



**Comhairle Cathrach
na Gaillimhe**

Galway City Council

STRATEGIC ENVIRONMENTAL ASSESSMENT

Environmental Report

For the Galway City Climate Action Plan 2024 -2029

Prepared for Galway City Council under SI 435 of 2004 as amended

November 2023

CONTENTS

1	Introduction.....	1
1.1	Background to Galway City CAP	1
1.2	Scale, Nature and Location of the Galway City CAP.....	2
1.3	Structure and Preparation of this Environmental Report	3
2	Methodology	5
2.1	Stages in the SEA process.....	5
3	Relationships to Plans	16
3.1	International and National	16
3.2	Regional and Local	16
3.3	Key implications and principles arising from the Plan, Policy and Programme Review.	17
4	Summary of current Environmental Baseline in Galway City.	22
4.1	Introduction	22
4.2	Green and Blue Infrastructure and Ecosystem Services	22
4.3	Biodiversity, flora and fauna	25
4.4	Population and Human Health	30
4.5	Geology and Soils.....	33
4.6	Water Resources including flood risk.....	37
4.7	Air Quality:	41
4.8	Material Assets:.....	44
4.9	Cultural Heritage:	46
4.10	Landscape and Visual:.....	48
4.11	Decarbonising Zone.	50
4.12	Evolution of the plan area in the absence of the Climate Action Plan.....	52
4.13	Environmental Sensitivity Mapping and inter-relationships	52
5	Strategic Environmental Objectives	55
5.1	Introduction	55
6	Consideration of Alternatives	57
6.1	Introduction	57
6.2	Key environmental challenges at city scale.....	57
6.3	Preferred alternative and reason for selection	61
7	Assessment of Likely Significant Effects	62
7.1	Summary of significant effects	63
7.2	Cumulative effects.....	70

8	Mitigation Measures	76
8.1	Introduction	76
8.2	Environmental Protection Measures in the Galway CDP 2023-2029.....	77
8.3	SEA and AA Mitigation Measures to Galway City Climate Action Plan (reworded/new text in blue font) 90	
9	Monitoring.....	91
9.1	Introduction	91
	Annex A: Assessment matrix	98

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Galway City Climate Action Plan 2024 - 2029

1 Introduction

This is the Environmental Report that has been prepared as part of the Strategic Environmental Assessment of the draft Galway City Climate Action Plan 2024-2029 (CAP). It sets out how the SEA has been undertaken and presents the findings of the assessment of the actions of the draft CAP together with its' reasonable alternatives.

Under *Directive 2001/42/EC - Assessment of Effects of Certain Plans and Programmes on the Environment*, certain plans and programmes require an environmental assessment. This is known as the Strategic Environmental Assessment (SEA) Directive. Article 1 of this Directive states that its objective 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.'

This Environmental Report complies with the requirements of the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) as implemented in Ireland through Statutory Instrument (SI) No.435 of 2004 European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (as amended).

These regulations are a statutory requirement for plans or programmes which could have significant environmental effects, and the assessment process aims to identify where there are potential effects and how any negative effects might be mitigated.

1.1 Background to Galway City CAP

Through the Climate Action and Low Carbon Development (Amendment) Act 2021, Ireland is now on a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by the end of this decade. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change. As required by the 2021 Act, Galway City Council is preparing their first Local Authority Climate Action Plan (LA-CAP) which must be adopted by the Elected Members before 23rd February 2024. This will continue the work undertaken over the first Climate Change Action Plan 2019-2024 which was non statutory.

1.1.1 Local Authority Climate Action Plans

Local Authorities will have a particularly important role in the delivery of both climate mitigation and adaptation. This is reflected in the provisions of the Climate Action and Low Carbon Development (Amendment) Act, 2021, which requires each Local Authority to prepare a CAP specifying the mitigation and the adaptation measures to be adopted by the Local Authority.

Local authorities are key drivers in advancing climate policy at the local level and the Galway City CAP aims to strengthen the alignment between national climate policy and local circumstances with the prioritisation and acceleration of evidence-based measures, to assist in the delivery of the climate neutrality objective for Galway City Council.

Galway City Council will use its CAP in planning how it will reduce greenhouse gas emissions from across its own assets and infrastructure, whilst also taking on a broader role to influence, facilitate and co-ordinate the climate actions of communities and other stakeholders and what it will do to advocate for climate action in Galway City. In order to ensure that the CAP is centred around a strong understanding of the role and remit of Galway City Council on climate action, the Plan is being developed through the following framework.

- Full accountable: Targeted actions for areas where Galway City Council has full accountability for climate action within their own operations.
- Influence: Actions for where Galway City Council can influence businesses, communities, and individuals in the delivery of local climate action through the functions and services they provide.
- Coordination: Actions for where Galway City Council can coordinate and facilitate local and community action bringing together stakeholders in partnership to achieve climate action related projects.
- Advocate: Actions aligned to Galway City Council role as advocate on climate action through raising awareness, communicating, informing, and engaging in open dialogue on the topic.

While the Climate Action Plan will be ambitious to reflect the leadership role of Galway City Council on climate action, the Plan will not include actions whereby their implementation and achievement fall outside our role, remit, and governance.

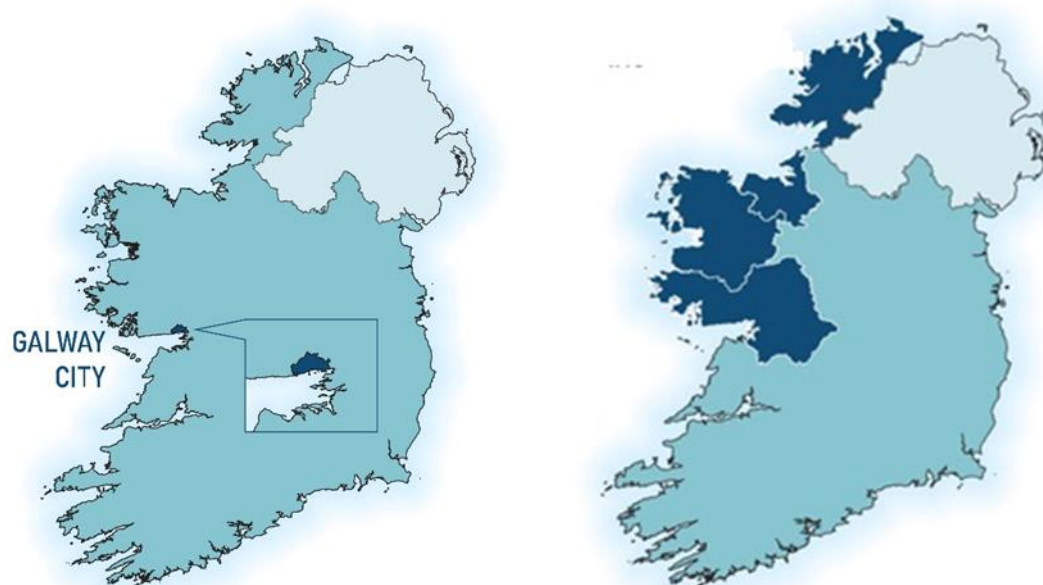
1.2 Scale, Nature and Location of the Galway City CAP

The plan will cover all of the functional area of Galway City. **Figure 1.1** shows the location of Galway City, and the Atlantic Seaboard North Climate Action Regional office extent (CARO). Key themes with supporting actions include:

- Governance and Leadership
- Energy and Built Environment
- Communities Resiliency and Transition
- Environment and Biodiversity
- Transport and Mobility
- Sustainability and Resource Management

The Plan will have to comply, as relevant, with various legislation, policies, plans and programmes (including requirements for lower-tier Appropriate Assessment, Environmental Impact Assessment, Ecological Impact Assessment and requirements as appropriate) that form the statutory decision-making and consent granting. Actions arising from the plan will demonstrate compliance with the environmental protection measures in the current Galway City Development Plan 2023-2029, and SEA Environmental Reports and Natura Impact Reports that accompanies same.

FIGURE 1-1 GALWAY CITY AND THE CARO ATLANTIC SEABOARD NORTH



1.3 Structure and Preparation of this Environmental Report

Regulations contained in Schedule 2A of Statutory Instrument (S.I.) 436 of 2004(as amended) details the information to be contained in an Environmental Report. The following **Table 1.1** lists the information required and details where this information is contained in this Environmental Report.

Table 1-1 Information Required to be contained in an SEA Environmental Report.

Schedule 2B of Statutory Instrument 435 of 2004	Addressed in this SEA ER
(a) an outline of the contents and main objectives of the plan and relationship with other relevant plans	Chapter One Introduction and Chapter Two Methodology outlines contents and main objectives Chapter Three details the relationship with other relevant plans
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan	Chapter Four Baseline Environment provides this information
(c) the environmental characteristics of areas likely to be significantly affected	Chapter Four Baseline Environment provides this information
(d) any Issues and Threats problems which are relevant to the plan including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or Habitats Directive	Chapter Four Baseline Environment provides this information.
(e) the environmental protection objectives, established at international, European Union or national level, which are relevant to the plan and the way those objectives and any environmental considerations have been taken into account during its preparation	Chapter Five: SEA Objectives provides this information
(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health,	Chapter Seven, Significant Effects on the Environment provides this information

Schedule 2B of Statutory Instrument 435 of 2004	Addressed in this SEA ER
fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors	
(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan	Chapter Eight, Mitigation Measures provides this information
(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information	Chapter Six, Alternatives Considered provides this information and difficulties encountered are listed at the end of Chapter Two, Baseline Environment.
(i) a description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan	Chapter Nine, Monitoring provides this information
(j) a non-technical summary of the information provided under the above headings	This is provided as a separate document to this Environmental Report but is also available

2 Methodology

This chapter presents the SEA methodology in detail and outlines the steps required for SEA. The methodology used to carry out the SEA of the plan reflects the requirements of the SEA regulations and available guidance on undertaking SEA in Ireland, including:

- SEA Methodologies for Plans and Programmes in Ireland – Synthesis Report Environmental Protection Agency (EPA), 2003;
- Implementation of SEA Directive (2001/42/EC) Assessment of the Effects of Certain Plans and Programmes on the Environment – Guidelines for Regional Authorities and Planning Authorities - published by the Department of the Environment, Heritage and Local Government, 2004;
- Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI 436 and SI 435 of 2004);
- Planning and Development (Strategic Environmental Assessment) Regulations 2011 (S.I. No. 201 of 2011);
- Planning and Development (Environmental Assessment of Certain Plans and Programmes) (S.I. No 200 of 2011);
- SEA Process Checklist Consultation Draft 2008, EPA 2008;
- Circular Letter PSSP 6/2011 Further Transposition of EU Directive 2001/42/EC on Strategic Environmental Assessment;
- Guidance on integrating climate change and biodiversity into Strategic Environmental Assessment European Union 2013;
- SEA Resource Manual for Local and Regional Authorities, Draft Version, 2013;
- Integrating Climate Change into Strategic Environmental Assessment in Ireland – A Guidance Note, EPA, 2015;
- Developing and assessing alternatives in Strategic Environmental Assessment, EPA, 2015;
- SEA of Local Authority Land Use Plans - EPA Recommendations and Resources (2020).
- Good practice guidance on Cumulative Effects Assessment in SEA, EPA, 2020
- Guidance on Strategic Environmental Assessment (SEA) Statements and Monitoring, EPA, 2020.

2.1 Stages in the SEA process

The steps involved in SEA are as follows:

- Screening (determining whether or not SEA is required).
- Scoping (determining the range of environmental issues to be covered by the SEA).
- The preparation of an Environmental Report (**current stage**)
- The carrying out of consultations.
- The integration of environmental considerations into the Plan or Programme.
- The publication of information on the decision (SEA Statement).

2.1.1 Scoping

The purpose of the SEA Scoping report is to identify the scope of the SEA and ensure that relevant data and environmental topics are included in the SEA. The Scoping report was issued to the statutory environmental authorities from 4th October to 2nd November 2023.

Table 2.1 below summarises the main issues raised by consultees and the SEA response to same.

TABLE 2-1 SEA SCOPING SUBMISSIONS RECEIVED

Consultee	Summary of comments	SEA Response
EPA	<p>The scale of the challenge facing Ireland to address climate change is significant, as highlighted in our State of Environment Report 'Ireland's Environment - An Integrated Assessment 2020' 1 (EPA, 2020). We urgently need to accelerate action to reduce our greenhouse gas emissions and implement adaptation measures to increase our resilience to climate change.</p> <p>We welcome that the Plan will set out a framework of climate actions to be carried out by Galway City Council, in collaboration with other key stakeholders, over the five-year period from 2024 to 2029. This includes establishing climate action related strategic goals, high level objectives to support the delivery of these goals and also actions that are time-bound, measurable and focused on local level climate action.</p> <p>We acknowledge that draft strategic goals look to address energy, the built environment and related infrastructure, transportation, natural environment and green infrastructure, Economic development and green enterprise/business, community resilience and just transition, and Governance related aspects. We also acknowledge that the Plan will take account of both climate mitigation and climate adaptation actions. We recognise the importance of ensuring that the National Transition Objective is underpinned by a clean, healthy and well-protected environment.</p> <p>It is important, in developing and implementing the Plan, that it is set within the context of a wider and more integrated approach to environmental protection.</p>	<p>Noted.</p> <p>Noted, and agreed.</p>
	<p>We note that the Plan will progress the climate adaptation and mitigation required at a local level and will support - a clear pathway to implement national climate policy locally, and prioritise action on evidence-focused climate measures that need to be taken.</p> <p>The SEA should play a key role in ensuring that this is achieved and should inform decision-making around the assessment and selection of actions and measures. The SEA should also assist in identifying ways to maximise the potential co-benefits of climate related measures for air quality, human health, biodiversity, water quality and other interrelated areas (i.e. win-win solutions).</p> <p>A key role of SEA is in assessing and informing the selection and refinement of actions and measures that maximise the co-benefits of climate actions for the wider environment and society. This should be highlighted in the SEA Report and the Plan</p>	<p>Noted, the SEA and AA has influenced the CAP and provided additional recommended actions as well as amendment of existing actions to enhance overall environmental performance of the CAP. These include co benefits and cross cutting mitigation measures.</p>

