify locations to create new habitats for native flora and fauna e.g. urban orchards, allotments, green roofs and walls, which will assist in negating the 'heat island effect'.</p> <p>Protect existing wetlands and identify new ones which may arise as a result of climate change.</p>	Strategic and Economic Development	Community, Culture and Placemaking  Roads and Environment Operations	Landowners  National Parks and Wildlife Service	Short - Long	To be Assessed
13.6	<p>Protect natural resources through waste prevention and recycling. Support national and regional initiatives e.g. the policy actions of the Regional Waste Management Plan, the EPA's Local Authority Prevention Network and Local Agenda 21.</p> <p>Promote behavioural change in relation to the use of natural resources through initiatives as the 'Waste prevention grant scheme'.</p> <p>Work with communities to enable them to develop an appreciation of natural resource protection, thus highlighting the link with climate change.</p>	Roads and Environment Operations	Community, Culture and Placemaking	Waste Enforcement Regional Lead Authorities (WERLA)  OPW	Short - Long	In Progress
13.7	<p>Adopt 'Green Public Procurement', moving from 'most economically advantageous' to a 'life-cycle costing model'.</p>	Finance	Climate Action Steering Group	CARO  Office of Government Procurement	Short - Long	To be Assessed

**Objective 14: To review, manage and protect biodiversity and natural heritage within the natural environment.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
14.1	<p>Collaborate with the National Parks and Wildlife Service (NPWS) and research organisations (UCC, CIT, Marine Institute) in the review of biodiversity plans and habitat conservation strategies, and projects to identify risks from adverse climate change impacts.</p> <p>Work with communities and schools to create and implement local Biodiversity Action Plans.</p>	Strategic and Economic Development	Roads and Environment Operations	National Parks and Wildlife Service  UCC  CIT  Marine Institute	Short - Long	To be Assessed
14.2	<p>Develop a green infrastructure strategy and associated action plan, including:</p> <ul style="list-style-type: none"> <li>the research and mapping of areas considered beneficial for use as local carbon offsets through carbon sequestration in conjunction with the relevant agencies; and</li> <li>the integration of nature-based solutions in all City Council development / works (roads, housing, architecture, parks and water infrastructure).</li> </ul>	Strategic and Economic Development	Roads and Environment Operations  Architects	Landowners  National Parks and Wildlife Service  Coillte  Tidy Towns  Cork Environment Forum	Short - Long	To be Assessed

**Objective 15: To support and enhance built heritage and cultural infrastructure.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
15.1	<p>Develop a system to document, monitor and deliver actions on reducing the impacts of climate change on Cork City Council’s natural and built heritage and cultural assets, including the following:</p> <ul style="list-style-type: none"> <li>• gather baseline data in order to monitor change e.g. map existing green areas, carry out habitat surveys;</li> <li>• create a risk register for the natural and built heritage and cultural assets; and</li> <li>• introduce ‘natural capital accounting’ which gives natural heritage a monetary value due to its association with tourism and overall health and wellbeing.</li> </ul>	Strategic and Economic Development	Climate Action Steering Group	CARO	Short - Long	To be Assessed
15.2	<p>Raise awareness and support positive behavioural change among staff, schools, community, homeowners and developers. Actions to include:</p> <ul style="list-style-type: none"> <li>• training and workshops;</li> <li>• information materials (brochures, educational packs, information boards); and</li> <li>• increased use of social media and attendance at events and festivals.</li> </ul>	Strategic and Economic Development	Climate Action Steering Group	CARO	Short - Long	To be Assessed



## Citizen Safety, Health and Wellbeing

### Objective 16: To consult, identify actions and build capacity and resilience within local communities.

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
16.1	<p>Develop public awareness campaigns to increase knowledge of and encourage behavioural change around climate change and extreme weather events. Activities to include:</p> <ul style="list-style-type: none"> <li>• training and workshops;</li> <li>• information materials (brochures, educational packs, information boards);</li> <li>• increased use of social media; and</li> <li>• attendance at events and festivals.</li> </ul>	Strategic and Economic Development	<p>Corporate Affairs and International Relations</p> <p>Community, Culture and Placemaking</p> <p>Climate Action Steering Group</p>	<p>CARO</p> <p>MET Éireann</p>	Short	To be Assessed
16.2	<p>Develop and implement a programme to enhance the capacity of citizens, businesses and communities to respond to and recover from extreme weather events with specific aims to:</p> <ul style="list-style-type: none"> <li>• provide assistance where possible to vulnerable communities to develop a stronger facilitating role for mitigating risks;</li> <li>• provide advice on the risk of extreme events affecting their locality;</li> <li>• devise adaptation actions to enhance preparedness and reduce dependency on local authority emergency responses; and</li> <li>• provide support to develop appropriate resilience arrangements to enable response and recovery.</li> </ul>	Roads and Environment Operations	<p>Corporate Affairs and International Relations</p> <p>Climate Action Steering Group</p> <p>Fire Services</p> <p>Local Enterprise Office</p>	<p>Civil Defence</p> <p>Gardaí</p> <p>HSE</p> <p>Health and Safety Authority</p>	Short - Medium	To be Assessed

16.3	<p>Raise awareness of the impacts of climate change and the ways for citizens, businesses and communities to respond appropriately and to increase resilience to these impacts. This should include:</p> <ul style="list-style-type: none"> <li>• develop and implement a behavioural change plan for citizens, businesses and communities to change behaviours, understand and better deal with climate change and extreme weather events;</li> <li>• provide and promote information on extreme weather event preparedness, including property security and safety;</li> <li>• highlight health issues related to extreme weather events;</li> <li>• raise public safety awareness;</li> <li>• raise water safety awareness for unsupervised watercourses in local areas; and</li> <li>• promote local resources to adapt to extreme weather events e.g. road salting.</li> </ul>	Community, Culture and Placemaking	Fire Service	Public Participation Network	Short	To be Assessed
			Climate Action Steering Group	Civil Defence		
			Healthy Cities	OPW Gardaí		
			Local Enterprise Office	HSE Health and Safety Authority		
				Irish Water		
				Port of Cork		
				Cork Airport		
				Irish Rail		
				Waterways Ireland Transport Infrastructure Ireland		
16.4	<p>Explore ways Cork City Council can help older, vulnerable and isolated people/communities to become more climate resilient.</p>	Community, Culture and Placemaking	Strategic and Economic Development	Public Participation Network	Short - Medium	To be Assessed
			Climate Action Steering Group	Age Action		
			Healthy Cities	Local Community Groups		
16.5	<p>Collaborate with third level and other research facilities to investigate the potential of climate action technologies and their application in Cork city, in conjunction with innovation and research funding at national and EU level.</p>	Strategic and Economic Development	Climate Action Steering Group	UCC / CIT National and International Research Centres.	Medium - Long	To be Assessed

# Partnerships with other Sectors and Agencies

**Objective 17: To collaborate with other sectors and agencies in programs relating to climate change.**

No.	Action	Responsible Lead Council Directorate / Team	Council Teams	External Partners	Action Timeframe	Resourced
17.1	Liaise, collaborate and work in relevant partnership with the sectors in the delivery of the sectoral adaptation actions, as approved by Government, where they are relevant to the functions and activities of Cork City Council.	Strategic and Economic Development	All Directorates	CARO <u>Departments of:</u>  Agriculture, Food and the Marine  Culture, Heritage and the Gaeltacht  Transport, Tourism and Sport  Communications, Climate Action and Environment  OPW  Housing, Planning and Local Government  Health	Short - Long	To be Assessed

## Appendix A: The Science Behind Climate Change

An Intergovernmental Panel on Climate Change (IPCC) Special Report in 2018 states that human activities are estimated to have caused approximately 1.0 degree C of global warming with a *likely* range of 0.8 degrees C to 1.2 degrees C. Global warming is *likely* to reach 1.5 degree C between 2030 and 2052 if it continues to increase at the current rate (high confidence). [31].

This coincided with an increase in the average global temperature of 0.74°C between 1906 and 2005. In 2013, the U.S. National Oceanic and Atmospheric Administration announced that CO<sub>2</sub> levels had reached 400ppm [32]. The World Meteorological Organization (WMO) Greenhouse Gas Bulletin (No.14/22 Nov 2018) showed that globally averaged concentrations of carbon dioxide (CO<sub>2</sub>) reached 405.5 parts per million (ppm) in 2017, up from 403.3 ppm in 2016 and 400.1 ppm in 2015. [33]. As far back as 2013, the IPCC concluded that "human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes.... it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century" [34]. The IPCC Climate Change 2014 Synthesis Report summed up observed changes in the climate system as follows: 'Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished and sea level has risen. [35]. In 2019, a research paper in the journal 'Advances in Atmospheric Sciences' states that 2018 has set a new record of ocean heating, surpassing 2017, which was the previous warmest year ever recorded. The vast majority of global warming heat ends up deposited in the world's oceans, and ocean heat content change is one of the best – if not the best – metric for climate change. [36] While the World Meteorological Organization (WMO) [37] released its analysis in 2013 that shows that the decade spanning 2001-2010 was the warmest ever recorded in all continents of the globe, a February 2019 newsletter from the Climate Central organisation uses NASA and NOAA data to declare that 2018 was the fourth-hottest year on record globally, with the five warmest years on record happening during the past five years – and the 20 warmest occurring over the past 22 years. [38]

## Appendix B: Adaptation Policy Contexts

### International Context

The Paris Agreement 2015 (set within the context of the United Nations Framework Convention on Climate Change (UNFCCC)), was ratified by Ireland on 4th Nov 2016, and it is aimed at:

- limiting global warming to less than 2.0 C above pre-industrial level and pursue efforts to limit the temperature increase to 1.5C; and
- building resilience and increasing the ability to mitigate the impacts of climate change.