Consultee	Summary of comments	SEA Response
	<p>You should ensure that the Plan aligns with national commitments on climate change mitigation and adaptation, (such as the latest National Climate Action Plan) as well as any relevant sectoral or regional adaptation plans and adjacent local authority climate action plans.</p> <p>The Plan should include a commitment to consider any relevant updated actions, measures or recommendations that may arise in updates to the National Climate Action Plan over the lifetime of the Plan.</p> <p>The Plan and SEA should take into account the recent Climate Council Annual Review report, which is available at: https://www.climatecouncil.ie/councilpublications/annualreviewandreport/CCAC-AR2023-FINAL%20Compressed%20web.pdf</p> <p>Additionally, the relevant objectives and policy commitments of the National Planning Framework and the Northern and Western Regional Spatial and Economic Strategy and the Galway City Development Plan should be aligned with and considered, as appropriate.</p>	<p>Relevant sectoral climate action and adaptation plans are considered within Chapter 3 and 4 of this SEA ER.</p> <p>Noted, agreed.</p> <p>Relevant objectives from national, regional and county/city plans are considered and aligned with as relevant.</p>
	<p>Greenhouse Gas Emissions</p> <p>In preparing the Plan and SEA, the direct and indirect impacts of the Plan on greenhouse gas emissions and removals should be assessed. The Agency's most recent projections reports Ireland's Greenhouse Gas Emissions Projections 2022-2040 (EPA, 2023) and Ireland's Provisional Greenhouse Gas Emissions 1990-2022 (EPA, 2023) should be taken into account. The Climate Action Plan identifies actions to decarbonise electricity generation, the built environment and transport and to move towards carbon neutrality for agriculture, forest and land use sectors. The Plan should also integrate and align with the relevant actions in the Climate Action Plan, as appropriate</p>	<p>Actions in the plan address transport, built environment, landuse, as well as agriculture and forestry. Some additional actions are recommended in this regard through the SEA and AA assessment processes.</p>
	<p>Climate Adaptation</p> <p>In preparing the Plan and SEA, you should consider how the impacts of climate change, individually and in combination, are likely to influence the implementation of the Plan. The Plan should look to improve resilience of existing and planned critical infrastructure, systems and procedures to the effects and variability of climate change. Vulnerable populations should be considered in the context of just transition/adaptation. The cascading effects of proposed adaptation measures should also be considered. Recent extreme weather events could be useful to assist in identifying areas where for further work is needed to improve resilience, e.g. the resilience of critical water service infrastructure to flooding and drought</p>	<p>The cumulative effects of adaptation measures is considered in Chapter 7 of this SEA.</p>
	<p>The Plan should include appropriate adaptation measures that can be implemented either directly or through relevant land use plans and/or specific plans e.g. Flood Risk Management Plans, River</p>	<p>Will be considered and integrated as appropriate.</p>

Consultee	Summary of comments	SEA Response
	Basin Management Plans etc. The Plan will also help inform local authority land use and transport planning. Additional aspects to consider may include changes in native species and habitats and the spread of invasive species, pests and pathogens. In this regard, the Plant Atlas 2020 project looking at Ireland's changing flora might be useful to consider. A summary of this results can be found at: https://bsbi.org/wpcontent/uploads/dlm_uploads/2023/02/BSBI-Plant-Atlas-2020-summary-reportIreland-WEB.pdf	
	Water Quality The Plan should take into account the most recent Water Framework Directive water quality status and risk information, available on the EDEN WFD app. Relevant future projections of river flow are available in either EPA research reports (such as HydroPredict, pending), or academic papers related to these projects.	Noted, will be considered.
	Air quality The Plan should take into account the Draft National Clean Air Strategy (DECC). The Air Quality in Ireland 2021 Report (EPA, 2022) sets out the most recent status in each of the four air quality zones in Ireland and may be useful to consider. Data on levels of atmospheric pollutants from the EPA's national ambient air quality monitoring network should also be integrated as appropriate. The pollutants of most concern are traffic-related, including Particulate Matter and Nitrogen Dioxide.	Noted, will be considered given localised transport emissions and impacts on biodiversity, water and human health.
	Recent EPA Climate change related publications Some recent climate change publications that may be useful to consider in preparing the SEA and the Plan are shown below: - Ireland's Greenhouse Gas Emissions Projections 2022-2040 (EPA, 2023) - Ireland's Final Greenhouse Gas Emissions 1990-2021 (EPA, 2023) - Ireland's Provisional Greenhouse Gas Emissions 1990-2022 (EPA, 2023) - Climate Change's Four Irelands (EPA, 2022) - Ireland's Air Pollutant Emissions 2021 (1990-2030) (EPA, 2023) Additionally, further reports/publications are available at: can be consulted at https://www.epa.ie/publications/monitoring--assessment/climate-change/ . Research report 429: Building Coastal and Marine Resilience in Ireland (EPA, 2023) may be useful to consider. It discusses the need for identification and increased awareness of climate change risks to Ireland's coastal communities. It also highlights the importance of building national resilience across socio-ecological and economic systems. Other climate- related environmental research reports are available at: https://www.epa.ie/publications/research/climate-change	Noted, will be reviewed and included as appropriate.
	EPA State of the Environment Report Our State of Environment Report, Ireland's Environment - An Integrated Assessment 2020 (SOER2020) identifies thirteen high level 'Key Messages for Ireland'.	SEA mitigation measure includes this publication re coastal and marine resilience. Noted

Consultee	Summary of comments	SEA Response
	<p>Delivering Ireland's long-term sustainable development and environmental objectives will involve many different stakeholders to address these key actions. The report recognises the need for full implementation of existing environmental legislation and review of governance/coordination on environmental protection across public bodies. Specifically, information provided in the following chapters should be considered, as appropriate and relevant. - Chapter 2 (Climate) highlights the clear need for systemic change in Ireland to ensure the country will become the climate neutral and climate resilient society it aspires to be. More urgency is needed to deliver actions on climate mitigation and adaptation and to ensure that Ireland meets its international obligations to reduce greenhouse gas (GHG) emissions. Further measures are required to meet national and EU ambitions to keep the global temperature increase to 1.5°C.</p> <p>These measures will contribute to Ireland achieving climate neutrality by 2050. - Chapter 11 (Transport). The transport sector has a significant impact on the environment, including being responsible for 20 per cent of Ireland's greenhouse gas emissions. A sustainable mobility transformation is required, with the next decade crucial, whereby necessary journeys are made by sustainable modes such as walking, cycling and public transport, followed by using electric vehicles where unavoidable. For this transformation to happen the measures relating to transport in the Climate Action Plan, and other necessary measures, must be fast tracked.</p> <p>Long-term, integrated spatial and transport planning can achieve compact development and move trips to other modes of transport, including cycling and should be supported in the Plan. Shifting to these modes is an essential part of a sustainable and climate-neutral transition for the transport sector. - Chapter 12 (Energy). Almost 90% of our total energy use is provided by combustion of mostly imported fossil fuels, which is unsustainable, and we need to begin fast tracking measures within the Climate Action Plan and other necessary solutions. This will involve strategic planning to transform this situation by 2050. Transitioning to using clean energy is essential for the protection of human health, our climate and the wider environment and will help support sustainable development of our society and economy. - Other chapters to consider include Chapter 6 (Nature) and Chapter 13 (Environment and Agriculture).</p>	
	<p>Population and Human Health: Air quality and water quality considerations should also be included in the list of aspects to be considered in relation to population and human health. Issues around equity and how vulnerable groups can be best assisted in dealing with and adapting to climate change should be considered, as relevant to the Plan.</p>	<p>These topics are considered in Chapter 4, 7 and mitigation measures recommended as appropriate .</p>

Consultee	Summary of comments	SEA Response
	<p>Biodiversity: The Plan should also seek to protect existing green and blue infrastructure and key ecological corridors from inappropriate development.</p> <p>Water Resources: With regards flooding, the Plan should consider the need for appropriate zoning and development of lands to avoid incompatible land uses in areas at risk of significant flooding.</p> <p>Soils / Geology: The protection of high nature value farming areas, and key agricultural lands should be considered. Where natural resources are required to support development, these should be carried out as efficiently as possible.</p> <p>Landscape: The key issues for the SEA to consider could also include the potential 'visual impact' of any proposed measures with potential to impact on sensitive landscape areas.</p> <p>Material Assets Transportation: The Plan should align with the transport commitments in the National Planning Framework, Northern and Western Regional Spatial and Economic Strategy, and the Galway Metropolitan Area Transport Strategy, where appropriate and relevant.</p> <p>Water Supply: Uisce Eireann's National Water Resources Adaptation Framework (and any relevant Regional Water Resource Plans) takes account of potential climate change implications for drinking water supply/service provision and may be also useful to consider.</p> <p>Cross-cutting issues Climate change will affect all aspects of our economy and society, with many issues impacting on the operations of individual local authorities. In implementing the Plan and in responding effectively to climate change, coordination, and collaboration among stakeholders on cross-cutting issues is needed</p>	
	<p>The Plan should include a commitment to implement the environmental monitoring programme and associated reporting set out in the Environmental Report.</p> <p>We suggest including a separate section on 'Monitoring, Implementation and Reporting' in the Plan, setting out the provisions for monitoring and reporting on the implementation of the Plan and periodic reviews. There may be merits in aligning the periodic reviews of the Plan with existing cyclical reporting e.g. Ireland's Environment, National Planning Framework, Water Framework Directive, Marine Strategy Framework Directive etc.</p> <p>In between review periods for the Plan, we recommend that Plan-related implementation reports are published annually, or biennially, as appropriate. We recommend aligning these Plan implementation monitoring/reporting with the environmental monitoring required under the SEA legislation. Doing so would enable the environmental performance of the Plan to be evaluated and would also provide for increased transparency during implementation.</p> <p>The SEA-related monitoring should address positive, negative and cumulative effects where they are likely to occur and should include provision for on-going review to facilitate an early response to any</p>	<p>Noted, the monitoring for the SEA ER is presented in Chapter 9.</p>

Consultee	Summary of comments	SEA Response
	significant environmental issues that may arise. The Environmental Report should specify the monitoring frequency and responsibilities and include provisions for reporting on the monitoring. To avoid duplication in data collection, the same indicators should be used for the plan-related and SEA-related monitoring where possible	
Department of Housing, Heritage and Local Government	<p>Having considered the SEA Scoping Report, the Department makes the following observations:</p> <ol style="list-style-type: none"> 1. The Department would welcome a Strategic Environmental Objective addressing ‘no net contribution to biodiversity losses or deterioration’, which accords with the wording of <i>Objective 1.1.3 of the National Biodiversity Action Plan 2017 – 2021</i>. This objective requires all Public Authorities and private sector bodies to ‘move towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure’. 2. ‘Biodiversity, Flora and Fauna’ data sources: <ul style="list-style-type: none"> • proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora designated under the Wildlife Acts 1976 to 2012, • Species protected under the Wildlife Acts including protected flora, • ‘Protected species and natural habitats’, as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008, including Birds Directive – Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive – Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), • Important bird areas such as those identified by Birdlife International, • Features of the landscape which are of major importance for wild flora and fauna, such as those with a “stepping stone” and ecological corridors function, as referenced in Article 10 of the Habitats Directive, • Other habitats of ecological value in a national to local context, • Red data book species 3. The Department recommends an action to ‘Identify, map and utilise local authority owned land and habitats for nature-based solutions including Sustainable Drainage System and Green Infrastructure’. Furthermore, consideration should be given to the incorporation of Nature-based Solutions to the Management of Rainwater and Surface Water Runoff into plans and developments as a Water Strategic Environmental Objective. Best practice interim guidance should be consulted: ‘Nature-based solutions to the Management of Rainwater and Surface 	<p>1.A new SEO has been included in the SEA ER to reflect the National Biodiversity Action Plan;</p> <p>2. This data is included, as relevant and appropriate in the SEA ER Baseline chapter and monitoring.</p> <p>3. Action recommended for inclusion. Note text in E 9 that partially addressed this: <i>“Consider and implement Nature Based Solutions (NBS) on all internal and</i> </p>

Consultee	Summary of comments	SEA Response
	<p>Water Runoff in Urban Areas’ published by the Department, supported by LAWPRO available at: https://www.gov.ie/en/publication/10d7c-nature-based-solutions-to-the-management-of-rainwater-and-surface-water-runoff-in-urban-areas-best-practice-interim-guidance-document/</p> <p>4. Measures should be included in the SEA for collective scientific analysis of post planning species monitoring reports submitted to the Local Authority to ascertain positive and negative species trends and success or otherwise of mitigation at Local Authority level and to inform future development. The recent Department publication ‘Guidance on the Strict Protection of Certain Animal and Plant Species under the Habitats Directive in Ireland’ should be consulted.</p>	<p><i>GCC planning permitted projects to ensure climate resilience and promoting biodiversity net gain, thereby creating vibrant, liveable and sustainable public realm. Further to include sustainable urban drainage systems, with appropriate regard to environmental protection requirements, including designated European sites. Increase in leaf cover in Galway City area, considering trees and vertical shading solutions.”</i></p> <p>Reference to LAWPRO guidance on NBS recommended for inclusion in CAP also.</p> <p>4 Noted, could be considered under preparation of new biodiversity action plan</p>
	<p>The Department notes that Shantalla/Westside has been selected as a ‘Decarbonisation zone’ (DZ) in the scoping document. The following designated sites should be considered in relation to this: Lough Corrib Special Area of Conservation (SAC) (Site Code: 000297), Galway Bay Complex (SAC) (Site Code: 000268) and Inner Galway Bay Special Protected Area (SPA) (Site Code: 004031). The NIR should include information on what alternative areas were considered and compared. The Department recommends identifying, protecting and enhancing the existing nature based carbon sequestering habitats in a DZ including but not limited to species rich grasslands, peatlands, wetlands, hedgerows and woodlands that would be integral to Galway City achieving its own and the Government’s 2030 and 2050 Climate Change targets.</p>	<p>Noted. CAP provides analysis as to criteria used in selecting DZ areas.</p>

Consultee	Summary of comments	SEA Response
	<p>The Department would like to draw your attention to the Climate Change Sectoral Adaptation Plan for Built and Archaeological Heritage (CCSAP) (2019) prepared as part of the National Adaptation Framework. The CCSAP identifies the priority impacts for the built and archaeological heritage based on current climate change projections.</p> <p>The Heritage Division of this Department is engaged with the local authorities through the departmental Climate Change Advisory Group and established Working Groups to ensure a consistent approach to protection and adaptation of heritage assets across the country and an alignment of policies, plans and actions across national, regional and local climate action.</p> <p>The Department anticipates ongoing engagement with the local authorities throughout the implementation of the current and future sectoral adaptation plans.</p> <p>In the preparation and implementation of the local authority adaptation strategy, there are a number of issues regarding protection of built and archaeological heritage that this Department recommends be taken into account to identify the heritage assets at risk in its area, assess their vulnerability to climate change, increase their resilience and develop disaster risk reduction policies for direct and indirect risks.</p>	Noted, and agreed.

2.1.2 Baseline data

The baseline data assists in describing the current state of the environment, facilitating the identification, evaluation and subsequent monitoring of the effects of the plan. It helps identify Issues and Threats in and around the plan area and in turn these can be quantified (for certain environmental parameters) or qualified. This highlights the environmental issues relevant to each SEA parameter and ensures that the plan implementation does not exacerbate such problems. Conversely this information can also be used to promote good environmental practices and opportunities for environmental enhancement, thereby improving environmental quality where possible.

Baseline data was gathered for all parameters.

Other data was gathered from the SEA ER of the North and Western Regional Economic and Spatial Strategy, NPWS, , National Biodiversity Centre, Uisce Eireann, the EPA, Met Eireann and other sources as appropriate including reports recommended by the EPA in their Scoping Submission. Footnotes throughout the document, particularly in Chapter Four present the reference and source.

The SEA has also used a Geographical Information System (GIS) in the following ways:

- To provide baseline information on a range of environmental parameters;
- To assist in assessment of alternatives;
- To help assess in-combination or cumulative impacts, and
- To provide maps to illustrate environmental parameters in the SEA Environmental Report.

2.1.3 Approach to assessment of significant environmental impacts

The principal component of the SEA involves a broad environmental assessment of the CAP. A methodology that uses the concept of expert judgement, public consultation, GIS and matrices, both to assess the environmental impact and to present the conclusions has been adopted in this SEA.