The agreement requires all the parties to formulate and implement National Adaption Plans.

One of the 17 United Nations Sustainable Development Goals (SDG No 13) calls on countries to ‘take urgent actions to combat climate change and its impacts’ and to integrate effective Climate Action measures into national policies.

### European Context

The 2013 EU Strategy on Adaptation to Climate Change encouraged all Member States to adopt comprehensive adaptation strategies. It sought for better informed decision making through the identification and addressing of gaps in knowledge about adaptation. The European Climate Adaptation Platform, Climate-ADAPT, was developed as a resource mechanism to help users access and share information on adaptation.

The Global Covenant of Mayors for Climate and Energy is a voluntary, bottom up, approach for cities and local governments to combat Climate Change and move towards a low emission, resilient society. The Global Covenant of Mayors for Climate and Energy brought the Compact of Mayors and the EU Covenant of Mayors under one international body in January 2017 incorporating over 9,000 cities and local governments. Cork City Council is a signature party to the Covenant of Mayors.

## Sectoral Context

Twelve sectors across seven government departments/agencies which will be developing individual climate adaptation strategies.

Sector	Parent Department
Seafood	Department of Agriculture, Food and the Marine
Agriculture	Department of Agriculture, Food and the Marine
Forestry	Department of Agriculture, Food and the Marine
Biodiversity	Department of Culture, Heritage and the Gaeltacht
Built and archaeological heritage	Department of Culture, Heritage and the Gaeltacht
Transport infrastructure	Department of Transport, Tourism and Sport
Electricity and gas networks	Department of Communications, Climate Action and Environment
Communications networks	Department of Communications, Climate Action and Environment
Flood risk management	Office of Public Works
Water quality	Department of Housing, Planning and Local Government
Water services infrastructure	Department of Housing, Planning and Local Government
Health	Department of Health

Under the non-statutory 2012 Framework, four Government departments prepared draft sectoral plans covering 5 sectors. These plans are:

- Sectoral Adaptation Plan for Flood Risk Management (OPW, 2015);
- Adaptation Planning - Developing Resilience to Climate Change in the Irish Agriculture and Forest Sector (DAFM, 2017);
- Adaptation Planning - Developing Resilience to Climate Change in the Irish Transport Sector (DTTAS, 2017); and

- Adaptation Plan for the Electricity and Gas Networks Sector (DCCA, 2017).

Government departments must develop statutory sectoral adaptation plans in accordance with the National Adaptation Framework (NAF) and the six-step adaptation planning process described in the May 2018 [Sectoral Planning Guidelines for Climate Change Adaptation](#) [39]. These guidelines aim to ensure that a coherent and consistent approach to adaptation planning will be adopted by the key sectors in Ireland.

Actions in completed plans could include those actions that:

- mainstream (integrate) adaptation into key sectoral plans and policies;
- identify and understand the key vulnerabilities, risks and opportunities facing their sectors. This should include major cross cutting risks;
- ensure that plans related to emergencies assigned to a sectoral department as lead Government department under the Strategic Emergency Planning Guidelines are climate-proofed;
- identify and collect information on the costs and benefits of adaptation within their sectors;
- build capacity within their sectors to cope with climate change;
- identify and address key research gaps within their sectors;
- improve co-ordination with the local government sector; and
- develop appropriate monitoring and verification systems within their sectors.

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**Appendix E: Strategic Environmental Screening Report**

# Strategic Environmental Assessment Screening Report

For

Draft Climate Change Adaptation Strategy for Cork City Council

Determination of the need for a Strategic Environmental Assessment for Cork City Council  
Climate Change Adaptation Strategy prepared under the National Climate Change Adaptation  
Framework

June 2019

ON BEHALF OF

Atlantic Seaboard South Region Climate Action Regional Office (CARO)

**DOCUMENT CONTROL SHEET**

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
1.0	Draft for Consultation	Muriel Ennis Principal Environmental Consultant	Muriel Ennis Principal Environmental Consultant	Jim Dowdall Director	27 <sup>th</sup> June 2019

## 1 INTRODUCTION

### 1.1 Background

The Earth's Climate is changing. While natural fluctuations in climate are considered normal, emerging research and observational records from across the world show rates of change that are far greater than those experienced in recent history. Global temperatures have risen and are projected to rise further bringing changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather. Ireland's climate is changing in line with global patterns and these changes are bringing significant and wide ranging economic, environmental and social impacts.

Climate change is now recognised as a global challenge with policy responses required in terms of both mitigating the causes of climate change and in adapting to the now inevitable consequences of our changing climate. Action at local level is vitally important to help reduce the risks and impacts of climate change across communities.

This local authority Draft Climate Change Adaptation Strategy forms part of Ireland's national strategy for climate adaptation as set out in the National Adaptation Framework (NAF) which was produced under the provisions of the Climate Action and Low Carbon Development Act 2015.<sup>1</sup>

It is tasked with mainstreaming climate change adaptation over time into all functions, operations and services of the local authority. It seeks to inform or 'climate proof' existing plans and policies produced and implemented by the local authority. This ensures a considered, consistent and coherent approach, facing head-on the challenges of a changing climate. Crucially, it also helps in building resilience within the local authority organisation itself as well as across all communities.

<sup>1</sup> Climate Action and Low Carbon Development Act 2015 (S.I. No. 25/2016). Available at <http://www.irishstatute-book.ie/eli/2015/act/46/enacted/en/htm>



## 2 LEGISLATIVE CONTEXT

### 2.1 Strategic Environmental Assessment

A Strategic Environmental Assessment (SEA) is the formal, systematic evaluation of the likely significant environmental effects of implementing a plan or program, or variation to a plan or program, before a decision is made to adopt it. The SEA Directive<sup>2</sup> requires, inter alia, that SEA is undertaken for certain plans, programs or variations to these.

The SEA Directive has been transposed into Irish law through the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004) and The Planning and Development Strategic Environmental Assessment (SEA) Regulations 2004 (S.I. 436 of 2004). These Regulations have since been amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (S.I. No. 200 of 2011) and the Planning and Development (SEA) (Amendment) Regulations 2011 (S.I. No. 201 of 2011). The criteria as set out in Annex II of The SEA Directive (Directive 2001/42/EC) on the assessment of the effects of certain plans and programmes on the environment, this criteria is also set out in Schedule 1 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004) need to be considered while drafting the Climate Change Adaptation Strategy.

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<sup>2</sup> Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27th June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment

This SEA screening report is consistent with the process as recommended by The Department of Environment, Heritage and Local Government guidance document entitled Implementation of SEA Directive 2001/42/EC Assessment of the Effects of Certain Plans and Programmes on the Environment November 2004, specifically Chapter 3 (SEA: Screening and Scoping) and furthermore uses the criteria for SEA screening criteria set out in the SEA Directive.

An Appropriate Assessment Screening Report has also been prepared for this Draft Climate Change Adaptation Strategy in line with Article 6(3) of the EU Habitats Directive (92/43/EEC).

## **2.2 Climate Change Adaptation**

### **2.2.1 International Context**

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty adopted in May 1992. The framework's objective is "to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". The framework did not set binding limits on greenhouse gas emissions and contained no enforcement mechanisms. However, the framework outlined how specific international treaties may negotiate further action towards its key objective. The Paris Agreement 2015 is a protocol set within the context of the UNFCCC (ratified by Ireland on 4<sup>th</sup> November 2016) and it is aimed at:

- Limiting global warming to less than 2°C above pre-industrial level and pursuing efforts to limit the temperature increase to 1.5°C.
- Building resilience and increasing the ability to mitigate the impacts of climate change.

The agreement states the need for Parties to formulate and implement National Adaptation Plans.

### **2.2.2 EU Context**

The 2013 EU Strategy on Adaptation to Climate Change encouraged all Member states to adopt comprehensive adaptation strategies. It sought better informed decision making through the identification and addressing of gaps in knowledge about adaptation. The European Climate Adaptation Platform Climate-ADAPT, was developed as a resource mechanism to help users access and share information on adaptation.

The Global Covenant of Mayors for Climate and Energy is a voluntary, bottom up, approach for cities and local governments to combat Climate Change and move towards a low emission, resilient society. The Global Covenant of Mayors for Climate and Energy brought the Compact of Mayors and the EU Covenant of Mayors under one international body in January 2017 incorporating over 9,000 cities and local governments.

### **2.2.3 National Context**

The 2012 National Climate Change Adaptation Framework (NCCAF) was Ireland's first step in developing a national policy on adaptation actions to combat the impacts of climate change.