Key to assessing the above is setting a specific set of environmental objectives for each of the environmental topics. The objectives are provided in Chapter Five and include all aspects of the environment such as Cultural heritage, Population and Human health, and Biodiversity, Flora and Fauna.

The assessment described within this Environmental Report aims to highlight the potential conflicts, if they are present, between the actions identified in the CAP with the Strategic Environmental Objectives. Furthermore, the assessment examines the potential impact arising from the plan's implementation on sensitive environmental receptors.

The SEA Directive requires that information be focused upon **relevant aspects** of the environmental characteristics of the area likely to be **significantly affected** by the plan and the likely change, both positive and negative, where applicable.

Chapter Seven provides a discussion, where relevant, on the significance and type of the identified impact in accordance with current guidelines.

A key part of the SEA process has been the integration of the draft CAP, the SEA and Appropriate Assessment. The SEA legislation and guidelines highlight the importance of the integration between the preparation of the draft CAP and the SEA and AA processes. The iterative nature of the SEA process is such that the CAP is informed by environmental considerations throughout the preparation of the plan. The Natura Impact Report is a separate document to the Environmental Report both of which accompany this draft CAP.

2.1.4 Mitigation

Section (g) of Schedule 2B of the SEA Regulations requires information on the mitigation measures that will be put in place to minimise/eliminate any significant adverse impacts due to the implementation of the plan. Chapter Eight of this SEA ER highlights the mitigation measures that will be put in place to counter identified significant adverse impacts due to the plans' implementation.

The CAP has been prepared having regard to the environmental protection objectives already within the draft plan and the iterative process between SEA and plan preparation. However, some unavoidable residual issues may remain and therefore mitigation measures are required. Chapter Nine details the mitigation measures necessary to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the CAP.

2.1.5 Monitoring

Article 10 of the SEA Directive sets out the requirement that monitoring is to be carried out of the significant environmental effects of the implementation of the plan in order to identify at an early stage any unforeseen adverse effects and to be able to undertake appropriate remedial action. Chapter Nine presents the monitoring requirements for the plan.

2.1.6 Habitats Directive Assessment

The Habitats Directive requires, *inter alia*, that plans and programmes undergo AA screening to establish the likely or potential effects arising from implementation of the plan. If the effects are deemed to be significant, potentially significant or uncertain then the plan must undergo Stage 2 AA. The preparation of the CAP, SEA and AA are taking place concurrently and the findings of the AA have informed both the SEA and the plan itself. The SEA has also applied the methodology for Integrated Biodiversity Assessment where relevant (EPA, 2015).

2.1.7 Data Gaps

Data gaps are present in terms of up to date human health and population information. More broadly, understanding the interactions between climate change, weather events, and impacts on water and biodiversity in particular are complex. Sectoral climate change adaptation plans have been referenced and used to fill these data gaps where possible.

The SEA ER has used an ecosystems services modelling approach to attempt to address these data gaps particularly in terms of understanding the role and inter-relationships between environmental parameters including water resources, biodiversity and human health.

3 Relationships to Plans

Under the SEA Directive, the relationship between the and other relevant plans and programmes must be taken into account. The preparation of the CAP must be considered within the context of a hierarchy of policies, plans and strategies which include international, national, regional and local level policy documents. These documents set the policy framework within which the CAP will operate. A list of the key relevant international, national, regional and city policies to be included in the review are provided below in Sections 3.2 to 3.4; Section 3.5. The list below is adapted from the EPA SEA of Local Authority Land-Use Plans - EPA Recommendations and Resources 2023 (Version 1.19)¹. **Table 3.1** identifies key principles that inform the SEA process arising from this review and how they relate to the EPA Themes in the State of Ireland's Environment as well as the UN Sustainable Development Goals.

3.1 International and National

- United Nations Sustainable Development Goals
- National Planning Framework(under review currently) (DHLGH)
- National Biodiversity Plan (DHLGH)
- Climate Action Plan 2022 (DECC)
- Sectoral Climate Change Adaptation Strategies and Low Carbon Roadmaps Sectoral Adaptation Plan (Agriculture, Forest and Seafood Climate Change Sectoral Adaptation Plan) and the annual Climate Action Plan (CAP23)
- National Mitigation Plan (DECC)
- National Adaptation Framework (DECC)
- National Policy Position on Climate Action and Low Carbon Development (DECC)
- EU Climate Adaptation Strategy 2021
- National Broadband Plan (DECC)
- National Renewable Electricity Policy Framework (in preparation DECC)
- Grid 25 Implementation Strategy (Eirgrid)
- Framework for Alternative Fuel Infrastructure in Transport (DoT)
- National Bioenergy Plan (DECC)
- National Landscape Strategy (DHLGH)
- Smarter Transport / Strategic Framework for Integrated Land Transport (DoT)
- National Greenway Strategy (DoT)
- State of the Environment Report 2020 (EPA)
- Waste Action Plan for a Circular Economy (DECC, 2020)
- Draft National Hazardous Waste Management Plan (EPA, in preparation)
- National River Basin Management Plan for Ireland (DHLGH)- Draft in preparation and under notification by European Commission to respond within 2 months (due November 2023)
- National Marine Planning Framework (DHLGH)
- Water Services Strategic Plan (Irish Water)
- Capital Investment Programme (Irish Water)
- Draft Water Resources Management Plan (Irish Water)
- National CFRAMS Programme (OPW)
- Clean Air Strategy 2023 (DECC)

3.2 Regional and Local

- North Western Regional Economic and Spatial and Strategy
- Relevant CFRAMS Flood Risk Management Plan (OPW)
- Pollution Reduction Programmes for Shellfish Waters (DHPLG)

¹ [Preliminary SEA Scoping Submission – Greater Dublin Area \(epa.ie\)](https://www.epa.ie/publications/SEA/Preliminary_SEA_Scoping_Submission_-_Greater_Dublin_Area.pdf)

- Regional Waste Management Plan (CUWR)
- National Investment Framework for Transport Investment (DTTAS)
- National River Basin Management Plans (DHPLG)
- Galway City Council Documentation: Galway City Development Plan 2023-2029 and associated environmental assessments including SEA Environmental Reports(ER), Natura Impact Reports (NIR) and Strategic Flood Risk Assessment (SFRA).
- Galway Galway Transport Strategy 2016-2035
- Public Realm Strategy 2019 and associated Design, Activity and Delivery Manuals
- Climate Change Adaptation Strategy 2019 2024
- Biodiversity Action Plan 2014-2024

3.3 Key implications and principles arising from the Plan, Policy and Programme Review.

Arising from the review, several key principles and implications for the SEA ER can be established. These principles are considered through the SEA process and inform the assessment. For consistency the Strategic Environmental Objectives (SEOs) developed for the Galway City Development Plan 2023 -2029 are proposed for application in the SEA of the CAP, as appropriate. In addition, the key environmental messages identified in the EPA 'State of the Environment' report for 2020 are presented, where relevant, to align the key principles with these key environmental messages and challenges for the environment, in addition to relevant UN Sustainable Development Goals. Please see **Table 3.1** overleaf which presents this information. .

TABLE 3-1 KEY PRINCIPLES AND IMPLICATIONS FOR THE SEA OF THE GALWAY CITY CAP 2024-2029

SEA Topic	Principles for the CAP and SEA	EPA Ireland's Environment 2020 Key Messages	United Nations Sustainable Development Goals
Air Quality and Climate	<p><i>Support the delivery of all national climate policy as appropriate to the city with the prioritisation and acceleration of evidence-based measures</i></p> <p>Promote climate adaption and mitigation measures in line with the Galway City Climate Change Adaption Strategy and any future plans.</p> <p>Enable sustainable development by encouraging new and existing development to reduce carbon emissions and build climate resilience.</p> <p>Improve air quality within the city</p> <p>Comply as appropriate with the provisions of the Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG, 2009).</p>	<p>SOE3 Health and Wellbeing</p> <p>SOE5 Air Quality</p> <p>SOE4 Climate</p> <p>SOE6 Nature</p> <p>SOE 8 Marine</p> <p>SOE9 Clean Energy</p> <p>SOE 11 Water Services</p> <p>SOE12 Circular Economy</p> <p>SOE13 Landuse</p>	<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation</p> <p>SDG 12. Ensure sustainable consumption and production patterns</p> <p>SDG13. Take urgent action to combat climate change and its impacts.</p>
Biodiversity, Flora and Fauna	<p>Protect, conserve and promote the enhancement of habitats, species and their sustaining resources in international and national designated sites and prevent adverse impacts (direct, cumulative and indirect) from development within or adjacent to these sites.</p> <p>Protect and conserve rare and threatened habitats and species, including those listed in the Habitats Directive and the Wildlife Acts.</p> <p>Protect and conserve the marine environment and promote the appropriate sustainable management of the coastal zone taking cognisance of potential direct, indirect and cumulative impacts on European sites.</p>	<p>SOE 4 Climate</p> <p>SOE 5 Air Quality</p> <p>SOE 6 Nature</p> <p>SEO 8 Marine</p> <p>SOE 11 Water Services</p> <p>SEO 12 Circular Economy</p> <p>SOE 13 Land use</p>	<p>SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p> <p>SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>

SEA Topic	Principles for the CAP and SEA	EPA Ireland's Environment 2020 Key Messages	United Nations Sustainable Development Goals
	<p>Support measures to control and manage alien/invasive species.</p> <p>Protect areas of local biodiversity value and stepping stones which provide connectivity for species and prevent wildlife habitat fragmentation that contributes <i>towards no net loss of biodiversity through strategies, planning, mitigation measures, appropriate offsetting and/or investment in Blue-Green infrastructure</i>¹</p> <p>Promote ecological awareness and biodiversity.</p> <p>Avoid and minimise habitat fragmentation and seek opportunities to improve habitat connectivity that moves</p>		
Population, Human Health, Noise	<p><i>Safeguard the Galway's citizens from environment-related pressures and risks to health and well-being including air, water and noise pollution, climate change and flooding.</i></p> <p>Promote good quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns, land uses, including potential adverse noise quality impacts.</p> <p>Promote social inclusion and wellbeing/healthy living in the city.</p> <p>Minimise noise, vibration and emissions from traffic and minimise impact on residential amenities.</p>	<p>SOE3 Health and Wellbeing</p> <p>SOE4 Climate</p> <p>SOE5 Air Quality</p> <p>SOE 11 Water Services</p> <p>SOE 12 Circular Economy</p> <p>SOE13 Landuse</p>	<p>SDG 3. Ensure healthy lives and promote wellbeing for all at all ages.</p> <p>SDG 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</p> <p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.</p> <p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable.</p>

¹ Amended following SEA Scoping Submission by Dept of Housing, Heritage and Local Government

SEA Topic	Principles for the CAP and SEA	EPA Irelands Environment 2020 Key Messages	United Nations Sustainable Development Goals
Water	<p>Maintain and improve, where possible, the quality of surface water, rivers, lakes and groundwater to meet the requirements of the National River Basin Management Plan.</p> <p>Maintain and improve, where possible, the quality of transitional and coastal waters, and to prevent the contamination of bathing water.</p> <p>Support the maintenance and improvement of drinking water supplies.</p> <p>Support the promotion of water conservation.</p> <p>Progressively reduce discharges of polluting substances to waters.</p>	<p>SOE3 Health and Wellbeing</p> <p>SOE5 Air Quality</p> <p>SOE4 Climate</p> <p>SOE6 Nature</p> <p>SOE 11 Water Services</p> <p>SOE13 Landuse</p>	<p>SDG 6. Ensure availability and sustainable management of water and sanitation for everyone</p> <p>SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development</p>
Soil and Geology	<p>Maintain the quality of soils.</p> <p>Maximise the sustainable re- use of brownfield lands, and the existing built environment.</p> <p>Minimise the consumption of non-renewable sand, gravel and rock deposits.</p> <p>Protect and conserve important and audited geological heritage sites</p>	<p>SOE4 Climate</p> <p>SOE6 Nature</p> <p>SOE 11 Water Services</p> <p>SOE 12 Water Services</p> <p>SOE13 Landuse</p>	<p>SDG12. Ensure sustainable consumption and production patterns.</p> <p>SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.</p>
Material Assets	<p>Maximise use of the built environment in a sustainable and efficient manner.</p> <p>Maximise and support sustainable modes of transport.</p> <p>Ensure water and wastewater are planned for and provided as critical services infrastructure</p> <p>Facilitate measures to reduce all forms of air pollution.</p>	<p>SEO3 Health and Wellbeing</p> <p>SOE 5 Air Quality</p> <p>SOE 8 Marine</p> <p>SOE9 Clean Energy</p> <p>SOE 13 Land use</p> <p>SOE 11 Water Services</p> <p>SOE 12 Circular Economy</p>	<p>SDG 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p> <p>SDG 12. Ensure sustainable consumption and production patterns</p> <p>SDG 13. Take urgent action to combat climate change and its impacts</p>
Cultural Heritage	<p><i>To support adaptive re-use of existing uninhabited and derelict structures where possible opposed to demolition</i></p>	<p>SOE3 Health and Wellbeing</p>	<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable.</p>

SEA Topic	Principles for the CAP and SEA	EPA Ireland's Environment 2020 Key Messages	United Nations Sustainable Development Goals
	<p><i>and new build (to promote sustainability and reduce landfill).</i></p> <p>Promote the protection and conservation of the city's cultural, built archaeological and linguistic heritage, and where appropriate enhance character.</p>	<p>SOE 12 Circular Economy</p> <p>SOE13 Landuse</p>	<p>SDG16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels</p>
Landscape	<p>Conserve and enhance the built heritage and landscape features of the city.</p> <p><i>Support landscape scale responses to climate change adaptation and mitigation</i></p>	<p>SOE3 Health and Wellbeing</p> <p>SOE 4 Climate</p> <p>SOE 5 Air Quality</p> <p>SOE 6 Nature</p> <p>SEO 8 Marine</p> <p>SOE 11 Water Services</p> <p>SOE 12 Circular Economy</p> <p>SOE 13 Land use</p>	<p>SDG 11. Make cities and human settlements inclusive, safe, resilient and sustainable.</p> <p>SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>
Inter-relationships	<p>Maintain and improve the health of people, ecosystems and natural processes</p> <p>Actively seek to integrate opportunities for environmental enhancement.</p>	<p>SOE3 Health and Wellbeing</p> <p>SOE 4 Climate</p> <p>SOE5 Air Quality</p> <p>SOE6 Nature</p> <p>SOE7 Water Services</p> <p>SOE 8 Marine</p> <p>SOE9 Clean Energy</p> <p>SOE 11 Water Services</p> <p>SOE12 Circular Economy</p> <p>SOE13 Landuse</p>	<p>All SDGs</p>

4 Summary of current Environmental Baseline in Galway City.

4.1 Introduction

The plan area encompasses Galway City. Therefore, the primary focus of the environmental baseline are the city plan areas, and depending on the environmental parameter at a larger scale. For example, built heritage might be confined to a street or specific site, whereas water resources such as rivers, lakes, estuaries and coastal waters are far larger in scope and can be influenced by activities at a larger scale or activities upstream. Similarly, mobile species may disperse over larger areas of the landscape and require consideration at City and regional level depending on the species under consideration. The scope of the baseline has been informed by the scoping submissions received.

4.2 Green and Blue Infrastructure and Ecosystem Services

Green spaces are key in terms of natural capital and ecosystem services. Green and Blue infrastructure can also contribute to climate change adaptation and mitigation with co benefits in terms of biodiversity, water quality, recreation, and human health ¹. There is strong policy support in the Galway City Development Plan 2023-2029 to protect and enhance recreation and amenity space reinforced through the recognition of the importance of the same throughout the COVID-19 pandemic². A fifth of the city's total land area is designated as protected habitats, recreational amenity, open space and agricultural land. Galway's Green Network approach aims to manage and protect the environment and meet the requirements of a number of European Directives, including the Habitats, Birds, Water Framework and Floods Directives. The Green Network supports the linkage between various multifunctional spaces that include:

- Blue Spaces of the city's coastal areas, rivers, lakes and canals
- Protected Spaces of ecological and biodiversity importance
- Green Spaces of woodland parks
- Open Spaces including recreational and amenity and agricultural zoned lands
- Community Spaces, that afford direct access to nature and amenities (e.g. greenways) to the community

Green infrastructure planning is a successfully tested tool to provide environmental, economic and social benefits through natural solutions. In many cases, it can reduce dependence on 'grey' infrastructure that can be damaging to the environment and biodiversity, and often more expensive to build and maintain. While green infrastructure promotes the amenity and quality of life value of nature within urban settings and is not solely for the benefit of biodiversity, it is noted that it can contribute significantly to the retention and enhancement of ecological connectivity.

Green Infrastructure is defined as *'an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations'* (Comhar, 2010). Such spaces include woodlands, coastlines, flood plains, hedgerows, fields, gardens, turloughs, lakes, city parks and street trees, and the benefits to humans they provide include water purification, flood control, carbon capture, food production and recreation. Incorporation of green infrastructure in spatial planning and sectoral decision making helps to prevent biodiversity loss and fragmentation of ecosystems, thus restoring, maintaining and enhancing ecosystems and their services. It will improve resilience and adaptation to climate change and enable greater connectivity between ecosystems in

¹ Spatial Planning & Climate Action Delivering a Low Carbon & Climate Resilient Future Workshop Report Feb 2021 CARO

² "COVID-19 and Sheer Wellbeing 2020 Access to and Use of Blue/Green Spaces in Ireland during a Pandemic," 19.

protected areas and the wider countryside. The European Commission produced a strategy on green infrastructure in 2013. Due to its obligations under the European Landscape Convention, Ireland has prepared the National Landscape Strategy for Ireland 2015-2025, which has significant implications for biodiversity.

Ecosystems provide a series of services for human wellbeing either directly (as food, medicinal extracts, and fuel), and indirectly by providing clean air and water. The true value of biodiversity and benefits derived from ecosystem services cannot be limited to a financial value, as many interdependencies between biodiversity, natural ecosystems and their benefits to human beings have not been fully understood¹. The following section provide a brief overview of the existing ecosystem present in and around the plan area. The NW RESS states the following under Regional Policy Objective 5.6 *Develop awareness and create a greater appreciation of the benefits of our natural heritage, including on the health, wealth and well-being of the regions ecosystem services.*

See **Box 1** below for description of Ecosystem Services and Figure 4.2 for graphic of same; whilst **Figures 4.2 to 4.4** presents the NPWS Mapping Ecosystem Services Pilot Project that identifies a number of ecosystem services at plan level. The EPA Research Report² on Irish marine, coastal and estuarine ecosystem services cites a valuation exercise study of Galway Bay, which used a combination of gross national income and cultural adjustment and demonstrated that the sea and the beaches were the two most valuable ecosystems at €137.6 million and €45.3 million (as of 2012).

BOX 1 ECOSYSTEM SERVICES

Ecosystem services are the benefits that flow from nature to people. They can be provisioning (e.g. the supply of food, clean air and water and materials), regulating (e.g. water and climate regulation, nutrient cycling, pollination, or the formation of fertile soils), or cultural (e.g. recreation opportunities, or the inspiration we draw from nature). Natural ecosystems are multifunctional – they can provide a wide range of services simultaneously. The range and flow of these benefits depends largely on biodiversity and ecosystem condition.

A network of healthy ecosystems often provides cost-effective alternatives to traditional 'grey' infrastructure, offering benefits for EU citizens and biodiversity. This is why the EU promotes the use of nature-based green and blue infrastructure solutions³.

FIGURE 4-1 PRINCIPAL ECOSYSTEM SERVICES



¹ *Ecosystems Services, Mapping and Assessment* | National Parks & Wildlife Service

² Norton, Hynes, and Boyd, *Valuing Ireland's Coastal, Marine and Estuarine Ecosystem Services*

³ https://ec.europa.eu/environment/nature/ecosystems/index_en.htm

FIGURE 4-2 ECOSYSTEM SERVICES CARBON IN SOIL

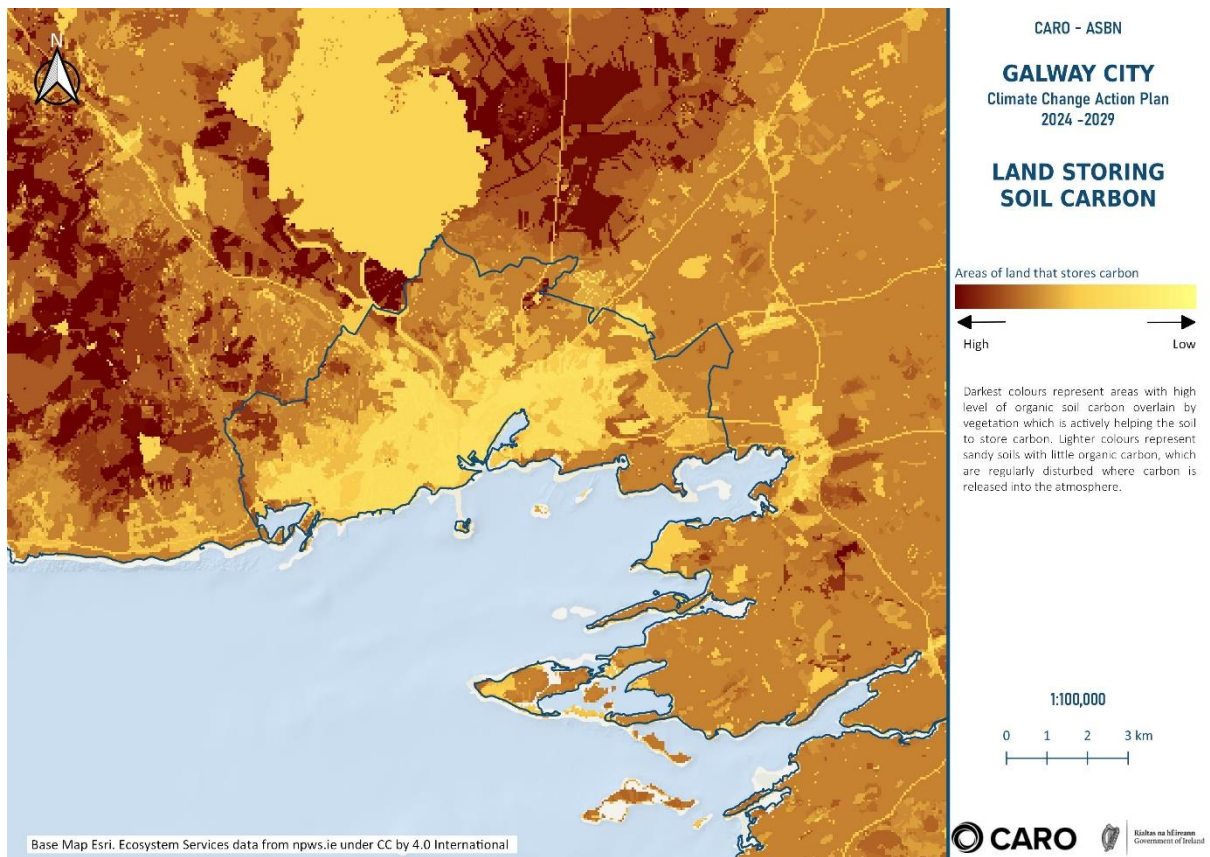


FIGURE 4-3 ECOSYSTEM SERVICES WATER RETENTION

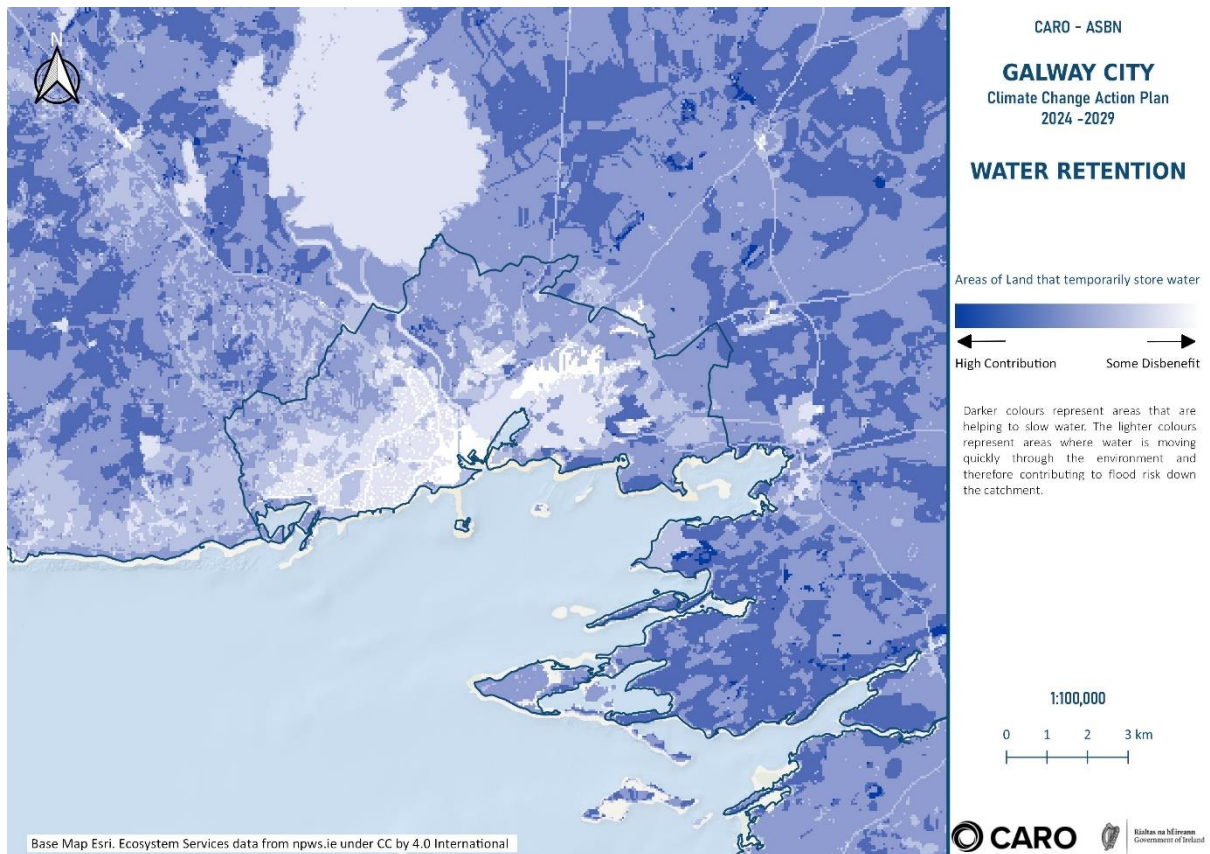
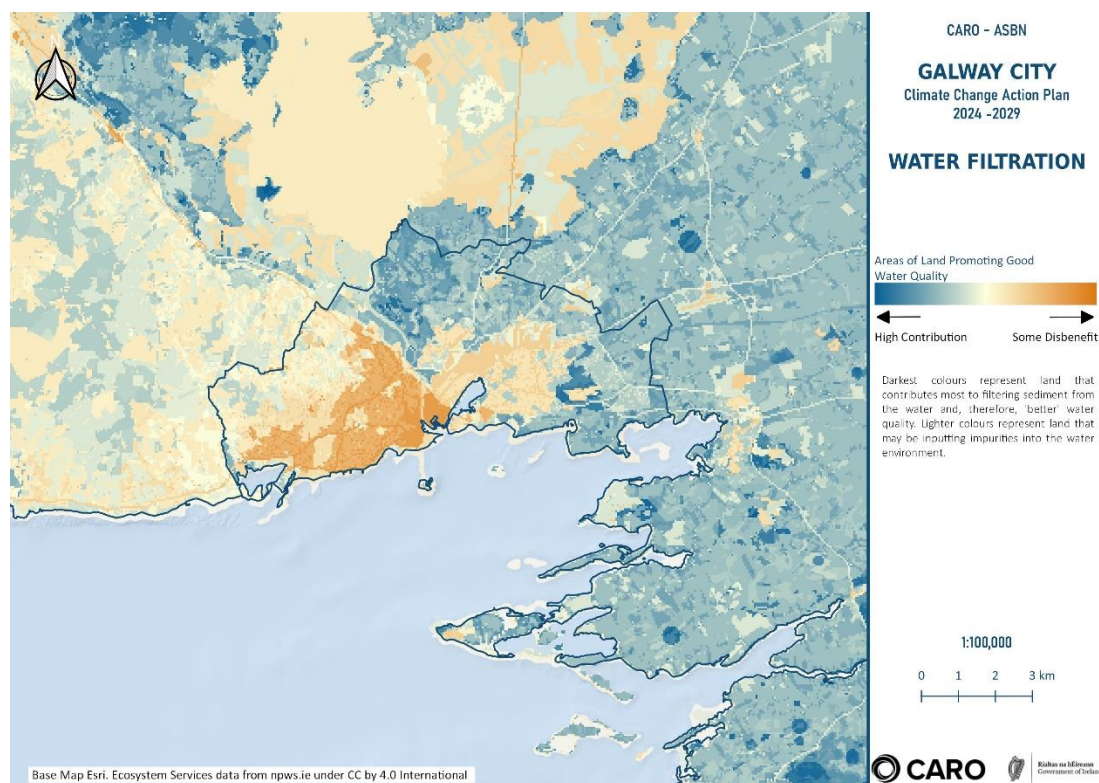


FIGURE 4-4 ECOSYSTEM SERVICES WATER FILTRATION



4.3 Biodiversity, flora and fauna

The Plan area is rich in biodiversity, with many significant protected habitats and species including coastal habitats and terrestrial habitats supporting a range of species and flora including otters, bats, wildfowl, salmon, lamprey and otter amongst others. Other habitats, although not protected are important for providing links between the protected habitats, allow migration, dispersal and genetic exchange of wild plants and mammals. Examples include scrub, hedgerows, tree lines, roadside verges, housing estate open spaces and gardens. Natural heritage in the plan area includes a wide range of natural features that make an essential contribution to the environmental quality, ecological biodiversity, climate resilience through nature-based solutions landscape character, visual amenity and recreational activities of the city. The Council also supports the All-Ireland Pollinator Plan which aims to help pollinators by improving biodiversity.