The National Policy Position on Climate Action and Low Carbon Development 2014 restated the policy position of the NCCAF, 2012. Greenhouse gas mitigation and adaptation to the impacts of climate change were to be addressed in parallel national plans under an evolving climate policy to 2050.

The Climate Action and Low Carbon Development Act 2015 was a landmark national milestone in the evolution of climate change policy in Ireland. It provides the statutory basis for the national transition objective laid out in the National Policy Position (as per above). Further to this, it made provision for and gives statutory authority to both the National Mitigation Plan (NMP), published in 2017 and the National Adaptation Framework (NAF) published in 2018. This Local Adaptation Strategy forms part of the National Adaptation Framework.

The Local Authority Adaptation Strategy Development Guidelines 2018 provides guidance to Local Authorities to develop their own Climate Action Adaptation Strategy. In developing this adaptation strategy Cork City Council has been consistent with these guidelines.

### 3 DETERMINING WHETHER AN SEA IS REQUIRED

The objective of the SEA Directive for the assessment of the effects of certain plans and programmes on the Environment is to

“provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.”<sup>3</sup>

<sup>3</sup> Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27th June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment

### 3.1 Cork City's Draft Climate Change Adaptation Objectives

The purpose of the Cork City Council's Draft Climate Change Adaptation Strategy is to achieve the national objective of becoming a more climate resilient society and economy by 2050. In order to help tackle current and future challenges that climate change can present, Cork City Council have set out a number of key objectives in their strategy, under thematic principles. Table 1 below outlines Cork City Council's Draft Climate Change Adaptation Strategy objectives per theme.

TABLE 1 CORK'S CITY'S DRAFT CLIMATE CHANGE ADAPTATION STRATEGY OBJECTIVES

Local Adaptation Governance and Business Operations	
1	To support the successful and practical implementation of climate adaptation planning.
2	To ensure that climate adaptation is mainstreamed into all relevant activities and operations of Cork City Council.
3	To develop and maintain a resource and risk model for Cork City Council.
4	To build resilience within Cork City Council to support service delivery.
5	To build capacity within Cork City Council to respond effectively to extreme weather events.
6	To identify and support opportunities that may arise from pursuing adaptation efforts through the functions of Cork City Council.
Infrastructure and Built Environment	
7	To increase the resilience of roads and transport infrastructure.
8	To increase the resilience of Cork City Council buildings, housing stock, parks and cemeteries and other capital assets.
Land Use and Development	
9	To integrate climate action considerations into land use planning policy and influence positive behaviour.
Drainage, Water and Flood Management	
10	To adapt to the increased risk and impact of flooding due to climate change.
11	To provide adequate drinking water supply and waste water treatment during extreme weather events.

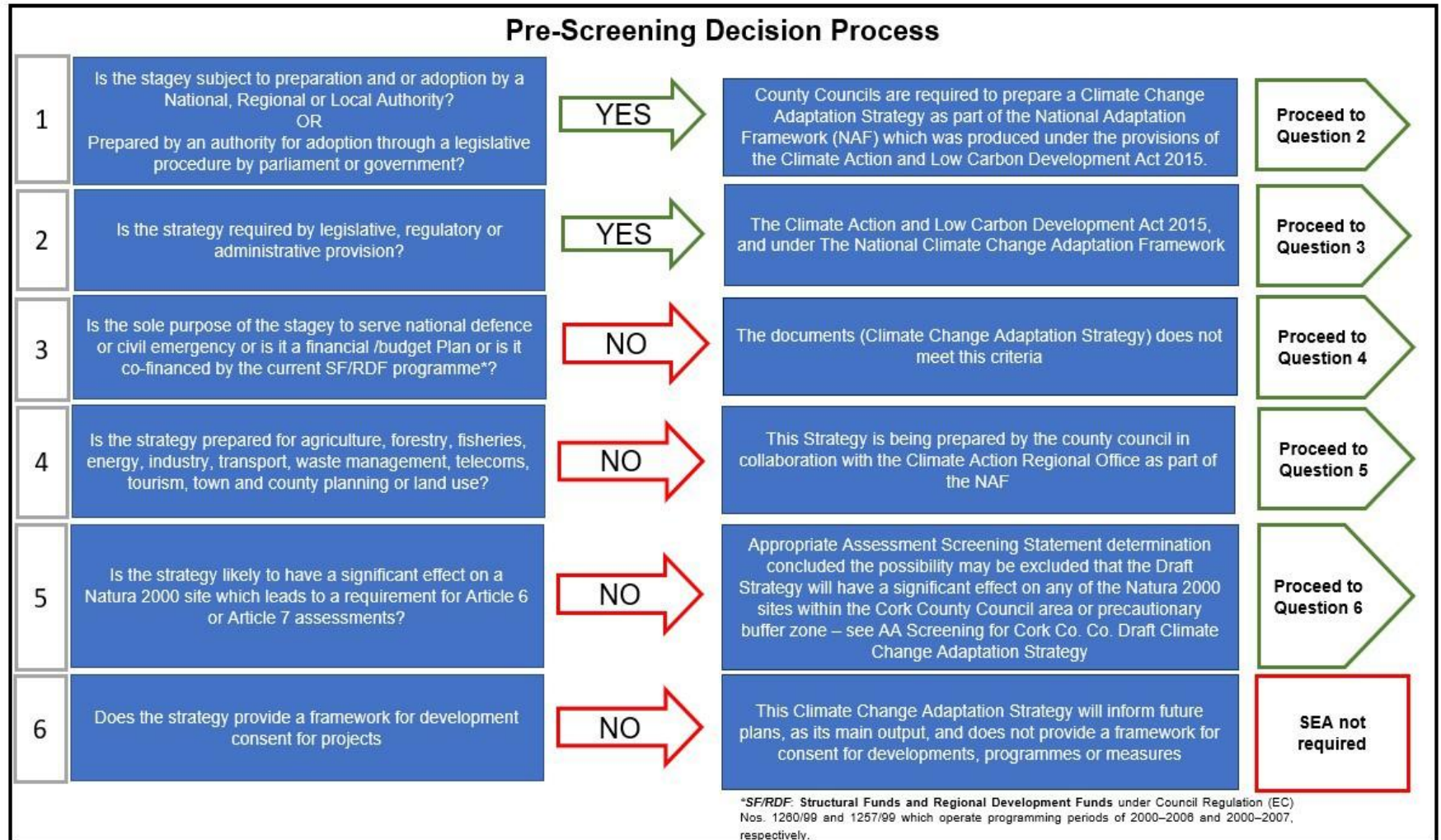
12	To liaise and work with other bodies and agencies responsible for the management of water sources.
Natural Resources and Cultural Infrastructure	
13	To protect and enhance and restore the natural environment.
14	To review, manage and protect biodiversity and natural heritage within the natural environment.
15	To support and enhance built heritage and cultural infrastructure.
Citizen Safety, Health and Wellbeing	
16	To consult, identify actions and build capacity and resilience within local communities.
Partnerships with other Sectors and Agencies	
17	To collaborate with other sectors and agencies in programmes relating to climate change.

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### 3.2 Requirement to carry out SEA – Pre-Screening Checklist

In order to determine if this Strategy is considered a plan/programme under Article 3 of the SEA Directive, a pre-screening check is necessary. Figure 1 below provides details of the pre-screening checklist; this checklist is based on the decision tree published by the EPA in the Development of SEA methodologies for plans and programmes in Ireland.<sup>4</sup>

Figure 1 Pre Screening Decision Process





#### 4 SEA SCREENING DETERMINATION

The Draft Climate Change Adaptation Strategy was screened using the criteria contained in Annex 11 of the SEA Directive. Table 2 and Table 3 below, details the screening assessment using the *criteria for determining the likely significance of effects* as set out in SEA Directive, Annex ii.

TABLE 2 SCREENING DETERMINATION FOR ANNEX 11(1), CRITERIA FOR DETERMINING THE LIKELY SIGNIFICANCE OF EFFECTS.

The Characteristics of the Plan and Programmes having regard, in particular, to, the following criteria		Likely to have significant environmental effects
Criteria	Screening Determination	
The degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources.	<p>The purpose of this Draft Climate Change Adaptation Strategy is to identify the risks to Cork City associated with climate change, and to set strategic goals, objectives and actions to adapt to these changes.</p> <p>Cork City Council’s Draft Climate Change Adaptation Strategy forms part of Ireland’s national strategy for climate adaptation as set out in the National Adaptation Framework (NAF) which was produced under the provisions of the Climate Action and Low Carbon Development Act 2015.</p> <p>Cork City Council’s Draft Climate Change Adaptation Strategy, if adopted, will not set a framework for future development consent of projects, i.e. projects listed in both Annex I and Annex II of the Environmental Impact Assess-</p>	No

<p>The degree to which the plan or programme influences other plans and programmes including those in a hierarchy;</p>	<p>This Draft Climate Change Adaptation Strategy will inform other future plans, as its main output, to ensure that Cork City Councils policies, strategies, plans, actions and measures being developed must be informed, take account and be aware of the need to adapt to the impacts of climate change.</p> <p>Future individual development policies, strategies, plans and projects must be considered under the SEA, EIA and/or AA processes.</p>	<p>No</p>
<p>The relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development;</p>	<p>As the Draft Climate Change Adaptation Strategy is aimed at integrating climate change adaptation into Cork City Councils plans, strategies and management team's agendas, the climate change adaptation measures will be implemented via future plans.</p>	<p>No</p>

	<p>This Draft Climate Change Adaptation Strategy’s main output is to ensure that all policies, strategies and plans for Cork City Council must be informed of the need to adapt to the potential impacts of climate change.</p> <p>Individual development policies, strategies, plans and projects must be considered individually under the SEA, EIA and/or AA process.</p>	
<p>Environmental problems relevant to the plan or programme;</p>	<p>The Draft Climate Change Adaptation Strategy looks to integrate climate change adaptation into Cork City Council as a management function and/or an important criterion to be considering in developing Local Authority Plans or Actions. The climate change adaptation actions taken will be implemented via future plans as its main output is to ensure that all policies, strategies, plans and measures for Cork City Council must be informed of the need to adapt to the potential impacts of climate change.</p> <p>Individual development policies, strategies, plans and projects must be considered individually under the SEA, EIA and/or AA process.</p>	<p>No</p>

<p>The relevance of the plan or programme for the implementation of Community legislation on the environment (e.g. plans and programmes linked to waste-management or water protection).</p>	<p>As the Draft Climate Change Adaptation Strategy is aimed at integrating climate change adaptation into identified Cork City Councils Plans and Strategies and future Plans and Strategies, with some specific actions to help raise awareness of climate change both within management team and the wider public in Cork City, these actions can support plans and programmes that are related to waste generation, management, flood resilience and protection.</p> <p>However, these climate change adaptation actions will be implemented via future plans as its main output is to ensure that all policies, strategies, plans and measures for Cork City Council must be informed of the need to adapt to the potential impacts of climate change.</p>	<p>No</p>
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TABLE 3 SCREENING DETERMINATION FOR ANNEX II (2.), CRITERIA FOR DETERMINING THE LIKELY SIGNIFICANCE OF EFFECTS

Characteristics of the Effects and of the Area Likely to be Affected, taking account of the following criteria		Likely to have significant environmental effects
Criteria	Screening Determination	
The probability, duration, frequency and reversibility of the effects	Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses throughout the local authority to the effects of climate change, which is now inevitable. At this stage, based on current information, it is difficult to estimate the duration, or indeed it's variability, but it is likely to be long term which justifies the need for an adaptation strategy such as the one being prepared. The adaptation strategy in its role to "climate-proof" existing plans, policies and activities of the Local Authority is an essential first step in dealing with climate change effects from a Local Authority perspective.	No
The cumulative nature of the effects	Changes in climate change are cumulative and work in combination. This can be seen where climatic factors combine and create what are called "compound events" where combined weather events may contribute to enhanced risk.	No

The transboundary nature of the effects	In order to deal with transboundary effects Cork City Council Draft Climate Change Adaptation Strategy has included actions, for example, Objective 17 and Action 17.1 to Liaise, collaborate and work in relevant partnership with the sectors in the delivery of the sectoral adaptation actions, as approved by Government, where they are relevant to the functions and activities of Cork City	No
The risks to human health or the environment (e.g. due to accidents)	Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses to the effects of climate change including working with other agencies to raising awareness of the impacts of climate change on communities (e.g. specific actions under the Citizen Safety, Health and Wellbeing theme)	No
The magnitude and spatial extent of the effects (geographical area and size of the population likely to be affected)	Areas of characteristics and cultural heritage within Cork City are provided with a level of protection from both planning policy and planning legislation. However, Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses throughout the local authority to the effects of climate change and does not identify specific areas for development.	No

<p>The value and vulnerability of the area likely to be affected due to:</p> <ul style="list-style-type: none"> <li>- special natural characteristics or cultural heritage;</li> <li>- exceeded environmental quality standards or limit values; and</li> <li>- intensive land-use.</li> </ul>	<p>Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses throughout the local authority to the effects of climate change, and to incorporate adaptation measures into all plans and policy produced by the council. This strategy will not result in development plans or set a framework for future development, and as such will not result in changes to the landscape, land-use or exceed environmental parameters.</p>	<p>No</p>
<p>The effects on areas or landscapes which have a recognised national, community or international protection status.</p>	<p>Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses throughout the local authority to the effects of climate change and does not identify specific areas for development.</p> <p>Any effects uncovered as part of this process will be considered in relation to the characteristics of the effects and of the area likely to be affected, and the process will have regard, in particular, to the criteria as listed, according to the legislation.</p>	<p>No</p>

## 5 CONCLUSION

This SEA Screening Report was carried out in order to determine the need for a Strategic Environmental Assessment for Cork City Council Draft Climate Change Adaptation Strategy prepared under the National Climate Change Adaptation Framework. It has been concluded, based on the pre-screening check, and review against the environmental significance criteria as set out in Annex II of the SEA Directive, that a Strategic Environmental Assessment is not required. Furthermore, the purpose of this Draft Climate Change Adaptation Strategy is to inform Local Authority policies, procedures and further plans on the need to incorporate climate change adaptation measures and it does not set out projects, plans or specific measures.

It is likely, that through the implementation of Cork City Councils Climate Change Adaptation Strategy, that there would be expected beneficial effects, as it aims to reduce risk from climate change. Specific actions in the strategy propose environmentally friendly adaptation measures, particularly actions falling from the objective under the Natural Resources and Cultural Infrastructure theme, for example, one objective under this theme is; Identify potential ecological corridors and connectivity issues between areas. Identify the potential to open up culverted rivers and incorporate softer engineering solutions.

Identify locations to create new habitats for native flora and fauna e.g. urban orchards, allotments, green roofs and walls, many of which will assist in reducing the affects of the 'heat island effect'.

Protect existing wetlands and identify new ones which may arise as a result of climate change.



**Appendix F: Appropriate Assessment Screening Report**

# APPROPRIATE ASSESSMENT SCREENING REPORT

FOR

DRAFT CLIMATE CHANGE ADAPTION STRATEGY FOR CORK CITY COUNCIL

June 2019

ON BEHALF OF

Atlantic Seaboard South Region

Climate Action Regional Office (CARO)

**DOCUMENT CONTROL SHEET**

Client	Climate Action Regional Office
Project Title	Draft Climate Change Adaption Strategy for Cork City Council
Document Title	Appropriate Assessment Screening Report

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
1.0	Draft for Consultation	Donnacha Woods, Project Ecologist	Jim Dowdall, Director	Muriel Ennis Principal Environmental Consultant	28/06/2019

## 1 INTRODUCTION

### 1.1 Background

Member States are required to designate Special Areas of Conservation (SACs) and Special Protected Areas (SPAs) under the EU Habitats and Birds Directives, respectively. SACs and SPAs are collectively known as Natura 2000 sites. An 'Appropriate Assessment' (AA) is a required assessment to determine the likelihood of significant impacts, based on best scientific knowledge, of any plans or projects on Natura 2000 sites. A screening for AA determines whether a plan or project, either alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site, in view of its conservation objectives.

This AA Screening has been undertaken to determine the potential for significant impacts on nearby Sites with European conservation designations (i.e. Natura 2000 Sites). The purpose of this assessment is to determine, the appropriateness, or otherwise, of the proposed development in the context of the conservation objectives of such sites.

### 1.2 Legislative Context

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and wild fauna and flora by the designation of SACs and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of SPAs. It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community.

An Appropriate Assessment is required under Article 6 of the Habitats Directive where a project or plan may give rise to significant effects upon a Natura 2000 Site, and paragraphs 3 and 4 states that:

6(3) Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site, in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.

6(4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

The current assessment was conducted within this legislative framework and the published DEHLG (2009) guidelines. As outlined in these, it is the responsibility of the proponent of the project to provide a comprehensive and objective Screening for Appropriate Assessment, which can then be used by the competent authority in order to conduct the Appropriate Assessment (DEHLG, 2009).

### 1.3 Quality assurance and competence

Enviroguide Consulting, is a wholly Irish Owned multi-disciplinary consultancy specialising in the areas of Environment, Waste Management and Planning. Both directors carry scientific qualifications and have a wealth of experience working within the Environmental Consultancy sectors, having undergone extensive training and continued professional development.

Enviroguide Consulting as a company remains fully briefed in European and Irish environmental policy and legislation. Both directors have a diploma from the Law Society of Ireland in Environmental and Planning Law and have a Master's degree in Environmental and Natural Resources Law at University College Cork.

Enviroguide's staff members are highly qualified in their field. Professional memberships include the Chartered Institution of Wastes Management (CIWM), the Irish Environmental Law Association and Chartered Institute of Ecology and Environmental Management (CIEEM).

All reports have been carried out by qualified and experienced ecologists and environmental consultants. Donnacha Woods, Project Ecologist with Enviroguide, undertook the desktop re- search for this report. Donnacha has an M.Sc. (Biodiversity and Conservation) from Trinity College, and over 6 years' experience as an ecologist and is an Associate member of CIEEM. He has worked on a wide range of conservation, research and ecological monitoring projects across several different countries.

Muriel Ennis, Principal Environmental Consultant, has an M.Sc. in Ecosystem Conservation and Landscape Management and over 10 years' experience as an Environmental / Ecology Consultant and is also an Associate member of CIEEM. She has worked on a range of projects from Strategic Flood Studies to residential developments.