4.3.1 Designated sites

Special Areas of Conservation (SACs) have been selected for protection under the European Council Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) - referred to as the Habitats Directive. The integrity of a European Site (referred to in Article 6.3 of the EU Habitats Directive) is determined based on the conservation status of the qualifying features of the SAC. The qualifying features for the designated sites have been obtained through a review of the Conservation Objectives available from the National Parks and Wildlife Service (NPWS). Few Natura 2000 sites are exclusively designated or classified in consideration of terrestrial or aquatic qualifying interests; many consist of a combination of terrestrial, freshwater and marine habitats and species. In the natural environment also there is considerable overlap between terrestrial and aquatic fauna and flora, with each co-existing and co-reliant in many cases. A full assessment of the Plan against the qualifying interests and conservation objectives of the designated sites is undertaken throughout the appropriate assessment process which has been undertaken in conjunction with the Plan and SEA processes and is presented in the Natura Impact Statement.

Natural Heritage Areas also have a significant role in supporting the species using Natura 2000 sites mainly relating to mobile fauna such as mammals and birds which may use pNHAs and NHAs as

“stepping stones” between Natura 2000 sites. Article 10 of the Habitats Directive and the Habitats Regulations 2011, place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows form key “stepping stones”. These habitats also provide other important ecosystem services such as carbon sequestration, flood attenuation, water filtration, and recreation. Under the Wildlife Amendment Act (2000), Natural Heritage Areas (NHA) are legally protected from damage from the date they are formally proposed for designation. The aim of the NHA network is to conserve and protect nationally important plant and animal species and their habitats. They are also designated to conserve and protect nationally important landforms, geological or geomorphological features. Article 10 of the Habitats Directive together with the Habitats Regulations 2011; place a high degree of importance on these sites as features that connect European sites.

There are a number of other sites across the plan area that have been designated for environmental and/or ecological protection. The Galway Biodiversity Action Plan (GBAP 2014-2024) takes into consideration the findings of the Habitats Inventory (2005) and a range of national and local policy documents and sets out actions to promote and conserve the city’s natural heritage. The GBAP identifies potential wildlife corridors¹ with the main corridor of the River Corrib, this connects the coastal habitats and the rich mosaic of habitats in the city’s hinterland. Twelve Local Biodiversity Areas were identified in this plan and are presented below in **Table 4.1**.

TABLE 4-1 LOCAL BIODIVERSITY AREAS IDENTIFIED IN GALWAY CITY BIODIVERSITY ACTION PLAN 2014-2024

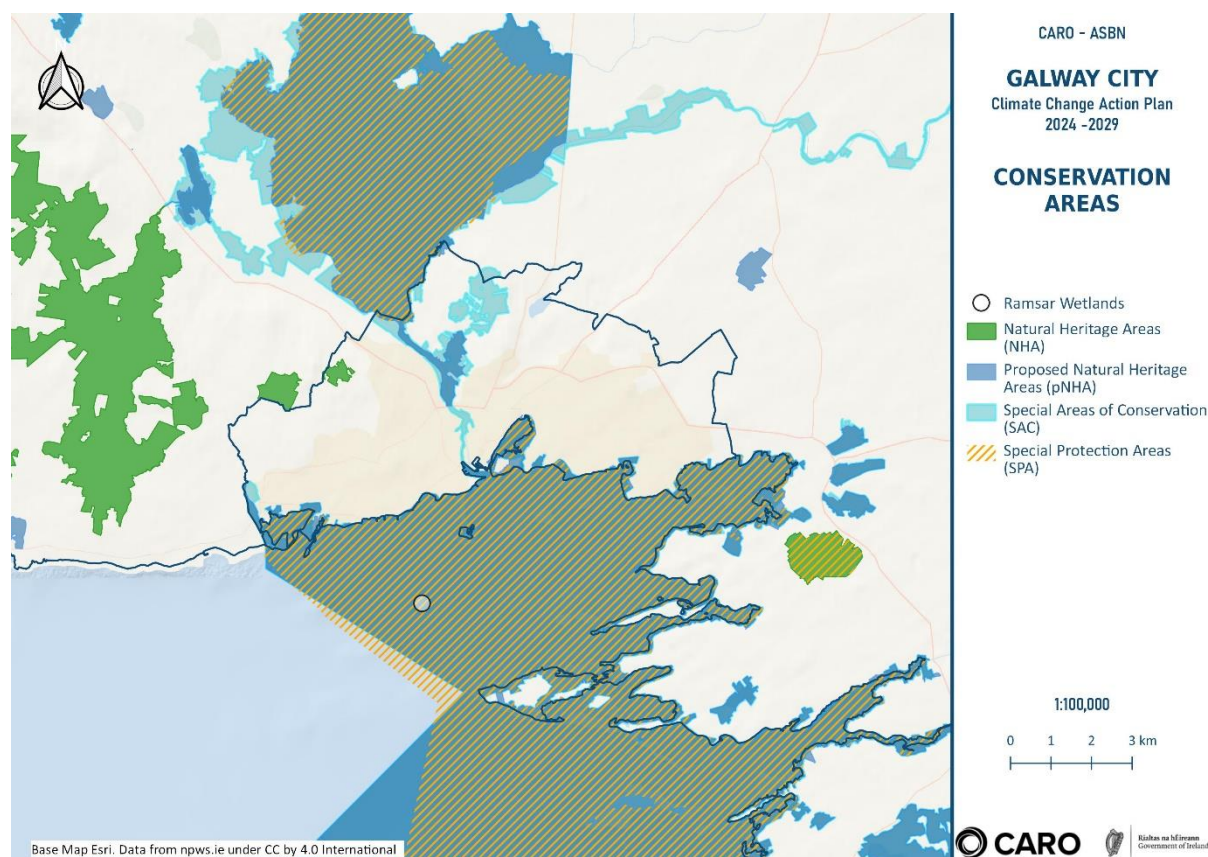
Name	Summary
Rusheen Bay – Barna Woods – Illaunafamona	This mosaic of habitats is located around the intertidal area of Rusheen Bay. The area has several types of shoreline including glacial cliffs, gravel banks, rocky shore, sandy shore, muddy sand and salt marsh. It also has several types of woodland in Barna Woods together with various semi-natural grassland types between Silverstrand and Gentian Hill. The entire area designated as either a SAC and/or SPA.
Cappagh – Ballymoneen	An area of blanket bog, fen, wet grassland and scrub located between Cappagh and Ballymoneen Roads.
Ballagh – Barnacranny Hill	Connemara peatlands, which includes blanket bog, fen, wet grassland, heath land and scrub, located east of Tonabrocky. This area is designated a NHA.
Mutton Island and nearby shoreline	The intertidal area around Mutton Island and the shoreline between the Grattan Road strand and Nimmo’s Pier hold the highest densities of wintering birds in the immediate vicinity of the city. The habitats are a mixture of rocky shore, sandy shore and shingle banks. The entire area is covered by SPA designation.
Lough Atalia and Renmore Lagoon	Lough Atalia is a land-locked inlet holds tidal water at low tide and has the largest salt marsh within the city. Renmore Lagoon, an outlet of Lough Atalia, is brackish and is surrounded by wet grassland, reed swamp and shingle banks. Lough Atalia and the intertidal area at Renmore except the Renmore Lagoon is designated a SPA.
River Corrib and adjoining wetlands	The River Corrib and the associated wetlands at Illaunacorra, including Jordan’s Island, contain an important complex of habitats such as lowland river, limestone/marl lake, reed swamp, wet grassland and wet woodland. The area also includes reed swamp and meadows on either side of the Dyke Road between Quincentenary Bridge and Salmon Weir and wet woodland at Dangan to the south of Dangan Business and Technology Park on the west bank of the river and peatland areas north of Bushypark.

¹ Kindermann, G. 2004

Name	Summary
Menlough to Coolagh Hill	Area of high value habitats centred on the Menlough area to the north of the city. The area has thin calcareous soils overlying limestone, which is exposed on the surface in many places. The area includes oak-ash-hazel woodland at Menlo Woods. It includes a mosaic of exposed limestone rock, calcareous grassland and hazel scrub. A small turlough occurs at the centre of this area.
Ballindooley – Castlegar	This area is centred on Ballindooley Lough and holds fen, reed swamp, wet grassland, scrub and exposed limestone rock. The Castlegar area also contains smaller areas of wet grassland, scrub and exposed limestone.
Ballybrit Racecourse	Large open area of species-rich calcareous grassland.
Merlin Park Woods	Woodlands containing mature broad-leaved trees, mixed broad-leaved conifer woodland and scrub. Located north and south of Merlin Park, Hospital and Dublin Road.
Doughiska	This area along the eastern boundary of the city, is centred on an area of exposed limestone rock with calcareous grassland and scrub. The grassland contains orchid species.
Roscam	The peninsula of Roscam lies between Oranmore Bay to the east and the townland of Murrough to the west, with the railway line dividing it from lands to the north. It contains some small but relatively undisturbed examples of saltmarsh, shingle banks, brackish lagoon, sandy shore and muddy sand shore, with calcareous grassland and scrub.

These areas are of huge importance for the protection of biodiversity at a local level and also in the provision of amenity and educational resource. See **Figure 4.5** for principal designated sites including Ramsar Sites..

FIGURE 4-5 DESIGNATED CONSERVATION SITES



4.3.2 Wetlands

The value of wetlands includes their function in improving water quality, for floodwater storage whereby they can slow down the force of flood and storm waters as they travel downstream; habitat for wildlife; biodiversity support and provision of recreational and cultural heritage services. The role of wetlands is recognized as forming a vital element in addressing climate change effects by acting as carbon storage.

Wetlands are effectively the border between the open water and dry land. Reeds, sedges, water forget-me-not, marsh marigold and purple loosestrife provide cover for ducks and wading birds. Changes in water quality as a result of pollution (from surface run-off, WWTPs etc.) also significantly impact wetlands. The value of wetlands include their function in improving water quality, for floodwater storage whereby they can slow down the force of flood and storm waters as they travel downstream; habitat for wildlife; support biodiversity; provide valuable open space and create recreational opportunities; are vital for preventing further climate change by acting as carbon storage and are part of cultural heritage.¹

4.3.3 Woodland habitat

Galway City contains various urban woodlands, significant in terms of contribution to local biodiversity and refuge areas for wildlife, as well as contributing to the wider ecological network. A summary of the principal urban woodlands is provided below:

- **Terryland Forest Park:** Twelve mammal species have been recorded at Terryland Forest Park including seven species of bats and species generally confined to rural areas, such as the Irish hare. The occurrence of the Irish hare in the urban setting is indicative of the interconnectedness of the natural areas within the city. ²
- **Barna Woods:** is approximately 21ha and is of high ecological value as it connects to other habitats of high conservation importance on an international scale, including Galway Bay Complex SAC. The site also has a rich archaeological heritage. Habitats recorded at Barna Wood including Oak-ash-hazel woodland, mixed alder-oak-ash woodland and Dry Calcareous and neutral grassland.³
- **Merlin Park Woods:** contains a range of habitats including native oak-ash-hazel woodland, mixed broadleaved woodland, conifer woodland, limestone pavement, wet grassland, scrub and a stream. There are records of several birds and bat species utilising the woods, as well as sightings of red squirrels. The long-eared owl *Asio otus* is known to breed within the conifer woodland at Merlin Park Woods.

4.3.4 Coastal habitats

The coastal zone of Galway City consists of a diverse range of habitats including sea cliffs, salt marsh, shingle banks, and sandy, muddy and rocky shores. Galway Bay is an important ornithological site with its shallow waters providing excellent habitat for species including Great Northern Divers and Red-breasted Merganser. Inner Galway Bay support species such as Black-throated Diver, Light-bellied Brent Goose, and Common Tern. Lough Atalia, supports an impressive variety of bird species including Little Grebe, Goldeneye and Red-breasted Merganser and common waders such as Oystercatcher.

The Harbour Seal (*Phouca vitulina*) occurring in the Galway Bay Complex SAC occupy both the aquatic and intertidal shorelines that become exposed during the tidal cycle. Inner Galway Bay supports the presence of the Common Seal and Otter, both listed under the Annex II of the E.U. Habitats Directive.

¹ <http://www.wetlandsurveysireland.com/>

² Galway City's Wildlife | Galway City Biodiversity

³ codes derived from Fossitt classification codes and descriptions

4.3.5 Protected species and habitats outside protected sites

Habitat mapping, bat surveys and tree surveys have helped to identify habitats and species which occur outside of designated sites, but which are protected under European and National legislation. Otter, Lesser Horseshoe Bat and Irish Hare have been recorded in the Lough Corrib SAC. Moycullen Bogs support the Irish Red Data Book species, Red Grouse, and several other faunal species, including the Irish Hare, Fox and amphibian species.

Atlantic Salmon use River Corrib and Lough Corrib as spawning grounds. Populations of Freshwater Pearl Mussel and White-clawed Crayfish occur throughout Lough Corrib. Other species that are listed under Annex II of the E.U. Habitats Directive are sea lamprey and brook lamprey.

The Wildlife Acts, 1976 and 2000 are to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims. It includes a diverse range of wild birds, land and marine mammals and amphibians. Protected plants are those that are legally protected under the Flora Protection Order, 2015.

4.3.6 Invasive species

The EU adopted “Regulations on the prevention and management of the introduction and spread of invasive non-native species” (2013/0307(COD)) came into force on the 1st of January 2015. This regulation seeks to address the problem of invasive species in a comprehensive manner so as to protect native biodiversity and ecosystem services, as well as to minimize and mitigate the human health or economic impacts that these species can have. The Regulation foresees three types of interventions; prevention, early detection and rapid eradication, and management.

Some species of aquatic and terrestrial invasive flora and fauna which specifically pertain to Galway City include; *Gunnera tinctoria* (giant rhubarb) and *Fallopia japonica* (Japanese knotweed). The Zebra Mussels poses a significant pressure on the aquatic ecosystems of the River Corrib. Rise in seawater temperatures have also been linked with increased interactions between recreational users of the ocean and undesirable species such as jellyfish and stinger larvae.

4.3.7 Key Biodiversity Flora and Fauna Issues relating to the Climate Action Plan

- Focus is being put on predicting how a changing climate will impact on some of our most threatened species, for example species at the range limits. Combined with change landuse patterns and activities most recently research (2023¹) record a decline in range and abundance or both of native plant species with native grassland species suffering the greatest decline. Lakes and wetlands have also been affected; some lakes are now dominated by the few aquatic plants favoured by nutrient enrichment, such as the introduced Nuttall's Pondweed. There is evidence that climate change may have affected the Irish flora by helping some southern species to spread northwards.
- In contrast, the overwhelming majority (80%) of species introduced into Ireland since 1500 have increased. Most of these non-native species are benign but some, such as Himalayan Balsam and Rhododendron, have become invasive, with a negative impact on the native flora.
- In Galway City one of the most prevalent impacts of climate change in recent years has been the increase in flood events. Management of flood-related issues is therefore of critical importance to the future sustainable development of the city.
- Coastal erosion is another prevalent impact of climate change in the city. There is firm evidence that rising sea-levels and increasing storm frequency and wave energy can increase the rate of erosion and the incidence of storm and flood-related events (e.g. land-ward incursion, wave damage, flooding). Over a period of decades, this will inevitably lead to loss or modification of some coastal habitats and interference with human use of the coastal zone.

¹ Botanical society of Britain and Ireland Plant Atlas 2020. [BSBI-Plant-Atlas-2020-press-release-Ireland-FINAL.pdf](#)

- Of the 94 identified ecological processes¹, across terrestrial, marine and freshwater ecosystems, that underpin ecosystem functioning and support services to people, 82% showed evidence of impact from climate change. The observed and projected climate change impacts on Ireland's biodiversity can be categorised into four broad categories:
 - a) Changes in phenology (the timing of lifecycle events);
 - b) Changes in the geographical range of species;
 - c) Increased degradation of habitats and changes in ecosystem processes;
 - d) Increased occurrence of invasive species;

Previous extreme weather events that have impacted on biodiversity include the extended cold spell of 2010 which led to Wintering Wildfowl Starving and Birds Freezing in Roosts on Shannon and Little Brosna callows. Exceptionally dry summer of 2018 resulted in numerous (50 estimated) large and smaller fires on upland and hill areas.

4.3.8 SEA recommendations:

- Clear and measurable actions to address nature based solutions to support co benefits and ecologically driven responses to interventions around climate change impacts, mitigation and adaptation.
- Actions to address and respond to invasive species.
- Creating space for nature at landscape scale to facilitate mobile species.
- Research into interactions between climate change on soil, water, air and biodiversity.

4.4 Population and Human Health

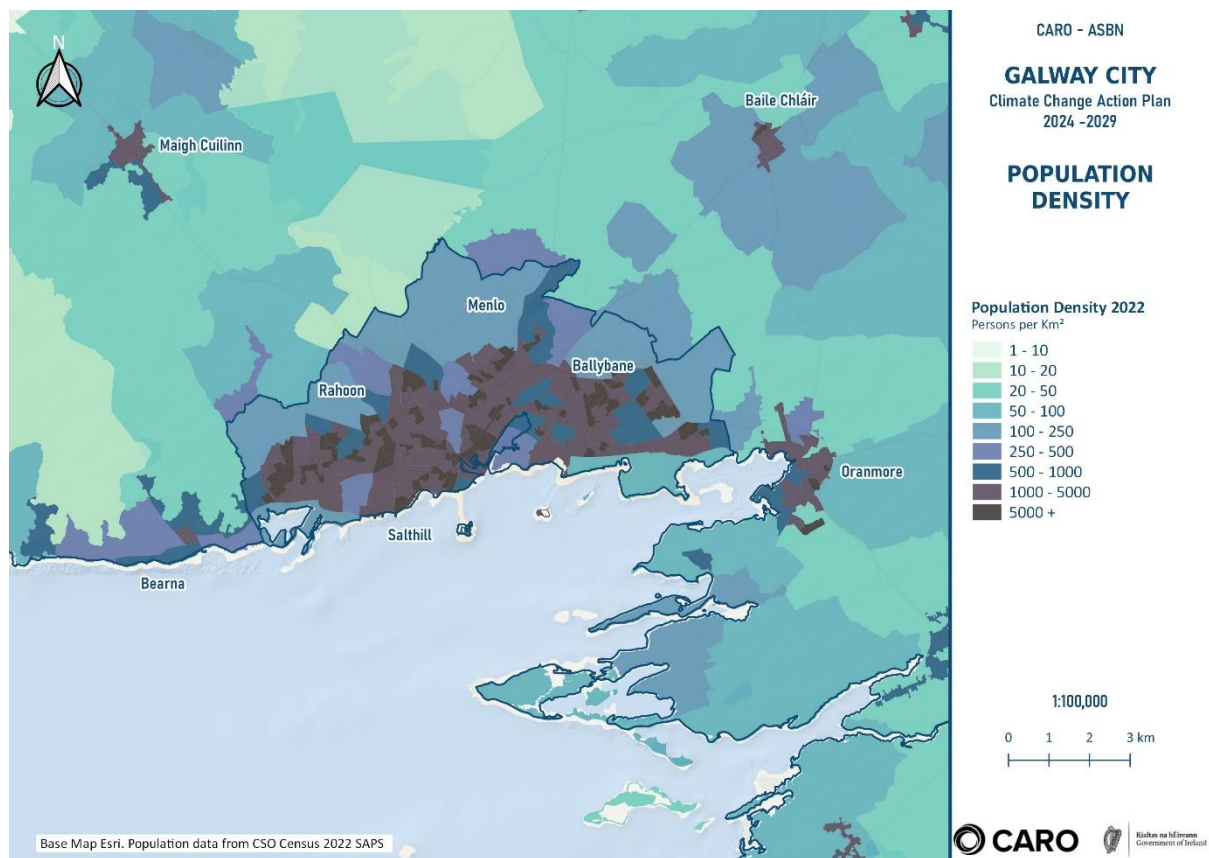
Census 2022 data shows a population for the Galway City and suburbs of 85,910 persons. The city is projected to grow an additional 30% of its current population in 2026, and therefore will necessitate an examination of the impacts on population dynamics, human health and quality of life on Galway City residents. Population projections and housing demands are expected to exceed the estimates that have been suggested by ESRI². A key challenge for the city is providing sufficient housing options across all tenures in sustainable neighbourhoods, housing choice and affordability, and social inclusion (in support of people with disabilities, the Traveller community and other ethnic minorities) to surmount barriers such as poverty that prevent people from engaging in education, culture and community activities that enhance quality of life.

Project Ireland 2040 National Planning Framework (NPF) targets the population of Galway City to grow by 40,000 to 45,000 people by 2040 which is an increase of approximately 55%. It also targets half of the homes to accommodate this population increase to be located within the existing built footprints on lands which include key regeneration/brownfield sites, infill sites and underutilised lands at locations that are well served by existing and planned public transport, amenity, social and community infrastructure. The Regional Spatial and Economic Strategy 2020-2032 (RSES) for the Northern and Western Regional Assembly area provides a high-level development framework to support the implementation of the NPF and includes a Metropolitan Area Strategic Plan (MASP) for Galway. The MASP identifies key infrastructure, services and facilities that will be required to support sustainable city growth and regeneration. It sets out how the NPF population targets can be met in accordance with the principles of sustainable development with the aim to deliver compact growth. For the city and suburbs, the population targets set out in the MASP are to accommodate 23,000 persons to 2026 and a further 12,000 persons to 2031, to be substantially delivered within the existing built-up footprint. **Figure 4.6** presents the population density at plan level based on the 2022 Census data.

¹ Biodiversity Climate change sectoral adaptation plan NPWS 2019

² "Chief Executive's Report on the Pre-Draft Plan Consultation Process."

FIGURE 4-6 POPULATION DENSITY



4.4.1 Human Health

Impacts can arise on people's health and quality of life from a range of environmental factors, often through a combination of environmental impacts such as landuse, water quality, air quality, noise and transport patterns. Many of these may be exacerbated from climate change effects and impacts. The exposure to contaminants or pollutants can have serious implications for human health. Potential impacts on population and human health include inadequate water and wastewater and waste infrastructure, contamination of soils, excessive noise, flooding and poor air quality in areas where there are large volumes of traffic. The Institute of Public Health states:

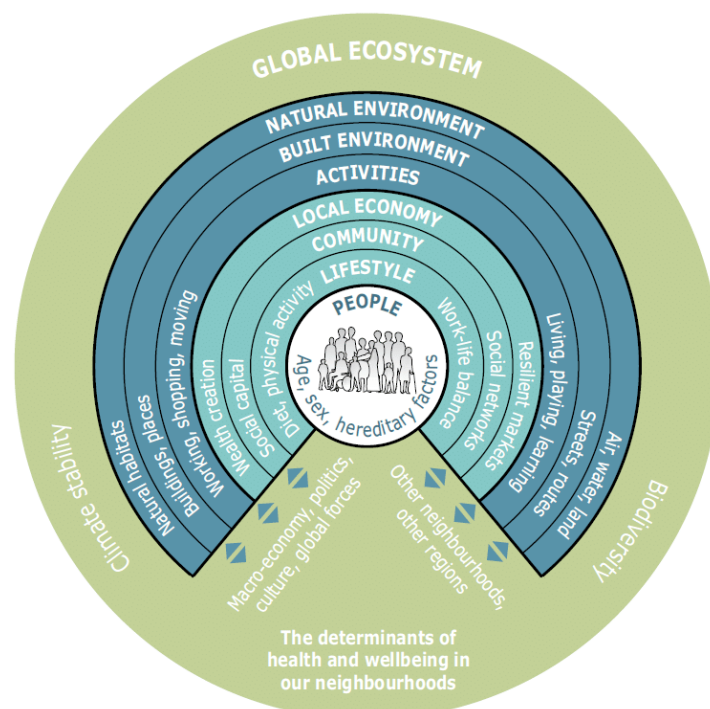
'Where people live affects their health. There are a number of elements of the living environment that influence health including the built environment, travel choices and the communities in which people live. The design, maintenance and location of buildings influence health. Similarly, public spaces and transport networks can facilitate health by providing opportunities for physical activity, social interaction and access to social goods'.

Disadvantaged people are more likely to live in poor quality built environments and have limited access to transport and local amenities supporting healthy choices. This has further implications in regard to climate change and adaptation and mitigation to climate change including transport options, green infrastructure, energy provision and efficiencies and air quality emissions. Poor air quality is a major health risk, causing lung diseases, cardiovascular diseases, and cancer. Health implications of poor air quality from transport impacts the lungs, liver & spleen¹Children, the elderly and citizens suffering from asthma and respiratory conditions are most affected. As well as negative effects on health, air pollution has considerable economic impacts; cutting short lives,

¹ Life Emerald 2023.

increasing medical costs, and reducing productivity through lost working days. Other environmental resources interact with human health and include material assets (wastewater and water services, energy, transport), and water quality as well as access to green and blue space. **Figure 4.7** below identifies key factors that contribute to human health.

FIGURE 4-7 THE DETERMINANTS OF HEALTH AND WELL-BEING IN OUR NEIGHBOURHOODS¹



4.4.2 Key Population and Human Health Issues relating to the Climate Action Plan

- Climate² change can influence health through altering exposure to stressors such as extreme weather events; vector-, food- and waterborne infectious diseases; changes in the quality and safety of air, food, and water; and stresses to mental health and wellbeing.
- Exposures that result from climate change can be categorised as exposures with direct health impacts (e.g. storm, drought, flood, heat wave, temperature change, wildfires) or exposures with indirect health impacts (e.g. water quality, air quality, land use change, ecological change).
- The extent to which exposures which result from climate change impacts on health will be influenced by mediating factors. These include: individual or social factors such as demographics, socio-economics, health status, access to care, conflict. environmental factors for example geography, baseline weather, air and water quality, vegetation. institutional capacity such as primary health care, warning systems.
- The potential climate change impacts on health are wide ranging such as deaths, injuries, respiratory disease, heat stroke, poisoning, water-borne diseases, infectious diseases, under nutrition, mental illness. These can include direct impacts (eg drowning), vector borne and other infectious diseases such as Lyme disease, impacts arising from air quality in terms of respiratory diseases, impacts to infrastructure with accompanying health impacts such as contaminated water, and water services.
- Health gains can occur from key climate change actions (“co-benefits”) such as: increasing consumption of diets with low greenhouse gas emissions and improving agriculture and good waste practices. Reducing co-pollutants from household solid fuel combustion, better

¹ SOURCE: HUMAN ECOLOGY MODEL OF A SETTLEMENT, BARTON AND GRANT, 2006

² Health Impacts of Climate Change and the Health Benefits of Climate Change Action: A Review of the Literature A Department of Health Research Paper, 2019.

lighting and application of passive design principles. Reducing greenhouse gases and associated co-pollutants from industrial sources. Increasing energy efficiency, reducing demand for fossil fuels and increasing demand renewable energy. Increasing green areas in urban spaces. Increasing active travel, modifications to public transport and to the built environment.

- EPA (2023) research¹ identified that people in Ireland feel that ‘others’ - such as future generations or people far away - are more threatened by climate change than themselves in the here and now. This means that many people underestimate the immediate risks and already-occurring effects of climate change here in Ireland. The youngest adults (18-24 years) consistently exhibit significantly higher levels of concern, with young women most concerned about climate change. People in Ireland support climate change policies. Where opposition to climate policies arise, it appears to be driven by practical concerns, rather than by scepticism or suspicion of the science of climate change. No figures are available for Galway City but at County scale 85 % of respondents in county (including Galway City) were worried about climate change.

4.4.3 SEA Recommendations

- Actions to support community awareness, engagement and ownership of climate change impacts, mitigation and adaptation.
- Enhanced placemaking through nature based solutions as an adaptive measures and support for active travel and modal shift.
- Support for energy efficiency in the built environment and circular economy.
- Research and support on appropriate landuse activities in the appropriate environment.
- Key focus on groups and demographics more vulnerable to impacts of climate change and support in terms of addressing fuel poverty, access to local food and public transport.
- Investigate and promote the potential and pivotal role creativity can play in addressing the challenges presented by climate action. Just Transition mechanisms and access to support for same.

4.5 Geology and Soils

The Geological heritage audit for Galway City includes 12 County Geological Sites (CGSs) in the plan area as follows:

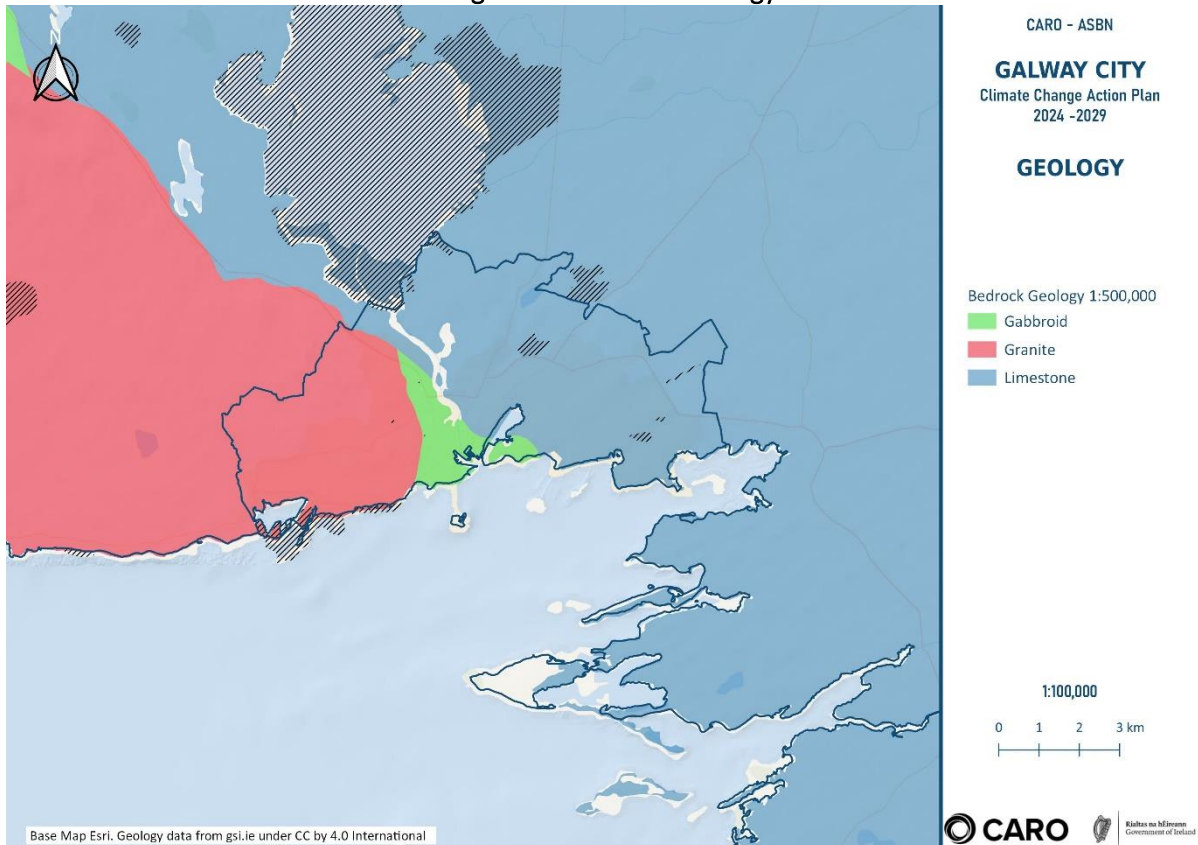
- Doughiska N6 Road Cut
- Fairlands Park
- Menlough Mushroom Rocks
- Menlough Quarry
- Merlin Park Cave
- Merlin Park Quarry
- Rusheen Bay Drumlins
- Salthill Promenade
- Shantalla Sliding Rock
- St. Augustines Well
- Terryland River
- Westside Sports Grounds

The majority of the soils for Galway City and suburbs are classified as “Made”, which have been distributed, transported or manipulated by urban activities. There are patches of Alluvial soils

¹ Climate Change in the Irish Mind - Support for Climate Policies’and Climate Change in the Irish Mind - Climate Risk Perceptions. <https://www.epa.ie/news-releases/news-releases-2023/people-in-ireland-support-climate-policies-with-some-opposition-specific-to-local-concerns-and-issues.php>

dispersed across the eastern side of the city. Vulnerable soils within the plan area are found primarily along the River Corrib. Lands to the west with granitic rocks are divided by the N59 from lands to the east with limestone. As granitic rocks are acidic and poorly drained, whilst limestone rocks are alkaline, the potential for contamination of water resources is higher. Given the urban character and historical landuse activities particularly in the city centre and harbour area, soil contamination may have occurred in brownfield lands. See **Figure 4.8** for bedrock geology, and geological heritage sites.