## 1.4 Stages of AA

This Appropriate Assessment Screening Report (the “Screening Report”) has been prepared by Enviroguide Consulting which considers whether the proposed Draft Climate Change Adaptation Strategy is likely to have a significant effect on a European Site and whether a Stage 2 Appropriate Assessment is required.

The AA process is a four-stage process, with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

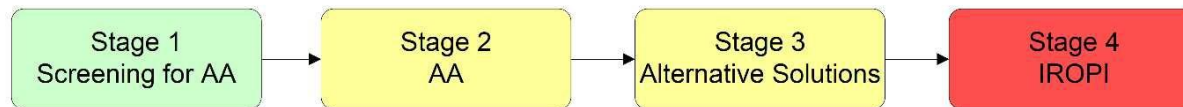


FIGURE 1. THE FOUR STAGES OF THE APPROPRIATE ASSESSMENT PROCESS (DEHLG, 2010).

The four stages of an AA can be summarised as follows:

- Stage 1: Screening. The first stage of the AA process is to determine the likelihood of significant impacts of a proposal.
- Stage 2: Natura Impact Statement (NIS). The second stage of the AA process assesses the impact of the proposal (either alone or in combination with other projects or plans) on the integrity of the Natura 2000 site, with respect to the conservation objectives of the site and its ecological structure and function. A Natural Impact Statement containing a professional, scientific examination of the proposal is required and should include any mitigation measure to avoid, reduce or offset negative impacts.
- Stage 3: Assessment of alternative solutions. If the outcome of Stage 2 is negative i.e. adverse impacts to the sites cannot be scientifically ruled out, despite mitigation, the plan or project should proceed to Stage 3 or be abandoned. This stage examines alternative solutions to the proposal.
- Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain. The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a Natural 2000 site, where no less damaging solution exists.

The purpose of Stage 1, the Screening Stage is to determine the necessity or otherwise for a NIS. Screening for AA examines the likely effects of a project or plan alone, and in combination with other projects or plans, upon a Natura 2000 site, and considers whether it can be objectively concluded that these effects will not be significant.

If it is determined during screening stage that the proposal may have a significant effect on a Natura 2000 site, or such a significant effect cannot be ruled out, then a NIS will need to be prepared. The Screening is outlined in Section 2.

## 1.5 Screening Steps

This Screening for AA, or Stage 1 of AA, has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2000). Screening for AA involves the following:

- Establish whether the Strategy is necessary for the management of a Natura 2000 site;
- Description of the Strategy;
- Identification of Natura 2000 sites potentially affected;
- Identification and description of individual and cumulative impacts likely to result from the Strategy;
- Assessment of the significance of the impacts identified above on site-integrity; and
- Exclusion of sites where it can be objectively concluded that there will be no significant effects.

This Stage 1, Screening, examines whether likely effects upon a Natura 2000 site will be significant and determines whether the AA process for the proposed Plan alone and in combination with other developments in the area requires a Stage 2.



## 1.6 Stage 1 Screening Assessment Methodologies

### 1.6.1 Desk Study

A desk study was carried out to evaluate all available information on the area's natural environment. This comprised a review of a wide range of available publications, datasets and resources where applicable, including the following sources:

- Draft Climate Change Adaptation Strategy – Cork City Council;
- National Parks and Wildlife Service (NPWS) datasets;
- Geological Survey Ireland (GSI) online datasets and mapping;
- Environmental Protection Agency (EPA) mapping and datasets;
- National Biodiversity Data Centre (NBDC) online mapping and species records;
- OSI aerial imagery and Discovery Series mapping;
- Satellite imagery from various sources and dates (Google, Digital Globe, Bing);
- The Status of EU Protected Habitats in Ireland (NPWS);

For a complete list of the specific documents consulted as part of this assessment, see Section 4 References.

### 1.6.2 Assessment of Impacts

The potential impacts of the Objectives and Actions of the Corks City Councils Draft Climate Change Adaptation Strategy are assessed against the criteria as outlined in Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001), the significance of these is assessed using key indicators:

- Habitat loss or alteration;
- Habitat / species fragmentation;
- Disturbance and / or displacement of species;
- Changes in population density; and
- Changes in water quality and resource.

While also assesses key indicators, the following terms are defined when quantifying duration:

TABLE 1. DEFINITION OF DURATIONS (EPA, 2017).

Description of Duration	Corresponding Time Frame
Momentary Effects	Effects lasting from seconds to minutes
Brief Effects	Effects lasting less than a day
Temporary Effects	Effects lasting less than a year
Short-term Effects	Effects lasting one to seven years.
Medium-term Effects	Effects lasting seven to fifteen years.
Long-term Effects	Effects lasting fifteen to sixty years
Permanent Effects	Effects lasting over sixty years
Reversible Effects	Effects that can be undone, for example through remediation or restoration
Frequency of Effects	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)

Furthermore, the criterion for confidence levels of the predicted likely impacts are given below in Table 2.

TABLE 2. IMPACT SIGNIFICANCE CRITERIA (EPA, 2017).

Significance of Effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight Effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate Effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant Effects	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment

While assessing Cork City's Draft Climate Changes Adaptation Strategy, each Objective and Action was assess using the key indicators as per Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001).

## 2 STAGE 1 SCREENING

### 2.1 Management of Natura 2000 Site

Cork City Council's Draft Climate Change Adaption Strategy is not directly connected with or necessary for the management of Natura 2000 sites in County Cork or elsewhere.

## 2.2 Description of the Plan

### 2.2.1 Background

The Earth's Climate is changing. While natural fluctuations in climate are considered normal, emerging research and observational records from across the world show rates of change that are far greater than those experienced in recent history. Global temperatures have risen and are projected to rise further bringing changes in weather patterns, rising sea levels and increased frequency and intensity of extreme weather. Ireland's climate is changing in line with global patterns, and these changes are bringing significant and wide-ranging economic, environmental and social impacts.

Climate change is now recognised as a global challenge with policy responses required in terms of both mitigating the causes of climate change and in adapting to the now inevitable consequences of our changing climate. Action at local level is vitally important to help reduce the risks and impacts of climate change across communities.

This local authority Draft Climate Change Adaptation Strategy forms part of Ireland's national strategy for climate adaptation as set out in the National Adaptation Framework (NAF) which was produced under the provisions of the Climate Action and Low Carbon Development Act 2015.<sup>1</sup>

It is tasked with mainstreaming climate change adaptation over time into all functions, operations and services of the local authority. It seeks to inform or 'climate proof' existing plans and policies produced and implemented by the local authority. This ensures a considered, consistent and coherent approach, facing head-on the challenges of a changing climate. Crucially, it also helps in building resilience within the local authority organisation itself as well as across all communities.

<sup>1</sup>Climate Action and Low Carbon Development Act 2015 (S.I. No. 25/2016).

2.2.2 Draft Climate Change Adaptation Strategy Objectives

The purpose of the Cork City Council’s Draft Climate Change Adaptation Strategy is to achieve the national objective of becoming a more climate resilient society and economy by 2050. In order to help tackle current and future challenges that climate change can present, Cork City Council has set out a number of key objectives in their strategy, under seven thematic principles. The seven themes are listed below:

1. Local Adaptation Governance and Business Operations
2. Infrastructure and Built Environment
3. Landuse and Development
4. Drainage, Water and Flood Management
5. Natural Resources and Cultural Infrastructure
6. Citizen Safety, Health and Wellbeing
7. Partnerships with other Sectors and Agencies

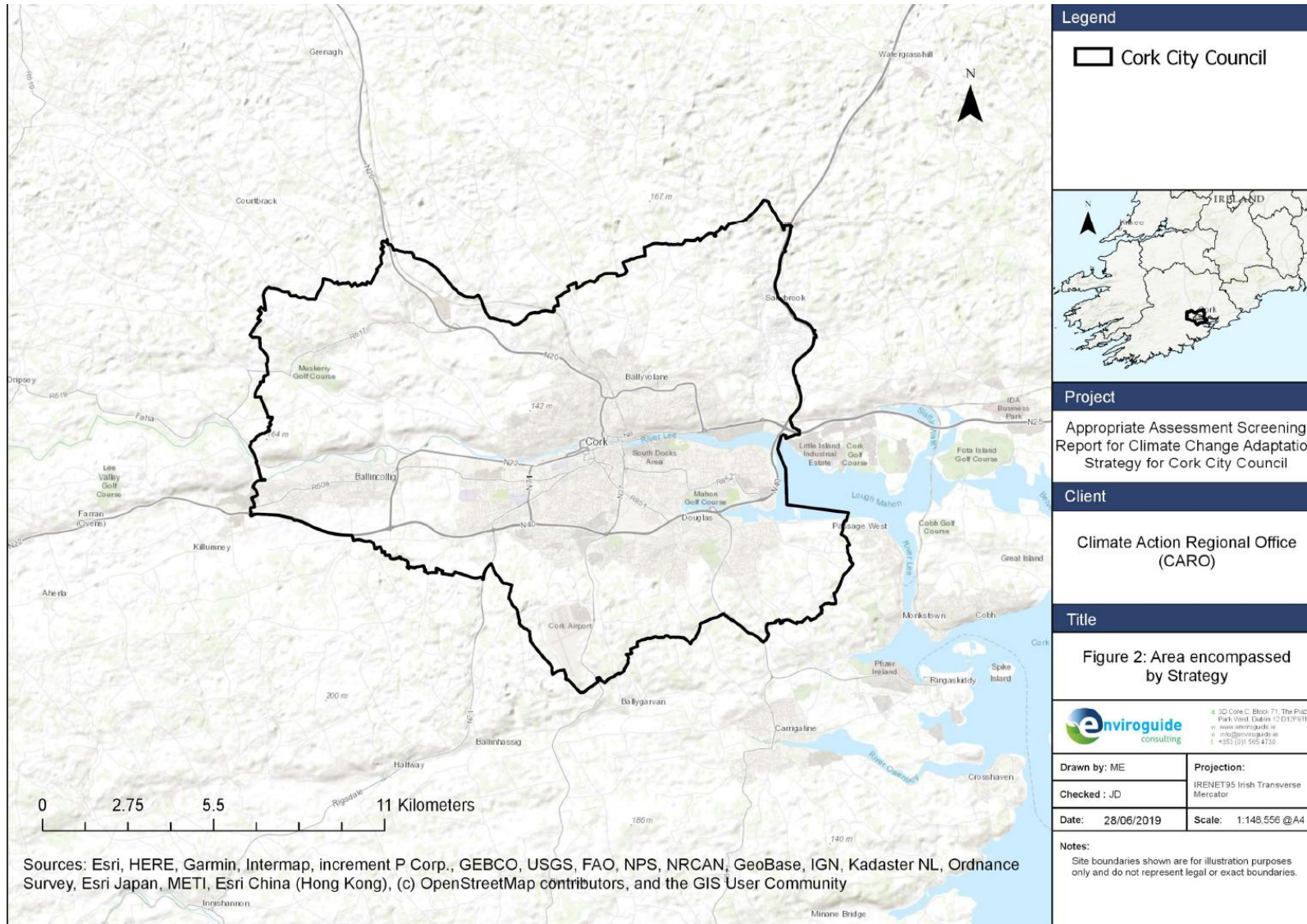
Table 3 below outlines Cork City Councils Draft Climate Change Adaptation Strategy objectives per theme.

TABLE 3. CORK CITY COUNCIL DRAFT CLIMATE CHANGE ADAPTATION STRATEGY OBJECTIVES

Local Adaptation Governance and Business Operations	
1	To support the successful and practical implementation of climate adaptation planning.
2	To ensure that climate adaptation is mainstreamed into all relevant activities and operations of Cork City Council.
3	To develop and maintain a resource and risk model for Cork City Council.
4	To build resilience within Cork City Council to support service delivery.
5	To build capacity within Cork City Council to respond effectively to extreme weather events.
6	To identify and support opportunities that may arise from pursuing adaptation efforts through the functions of Cork City Council.
Infrastructure and Built Environment	

7	To increase the resilience of roads and transport infrastructure.
8	To increase the resilience of Cork City Council buildings, housing stock, parks and cemeteries and other capital assets.
<b>Land Use and Development</b>	
9	To integrate climate action considerations into land use planning policy and influence positive behaviour.
<b>Drainage, Water and Flood Management</b>	
10	To adapt to the increased risk and impact of flooding due to climate change.
11	To provide adequate drinking water supply and waste water treatment during extreme weather events.
12	To liaise and work with other bodies and agencies responsible for the management of water sources.
<b>Natural Resources and Cultural Infrastructure</b>	
13	To protect and enhance and restore the natural environment.
14	To review, manage and protect biodiversity and natural heritage within the natural environment.
15	To support and enhance built heritage and cultural infrastructure.
<b>Citizen Safety, Health and Wellbeing</b>	
16	To consult, identify actions and build capacity and resilience within local communities.
<b>Partnerships with other Sectors and Agencies</b>	
17	To collaborate with other sectors and agencies in programmes relating to climate change.

FIGURE 2. AREA ENCOMPASSED BY STRATEGY



<b>Legend</b>	
 Cork City Council	
	
<b>Project</b>	
Appropriate Assessment Screening Report for Climate Change Adaptation Strategy for Cork City Council	
<b>Client</b>	
Climate Action Regional Office (CARO)	
<b>Title</b>	
Figure 2: Area encompassed by Strategy	
 © JD Core © Block 71, The Plaza Park, Valentia, Dublin 12 D13F6T4 www.enviroguide.ie info@enviroguide.ie t. +353 (0)1 565 4730	
Drawn by: ME	Projection: IRENET95 Irish Transverse Mercator
Checked: JD	
Date: 28/06/2019	Scale: 1:148,556 @A4
<b>Notes:</b>	
Site boundaries shown are for illustration purposes only and do not represent legal or exact boundaries.	

2.3 Identification of Relevant Natura 2000 Sites

In identifying potentially affected Natura 2000 sites, it has been decided to adopt the precautionary principle and includes all SPAs and SACs within the Strategy area, including a surrounding 15km buffer zone. Within this overall area, a total of 2 SACs and 1 SPAs are found, each site name, corresponding code and qualifying interests are detailed in Table 4 below.

TABLE 4. NATURA 2000 SITES WITHIN A 15KM RADIUS OF THE STRATEGY AREA.  
 \* = PRIORITY; NUMBERS IN BRACKETS ARE NATURA 2000 CODES

Site Code	Site Name	Qualifying Interests	Location
Special Areas of Conservation (SAC)			
001058	Great Island Channel SAC	<ul style="list-style-type: none"> <li>- [1140] Tidal Mudflats and Sandflats</li> <li>- [1330] Atlantic Salt Meadows</li> </ul>	Within Co. Cork