Figure 4-8 Bedrock Geology



Soils have a number of functions including supporting plant life and life within the soil, biogeochemical cycling of elements, energy cycles, water storage and exchange and ecosystem productivity. Soil formation occurs over very long timescales and can be considered a non-renewable resource. Soil formation occurs over very long timescales, and can be considered a non-renewable resource.

“Soil provides critical ecosystem and environmental services (Carilli, 2014; Agrilinks, 2019; Renforth and Campbell, 2021) that maintain key components of global climate and biodiversity (Hector et al., 1999; Kleijn and Sutherland, 2003; Gessner et al., 2010; Isbell et al., 2011; Doula and Sarris, 2016). Soil directly impacts biomass production, habitat diversity, biodiversity and the storage of many elements (e.g. carbon, nitrogen) and substances (e.g. water, organic matter; EC, 2017). From a socioeconomic perspective, soil underpins the security of the global food chain for people and animals, the production of fibre, environments that promote health and well-being (Bevik et al., 2020), and a potential nature-based solution to help mitigate the impacts of flooding and climate change. Soils are central to the discussion of topical issues such as carbon sequestration, nutrient availability, pollution, remediation and equitable economic development. Soil quality (the characteristics and dynamics of soil physical properties, chemistry and biology; Wander et al., 2019) and soil health (the functional ability of soil to provide ecosystem services and management

outcomes; Wander et al., 2019) should therefore be key elements of any policy framework relating to soils and soil management.¹

Figures 4.9 and 4.10 present principal soil types at plan level, as well as the mapping of high value nature farmland. Although the plan area is dominated by made soils due to the urban character, the western part of the plan area has been identified as supporting potential high value farmland.

FIGURE 4-9 SOIL TYPE

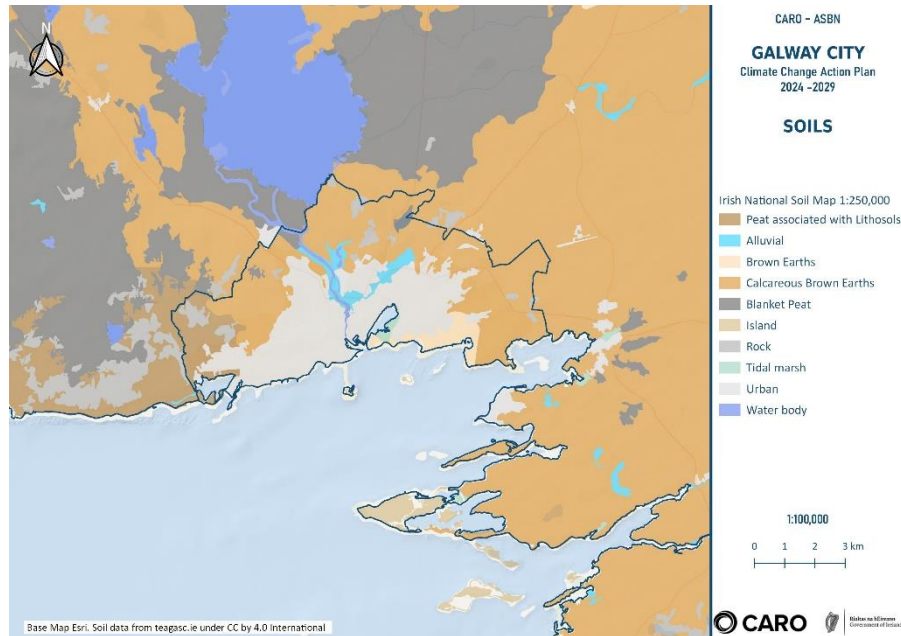
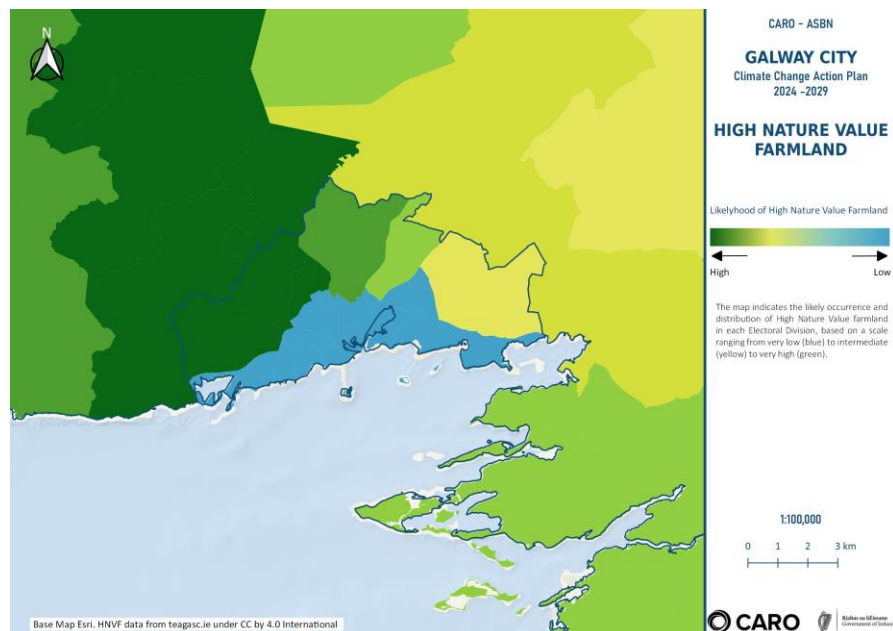


FIGURE 4-10 HIGH VALUE NATURE FARMLAND



EPA research has identified significant research gaps relating to soil in Ireland in terms of themes identified under the EU Soil Strategy for 2030 and this research has identified a signpost for soil policy in Ireland, presented below in Figure 4.11 which has particular relevant to climate action.

¹ A Signpost for Soil Policy in Ireland MUCKISOILS (Mapping Understanding and Current Knowledge of Irish Soils) (2021-NE-1029) EPA Research Evidence Synthesis Report UCC. Page 1.

FIGURE 4-11 SIGNPOST FOR SOIL POLICY IN IRELAND



4.5.1 Key Geology and Soil Issues relating to the Climate Action Plan

Significant changes to soil condition can be brought about by the impacts of climate change including changes in air temperature, precipitation and extreme weather events – increased occurrences of summer droughts and increased winter rainfall. The potential impacts of these weather changes are likely to be experienced most significantly in relation to agriculture, peatland areas and forestry areas as well as increasing the potential for flood risk. Drier summers could also require necessary infrastructural investment to store winter rain and the drying out of soils in response to climate change could result in deterioration of soil quality. Increased rainfall could cause increase soil erosion and run off. Other significant issues include:

- Maintaining and enhancing soil function and its carbon storage role where possible, recognising the essential role soils, and particularly functioning peatlands (peat soils present in the western part of the plan area) can contribute to climate change mitigation and adaptation.
- Addressing extent of soil sealing, increased surface run off and variable permeability of lands in the plan area.
- Retention and creation of areas of greenfield in terms of open space, green infrastructure, permeability and biodiversity considerations.
- Because of the complex interrelationship between water, air and soil, declining soil quality can contribute to negative or declining water or air quality and function.
- Significant changes to soil condition can be brought about by the impacts of climate change including changes in air temperature, precipitation and extreme weather events - increased occurrence of summer droughts and increased winter rainfall. The drying out of soils in response to climate change could result in deterioration of soil quality. In wetter western areas, within which the Plan area lies, increased rainfall could cause increased soil erosion.

Generally, a combination of dry summers and wet winters could also result in subsidence and soil heave.

- High nature value farming areas, and key agricultural lands should be considered. Where natural resources are required to support development, these should be carried out as efficiently as possible.

4.5.2 SEA Recommendations

- Supporting research and actions relating to carbon sequestration in soil
- Nature based solutions to provide co benefits including to retention and enhancement of soil quality and soil diversity
- Reuse of brownfield lands and support for circular economy through adaptive reuse of buildings and waste streams
- Support for sustainable landuse.

4.6 Water Resources including flood risk

The Water Framework Directive (WFD) requires the achievement of good status in all waters and that the status of water bodies does not deteriorate. Ireland is required to produce a river basin management plan under the Water Framework Directive and the current plan is from 2018-2021. The plan sets out the actions that Ireland will take to improve water quality and achieve 'good' ecological status in water bodies (rivers, lakes, estuaries and coastal waters) by 2027. The main catchment in the plan area is the Corrib Catchment (Code: 30), covering approximately 3113.28sq km. This includes the area drained by the River Corrib and all streams entering tidal water between Renmore Point and Nimmo's Pier (Galway). The total population of the catchment is approximately 116,866 with a population density of 38 people per km². This catchment is characterised by a wide, flat, limestone plain occupying the eastern two-thirds of the catchment which terminates in the large lakes of Corrib and Mask that abut against the igneous granites of Galway and the metamorphic uplands of southwest Mayo. The entire area of this catchment east of the large lakes is karstified and groundwater and surface water are highly interconnected in this region.

Catchments are shown in **Figure 4.12**. Surface water quality and water bodies at risk of not meeting WFD objectives are shown in **Figures 4.13 and 4.14**. Urban run off, urban wastewater, hydro morphological and anthropogenic pressures, extractive industry, , domestic wastewater and invasive species are exerting significant pressures affecting WFD 'At Risk' waterbodies in Galway.