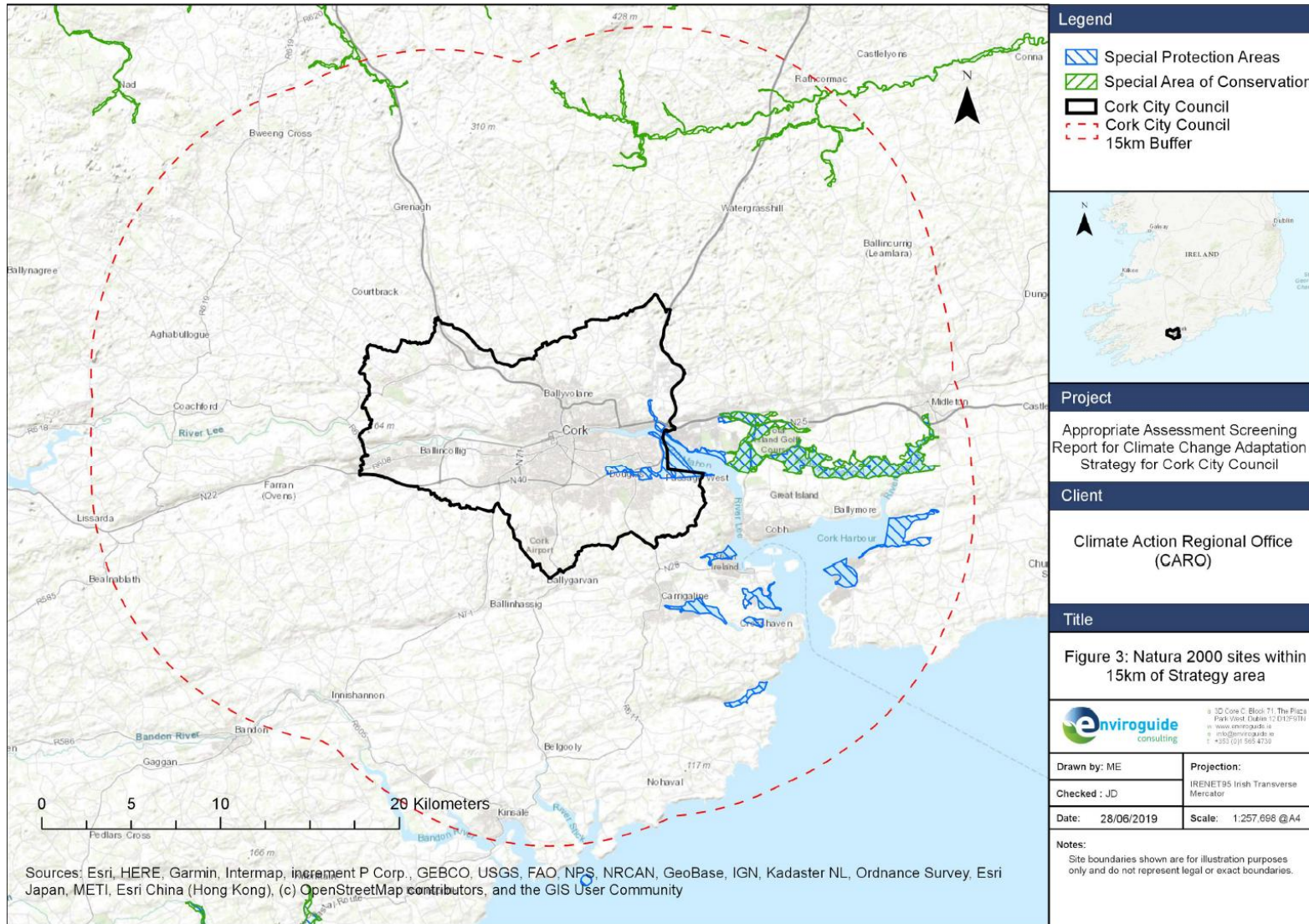


002170	Blackwater River (Cork/Waterford) SAC	<ul style="list-style-type: none"> <li>- [1130] Estuaries</li> <li>- [1140] Tidal Mudflats and Sandflats</li> <li>- [1220] Perennial Vegetation of Stony Banks</li> <li>- [1310] Salicornia Mud</li> <li>- [1330] Atlantic Salt Meadows</li> <li>- [1410] Mediterranean Salt Meadows</li> <li>- [3260] Floating River Vegetation</li> <li>- [91A0] Old Oak Woodlands</li> <li>- [91E0] Alluvial Forests*</li> <li>- [1029] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>)</li> <li>- [1092] White-clawed Crayfish (<i>Austropotamobius pallipes</i>)</li> <li>- [1095] Sea Lamprey (<i>Petromyzon marinus</i>)</li> <li>- [1096] Brook Lamprey (<i>Lampetra planeri</i>)</li> <li>- [1099] River Lamprey (<i>Lampetra fluviatilis</i>)</li> <li>- [1103] Twaite Shad (<i>Alosa fallax</i>)</li> <li>- [1106] Atlantic Salmon (<i>Salmo salar</i>)</li> <li>- [1355] Otter (<i>Lutra lutra</i>)</li> <li>- [1421] Killarney Fern (<i>Trichomanes speciosum</i>)</li> </ul>	Within Co. Cork
Special Protection Areas (SPA)			

004030	Cork Harbour SPA	<ul style="list-style-type: none"> <li>- [A004] Little Grebe (<i>Tachybaptus ruficollis</i>)</li> <li>- [A005] Great Crested Grebe (<i>Podiceps cristatus</i>)</li> <li>- [A017] Cormorant (<i>Phalacrocorax carbo</i>)</li> <li>- [A028] Grey Heron (<i>Ardea cinerea</i>)</li> <li>- [A048] Shelduck (<i>Tadornatadorna</i>)</li> <li>- [A050] Wigeon (<i>Anas penelope</i>)</li> <li>- [A052] Teal (<i>Anas crecca</i>)</li> <li>- [A054] Pintail (<i>Anas acuta</i>)</li> <li>- [A056] Shoveler (<i>Anas clypeata</i>)</li> <li>- [A069] Red-breasted Merganser (<i>Mergus serrator</i>)</li> <li>- [A130] Oystercatcher (<i>Haematopus ostralegus</i>)</li> <li>- [A140] Golden Plover (<i>Pluvialis apricaria</i>)</li> <li>- [A141] Grey Plover (<i>Pluvialis squatarola</i>)</li> <li>- [A142] Lapwing (<i>Vanellus vanellus</i>)</li> <li>- [A149] Dunlin (<i>Calidris alpina</i>)</li> </ul>	Within Co. Cork
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		<ul style="list-style-type: none"> <li>- [A156] Black-tailed Godwit (<i>Limosa limosa</i>)</li> <li>- [A157] Bar-tailed Godwit (<i>Limosa lapponica</i>)</li> <li>- [A160] Curlew (<i>Numenius arquata</i>)</li> <li>- [A162] Redshank (<i>Tringatotanus</i>)</li> <li>- [A179] Black-headed Gull (<i>Chroicocephalus ridibundus</i>)</li> <li>- [A182] Common Gull (<i>Larus canus</i>)</li> <li>- [A183] Lesser Black-backed Gull (<i>Larus fuscus</i>)</li> <li>- [A193] Common Tern (<i>Sterna hirundo</i>)</li> <li>- [A999] Wetland and Waterbirds</li> </ul>	
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FIGURE 3. NATURA 2000 SITES LOCATED WITHIN 15KM OF THE STRATEGY'S AREA.



## 2.4 Assessment of Significance of Potential Impacts

The potential for significant impacts resulting from the Cork City Council Draft Climate Change Adaptation Strategy has been assessed in relation to Natura 2000 sites within the precautionary zone of potential impact.

Impacts that require consideration are categorised under the following criteria, as outlined in Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission, 2001).

- Habitat loss or alteration;
- Habitat / species fragmentation;
- Disturbance and / or displacement of species;
- Changes in population density; and
- Changes in water quality and resource.

Cork City Council Draft Climate Change Adaptation Strategy is designed to inform responses throughout the local authority to the effects of climate change and does not identify specific areas for development. Any future projects resulting from the objectives laid out in the Strategy will need to comply with the relative legislation in relation to Appropriate Assessment, where appropriate.

### 2.4.1 In-combination Effects

The following planning and policy documents were reviewed and considered for possible in-combination effects with the proposed Strategy:

- Cork County Development Plan 2014-2022;
- Cork City Heritage Plan 2015-2020; and
- County Cork Biodiversity Action Plan 2009-2014

Due to the nature of Corks City Council Draft Climate Change Adaptation Strategy, and in particular its main objective of mainstreaming Climate Adaptation into all functions within Cork City Council, there is no in-combination effects identified to any Natura 2000 sites as a result of this Draft Climate Change Adaptation Strategy.

Cork City's Climate Change Adaptation Strategy is designed to inform council policy documents and actions in relation to climate change adaptation. As such it is high level and the objectives and actions are high level and not area specific.

Other Local Authority documents such as Development Plans will take their lead from the Climate Change Adaptation Strategy. These, as

part of the plan preparation process will be subject to SEA and AA that ensures that objectives and actions that result will be adequately examined for ecological effects.

Should specific actions result from these plans these will be subjected to both AA and EIA when sufficient design details exist. The EIA and AA process will ensure that any possible environmental and ecological effects of any outcomes from the adaptation plans will be adequately assessed.

#### 2.4.2 Screening Matrix

Brief description of the plan:
Preparation of the Cork City Council Draft Climate Change Adaptation Strategy. This document is designed to inform the policy documents of Cork City Council in adapting to the effects of climate change.
Brief description of the Natura 2000 sites Located in Cork City Council area. Table 4 detail above details the exhausted list of SAC and SPAs and the qualifying interests of Natura 2000 sites inside and outside Cork City Council area.

Cork Harbour SPA (4030) is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monkstown Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poul-nabibe inlets. Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl. Of particular note is that the site supports internationally important populations of Black-tailed Godwit and Redshank and nationally important number of 19 other wetland species.

The Great Island Channel SAC (001058) stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and, compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers, these rivers, which flow through Midleton, provide the main source of freshwater to the North Channel. The main habitats of conservation interest are the sheltered tidal sand and mudflats and the Atlantic salt meadows. Owing to the sheltered conditions, the intertidal flats are composed mainly of soft muds. These muds support a range of macro-invertebrates, notably *Macoma balthica*, *Scrobicularia plana*, *Hydrobia ulvae*, *Nephtys hombergi*, *Nereis diversicolor* and *Corophium volutator*. Green algal species occur on the flats, especially *Ulva lactuca* and *Enteromorpha* spp.

The River Blackwater SAC (002170) to the north and east of Cork City Council boundary and is an area of peaty terrain in the upper reaches of the river and of some of the tributaries gives the water a pronounced dark colour. The SAC consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Oventaraglin and Awnaskirtaun. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Nearby towns include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal. This SAC is designated for a range of habitat types and is of considerable conservation significance for the occurrence of good examples of habitats and populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively and the importance of the site is enhanced by the presence of a suite of uncommon plant species.

Describe the individual elements of the plan (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site:

<p>The Adaptation Strategy is designed to inform Council Policy documents and actions in relation to climate change adaptation. As such it is high level and the objectives and actions are high level and not area specific.</p> <p>Other Local Authority documents such as City Council Development plans will take their lead from the Climate Change Adaptation Strategy. These, as part of the plan preparation process will be subject to SEA and AA that ensures that objectives and actions that result will be adequately examined for ecological effects.</p>
<p>Should specific actions result from these plans these will be subjected to both AA and EIA when sufficient design details exist. The above will ensure that any possible environmental and ecological effects of any outcomes from the adaptation plans will be adequately assessed.</p>
<p>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</p>
<ul style="list-style-type: none"> <li>• Size and scale;</li> </ul> <p>The adaptation strategy takes in all of Cork City Council area- see Figure 2 above. Of the actions in the plan, it would also be worth mentioning that the effects of the implementation of the adaptation strategy would be expected to be beneficial as it reduces risk from climate change and actions exist in the strategy to use environmentally friendly adaptation measures, such as the objective To protect and enhance and restore the natural environment.</p>
<ul style="list-style-type: none"> <li>• Land-take;</li> </ul> <p>None envisaged at this stage of the process. Please note that any actions and projects, as yet unknown that may arise, will be subjected to both the AA and EIA processed as they arise.</p>
<ul style="list-style-type: none"> <li>• Distance from Natura 2000 site or key features of the site;</li> </ul> <p>See Brief Description of Natura 2000 sites above and also Table 4</p>
<ul style="list-style-type: none"> <li>• Resource requirements (water abstraction etc.);</li> </ul> <p>No policies within the Climate Change Adaptation Strategy indicate the need for abstraction of water from any designated site.</p>

- Emission (disposal to land, water or air);

No uncontrolled emissions are envisaged as a result of the objectives and actions of the Climate Change Adaptation Strategy. Where these might arise, at project level and not strategy level, these will be subject to appropriate assessment in line with planning and wildlife legislation.

- Excavation requirements;

Cork City Councils Climate Change Adaptation Strategy is chiefly designed to inform policy responses to climate adaptation. No excavation related activities have been mentioned in the strategy. Where this might arise at project level they will be subjected to assessment at that stage.

- Transportation requirements;

It is not considered that any of the policies put forward in the strategy call for the development of new routes and as such will not have any effect on any designated sites.

- Duration of construction, operation, decommissioning, etc;

The lifespan of the Climate Adaptation Strategy will be five years, i.e. from 2019 to 2024.

- Other

None.



Describe any likely changes to the site arising as a result of:
<ul style="list-style-type: none"> <li>• reduction of habitat area:</li> </ul> <p>None – the objectives and actions of the Climate Change Adaptation Strategy are high level and at this stage do not envisage habitat reduction in any of the Natura 2000 sites. As outlined above, where this might arise at project stage, it will be assessed at that level. It should be noted, that some of actions of the plan promote ecological solutions to climate adaptation issues and these offer opportunities for habitat creation.</p>
<ul style="list-style-type: none"> <li>• disturbance to key species;</li> </ul> <p>None- the plan is about climate adaptation. The adoption of ecological solutions would have beneficial ecological effects and these might well allow additional buffer areas and areas that function as green infrastructure.</p>
<ul style="list-style-type: none"> <li>• habitat or species fragmentation;</li> </ul> <p>None- see comments immediately above.</p>
<ul style="list-style-type: none"> <li>• reduction in species density;</li> </ul> <p>None envisaged as the objectives and actions of the adaptation strategy are designed to inform council responses to climate adaptation issues and do not envisage interventions in designated sites. As outlined above the adaptation of ecologically based responses to climate adaptation could well offer an opportunity to create wildlife habitats that would make a positive contribution to species that are of conservation interest.</p>
<ul style="list-style-type: none"> <li>• changes in key indicators of conservation value</li> </ul> <p>No projects giving rise to significant adverse changes in key indicators of conservation value for Natura 2000 sites are likely given that policies are in place in the Development Plans to control possible effects and to ensure that the potential for such effects is adequately assessed and taken into account in any projects.</p>

<ul style="list-style-type: none"> <li>• Climate change:</li> </ul> <p>This is a Climate Change Adaptation Strategy that is designed to inform responses to the effects of climate change. These include the promotion of ecologically based adaptation to climate change.</p>
Describe any likely impacts on the Natura 2000 site as a whole in terms of:
<ul style="list-style-type: none"> <li>• interference with the key relationships that define the structure of the sites;</li> </ul> <p>None, see above in relation to promotion of ecologically based adaptation responses. Any projects that might result will also be assessed at design stage for possible ecological effects.</p>
<ul style="list-style-type: none"> <li>• interference with key relationships that define the function of the sites;</li> </ul> <p>None.</p>
Provide indicators of significance as a result of the identification of effects set out above in terms of:
<ul style="list-style-type: none"> <li>• loss;</li> </ul> <p>Not applicable.</p>
<ul style="list-style-type: none"> <li>• Fragmentation;</li> </ul> <p>Not applicable, see response above regarding the use of ecologically based responses which would allow for the development of buffers.</p>

<ul style="list-style-type: none"> <li>• Disruption;</li> </ul> <p>Not applicable.</p>
<ul style="list-style-type: none"> <li>• Disturbance;</li> </ul> <p>Not applicable.</p>
<ul style="list-style-type: none"> <li>• Change to key elements of the site (e.g. water quality etc.);</li> </ul> <p>Not applicable.</p>
<p>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts are not known</p>
<p>The objectives and actions are high level and are intended to serve as guidance for the inclusion of material in other council policy documents such as the City Councils Development Plan. It is here through mechanisms such as zoning and planning policy that the Adaptation Strategy will be given effect. These plans will be subject to SEA and AA as they are prepared and as zoning and policy responses it will be easier to assess their impacts and allow them to be modified accordingly.</p>

2.4.3 Findings of No Significant Effects Matrix

Brief description of the plan:	Cork City Council Climate Adaptation Strategy 2019-2024.
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<p>Natura 2000 sites within Cork City Council area, see also Figure 3 and Table 4 for exhausted list:</p>	<p>Cork Harbour SPA (4030) is a large, sheltered bay system, with several river estuaries - principally those of the Rivers Lee, Douglas, Owenboy and Owennacurra. The SPA site comprises most of the main intertidal areas of Cork Harbour, including all of the North Channel, the Douglas River Estuary, inner Lough Mahon, Monks- town Creek, Lough Beg, the Owenboy River Estuary, Whitegate Bay, Ringabella Creek and the Rostellan and Poul nabibe inlets. Cork Harbour is an internationally important wetland site, regularly supporting in excess of 20,000 wintering waterfowl. Of particular note is that the site supports internationally important populations of Black-tailed Godwit and Redshank and nationally important number of 19 other wetland species.</p> <p>The Great Island Channel SAC (001058) stretches from Little Island to Midleton, with its southern boundary being formed by Great Island. It is an integral part of Cork Harbour which contains several other sites of conservation interest. Geologically, Cork Harbour consists of two large areas of open water in a limestone basin, separated from each other and the open sea by ridges of Old Red Sandstone. Within this system, Great Island Channel forms the eastern stretch of the river basin and, compared to the rest of Cork Harbour, is relatively undisturbed. Within the site is the estuary of the Owennacurra and Dungourney Rivers, these rivers, which flow through Midleton, provide the main source of freshwater to the North Channel. The main habitats of conservation interest are the sheltered tidal sand and mudflats and the Atlantic salt meadows. Owing to the sheltered conditions, the intertidal flats are composed mainly of soft muds. These muds support a range of macro- invertebrates, notably <i>Macoma balthica</i>, <i>Scrobicularia plana</i>, <i>Hydrobia ulvae</i>, <i>Nephtys hombergi</i>, <i>Nereis diversicolor</i> and <i>Corophium volutator</i>. Green algal species occur on the flats, especially <i>Ulva lactuca</i> and <i>Enteromorpha</i> spp</p> <p>The River Blackwater SAC (002170) to the north and east of Cork City Council boundary and is an area of peaty terrain in the upper</p>
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Description of the Project or Plan	As given in Screening Matrix above.
Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?	No.
Are there other projects or plans that together with the project of plan being assessed could affect the site (provide details)?	None.
The Assessment of Significance of Effects	
Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 sites:	None envisaged as the objectives and actions of the adaptation strategy are designed to inform council responses to climate adaptation issues and do not envisage interventions in designated sites. As outlined above the adaptation of ecologically based responses to climate adaptation could well offer an opportunity to create wildlife habitats that would make a positive contribution to species that are of conservation interest.
Explain why these effects are not considered significant:	The effects of the implementation of the adaptation strategy would be expected to be beneficial as it reduces risk from climate change and actions exist in the strategy to use environmentally friendly adaptation measures

<p>List of Agencies Consulted: Provide contact name and telephone or email address:</p>	<p>AA Screening Reports are being sent to:</p> <ul style="list-style-type: none"> <li>• SEA Section, Environmental Protection Agency</li> <li>• Planning System and Spatial Policy Section</li> <li>• Development Applications Unit, Department of Culture Heritage and the Gaeltacht,</li> </ul>		
<p>Summary of Responses received for previous draft.</p>	<p>Not applicable</p>		
<p>Data Collected to Carry out the Assessment</p>			
<p>Who carried out the Assessment?</p>	<p>Sources of Data</p>	<p>Level of assessment Completed</p>	<p>Where can the full results of the assessment be accessed and viewed</p>
<p>Enviroguide Consulting</p>	<p>Existing NPWS - Site Synopses, Conservation Objectives and Natura2000 forms – see section 4 of this document</p>	<p>Desktop study, site visits</p>	<p>With plan documentation on request.</p>

### 3 CONCLUSION

In conclusion, upon the examination, analysis and evaluation of the relevant information including, in particular, the nature of the Draft Climate Change Adaptation Strategy and the likelihood of significant effects on any Natura 2000 site, in addition to considering possible in-combination effects, and applying the precautionary principles, it is concluded by the authors of this report that, on the basis of objective information, the possibility may be excluded that the Draft Strategy will have a significant effect on any of the Natura 2000 sites within the Cork City Council area or precautionary buffer zone.

Other Local Authority documents such as Cork City Development Plans will take their lead from the Climate Change Adaptation Strategy. These, as part of the plan preparation process will be subject to SEA and AA process that ensures that objectives and actions that result will be adequately examined for ecological effects.

Furthermore, should specific actions from Cork City Council strategy or plan arise, they will be subjected to both AA and EIA process when sufficient design details exist. The AA and EIA process will ensure that any possible environmental and ecological effects of any outcomes from resulting actions will be adequately assessed.



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