FIGURE 4-12 WFD CATCHMENT

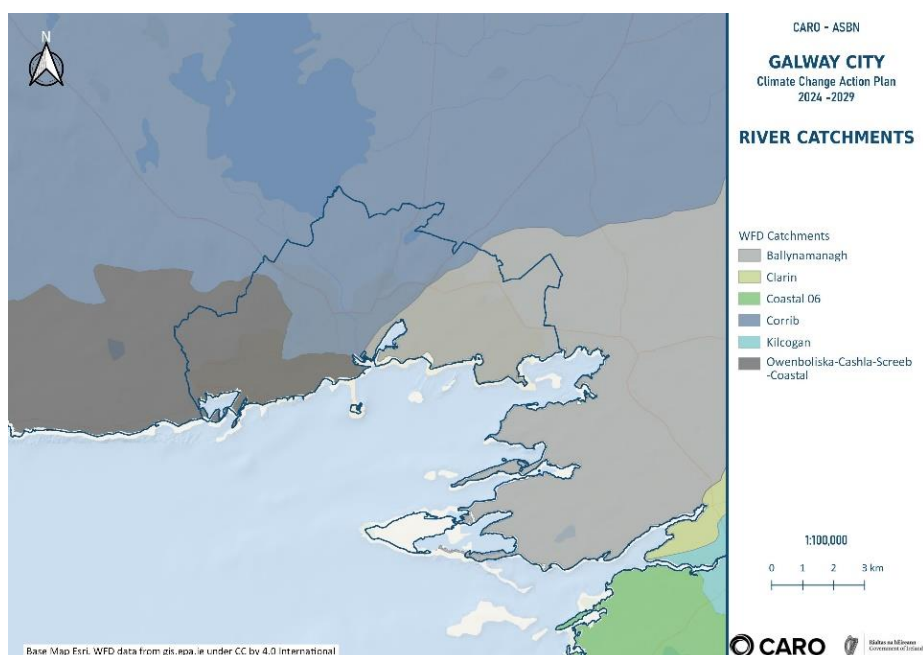


FIGURE 4-13 SURFACE WATER QUALITY

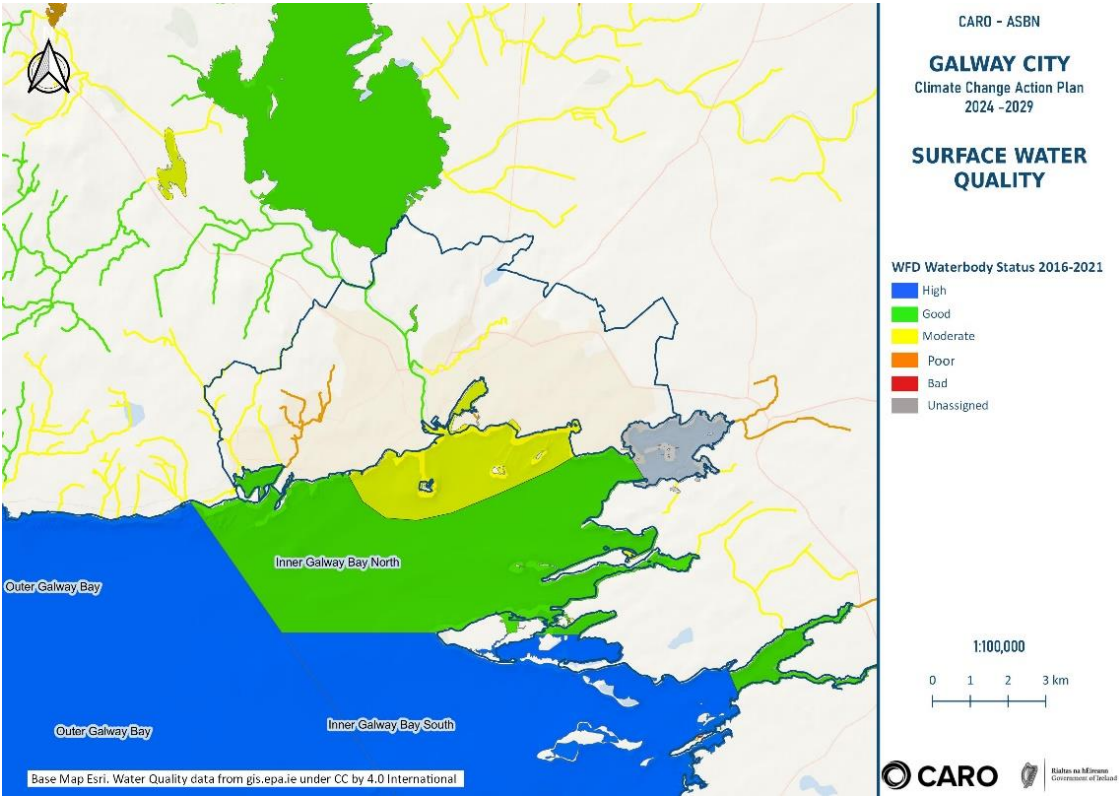
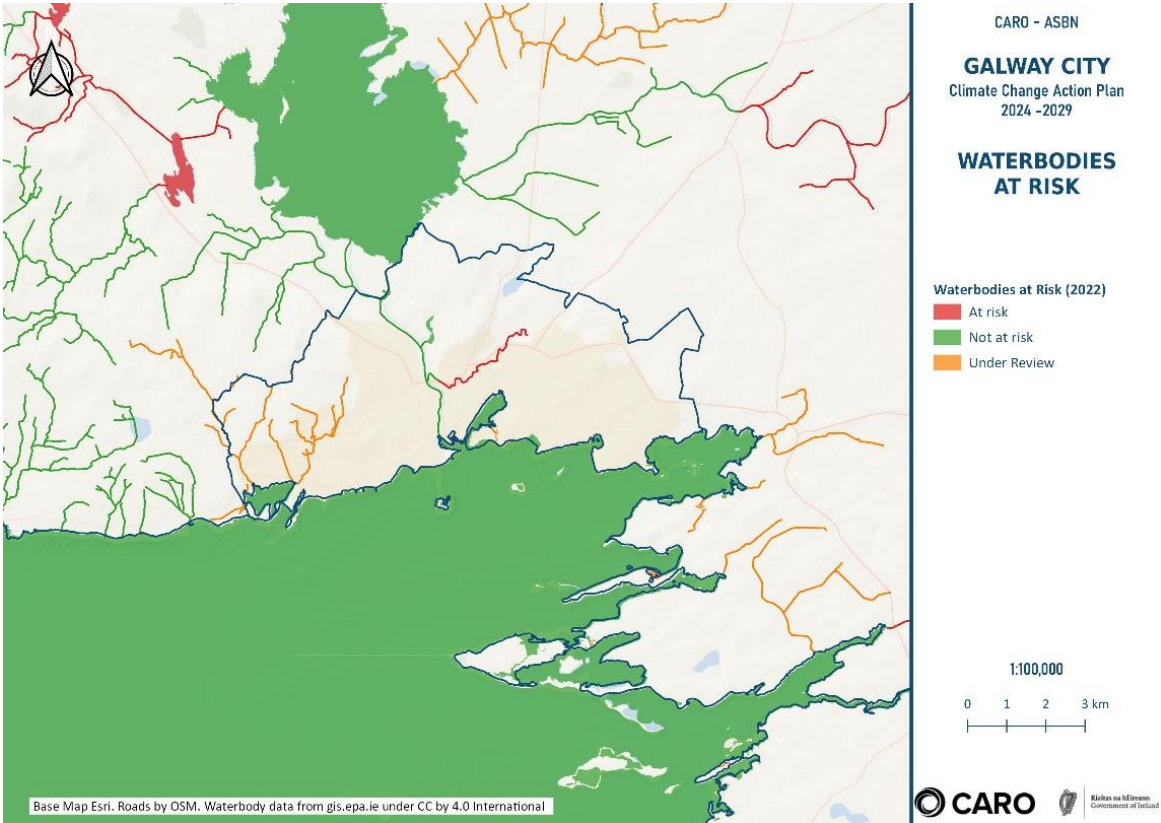


FIGURE 4-14 WATER BODIES AT RISK OF NOT MEETING WATER FRAMEWORK DIRECTIVE OBJECTIVES



4.6.1 Groundwater

Groundwater is a further significant resource and refers to water stored underground in saturated rock, sand, gravel, and soil. Surface and groundwater functions are closely related and form part of the hydrological cycle. The protection of groundwater from land uses is a critical consideration and groundwater vulnerability is becoming an important management tool. The entire island of Ireland has been designated as a Protected Area for Groundwater under the WFD. Groundwater is important as a drinking water supply as well as the supply to surface waters. In addition, groundwater supplies surface waters. Groundwater is exposed to higher concentrations of pollutants that are retained in the layers of rock and soil. The exposure to pollutants lasts much longer as groundwater moves at a slower pace through the aquifer. The quality of our drinking water supply, fisheries and terrestrial based habitats is intrinsically linked with groundwater quality. The Geological Survey of Ireland (GSI) aquifer categories are based on their vulnerability to pollution, i.e. the ease at which it can enter the subsurface layers. The classification of extreme or high vulnerability means that the groundwater in these areas is very vulnerable to contamination due to hydrogeological and soil factors.

Surface and groundwater are inextricably linked therefore making it difficult to protect from contamination. The protection of groundwater from human activity is crucial as the resource is highly susceptible to contamination with long-term consequences for humans and the environment. Overall, the groundwater status within the plan area is primarily of good status.

4.6.2 Flooding

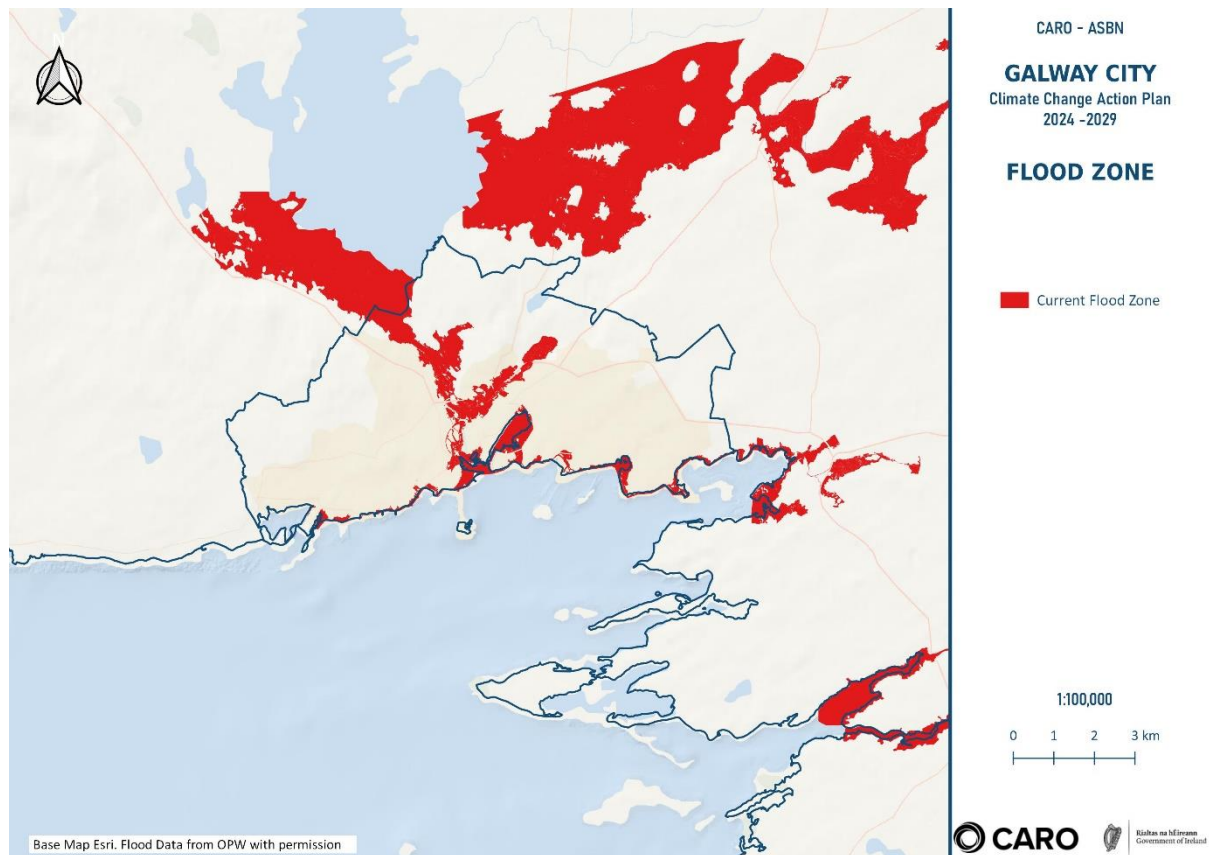
With climate change there are increased extreme weather events that contribute to flooding across a range of sources. Certain areas across the City are at risk from flooding from sources including groundwater, pluvial, fluvial and coastal. The Strategic Flood Risk Assessment for the City Development Plan 2023 -2029 states that:

Galway City has a coastline of approximately 13.5km that stretches from Silverstrand in the west to Roscam Point to the east. The key areas of flood risk within the city are properties along the Salthill promenade, the Claddagh Basin and Nimmo's Pier and the harbour. The area around the Claddagh Basin and the Docklands are also influenced by the River Corrib which discharges to Galway Bay. Significant, and relatively frequent, flooding occurs at Spanish Arch and Flood Street. The properties that encompass Lough Atalia are also an area of possible risk.

There is proportionally less risk from fluvial flooding than from tidal, but it is still important that river side development is fully considered in the context of flood management, particularly for sites which are currently defended. The main fluvial flood risk arises from the Corrib and the various canals that arise from it, including Friar's Cut and the Eglington Canal. There are also two smaller watercourses to the west of the city, both of which are independent of the River Corrib.

There are a number of flood relief schemes in Galway, including the dyke, which protects the Headford Road area from the Corrib, a retaining wall on the right bank of the River Corrib downstream of the Salmon Weir and the quay walls which provide some protection against tidal inundation. There are also a number of walls and other structures which, whilst not designed to act as flood defences, provide a level of protection against flood water. Since the winter flooding in 2013/2014, Galway City Council has carried out small scale works in the Salthill area with the aim of providing a higher level of protection to Leisureland and a flood gate has been installed to provide protection to the Galway Business School. Three sets of demountable defences have also been purchased to protect Spanish Arch and the surrounding area when extreme tides are forecast. Galway City Council and the OPW have also recently appointed consultants to begin work on Coirib go Cósta - the Galway City Flood Relief Scheme, which will review the potential for a scheme for the whole City and take this through to construction. The flood relief scheme is a significant project for the city and provides for protection and management of the SAC and SPA. See **Figure 4.15**.

FIGURE 4-15 FLOOD ZONES



4.6.3 Key Water Issues related to the Climate Action Plan

The main pressures on water quality arise from a number of sources including climate change and landuse activities and these can interact to exacerbate existing pressures on water quality. An example of such impacts are shown below:

- High precipitation - Increased surface and sewer flooding (leading to mobilisation)
- Low precipitation - Low flows and water levels causing reduced dilution of pollutants
- High temperatures - Spread of / increased viability of pathogens
- High temperatures - Changes in species distribution and phenology, including native, non-native and invasive species

Climate change poses risks to the delivery of water management objectives, but these risks depend on local catchment and water body conditions. Climate change affects the status of water bodies, and it affects the effectiveness of measures to manage the water environment and meet policy objectives. The future impact of climate change on the water environment and its management is uncertain. Impacts are dependent on changes in the duration of dry spells and frequency of 'flushing' events. The following risks are identified for water resources:

- Lower water levels and higher water temperature will reduce dissolved oxygen and lead to algal blooms and increased concentration of bacteria and other pollutants in the water.
- Increased precipitation increases the risk to groundwater quality from septic tank systems, agricultural, forestry and urban centre runoff.
- Saltwater intrusion on freshwater systems.
- River Basin Management plans will provide for more integrated management requirements for our water resources.
- Climate change threatens coastal areas, which are already stressed by human activity, pollution, invasive species and storms.
- Sea level rise threatens to erode and inundate coastal ecosystems and communities including unique ecosystems such as wetlands and machair (sand dunes).

- Warmer and more acidic oceans are likely to disrupt coastal and marine ecosystems on native species, algal blooms.
- Increase in fluvial, pluvial (urban storm water) and groundwater flood risk.
- Increasing risk to our coastal communities and assets.
- Threat of coastal squeeze of inter-tidal habitats where hard defences exist.
- The development of flood forecasting systems in conjunction with community.

4.6.4 SEA Recommendations

- Landscape consideration of water through LAWPRO and catchment management
- Support for nature based solutions through the catchments
- Management to 'slow the flow' and increase overall resilience of the ecosystems.
- Research and assessment of risks and then supporting actions to achieving Water Framework Directive Objectives from climate change impacts.

4.7 Air Quality:

Poor air quality leads to more than 1300 premature deaths each year in Ireland. Ireland's two main pollutants of concern are: Fine particulate matter (PM2.5), where the dominant source is residential solid fuel burning. Nitrogen dioxide (NO₂), where the dominant source is transport.

The Air Quality Index of health¹ is based on hourly monitoring data from sites around Ireland and is based on measurements of five air pollutants all of which can harm health. The five pollutants are:

- Ozone gas
- Nitrogen dioxide gas
- Sulphur dioxide gas
- PM2.5 particles and PM 10 particles.

The EPA has three air quality monitoring stations in Galway City at Eyre Square, Ragoon and Briar Hill. Galway City Council and NUI Galway undertook a collaborative study to understand the long-term air pollution trends in Galway and concluded that the trends show a slow, yet steady improvement². The Clean Air Together Citizen Science project moved to Galway for 2023 and involves 400 citizen scientists recording local air quality that will assist the EPA in air quality monitoring and Galway City in air quality management³.

Air quality and health is discussed under Section 4.4.2 Population and Human Health.

4.7.1 Climate Factors

Ireland must invest in structural and behavioural change to enable the transition to a climate neutral, climate-resilient country. These changes include the rapid decarbonisation of energy and transport and the adoption of sustainable food production, management and consumption systems. In December 2022, the government published Climate Action Plan 2023 (CAP23). It is the first updated plan since the introduction of the Climate Action and Low Carbon Development (Amendment) Act 2021. CAP23 aims to keep Ireland's emissions within its mandatory carbon budget and achieve the legally binding target of reducing emissions by 51% (from a 2018 baseline) by 2030. Sectoral emissions ceilings refer to the total amount of greenhouse gas emissions that each sector of the economy is allowed to produce during a specific time period. In Ireland the sectoral emissions ceilings set out the maximum emissions that are permitted from each sector to ensure that Ireland remains within its carbon budgets. These sectors are:

- Electricity
- Transport
- Built Environment (Residential, Commercial & Public Sector)

¹ <http://www.epa.ie/air/quality/>

² Ceburnis, *Galway Air Quality: Evidence Based Solutions*.

³ Air Quality in Ireland Report 2022, EPA [Air Quality Report 22 v8 \(adobe.com\)](https://www.epa.ie/air/quality/report22/)

- Industry & Other
- Agriculture
- Land Use, Land Use Change and Forestry (LULUCF)

Figure 4.16 provides a summary of Galway City emissions. Galway City differs from the other Atlantic Seaboard CARO local authorities due to its predominantly urban character; consequently, the greatest % of emissions at city level are from residential and industry.

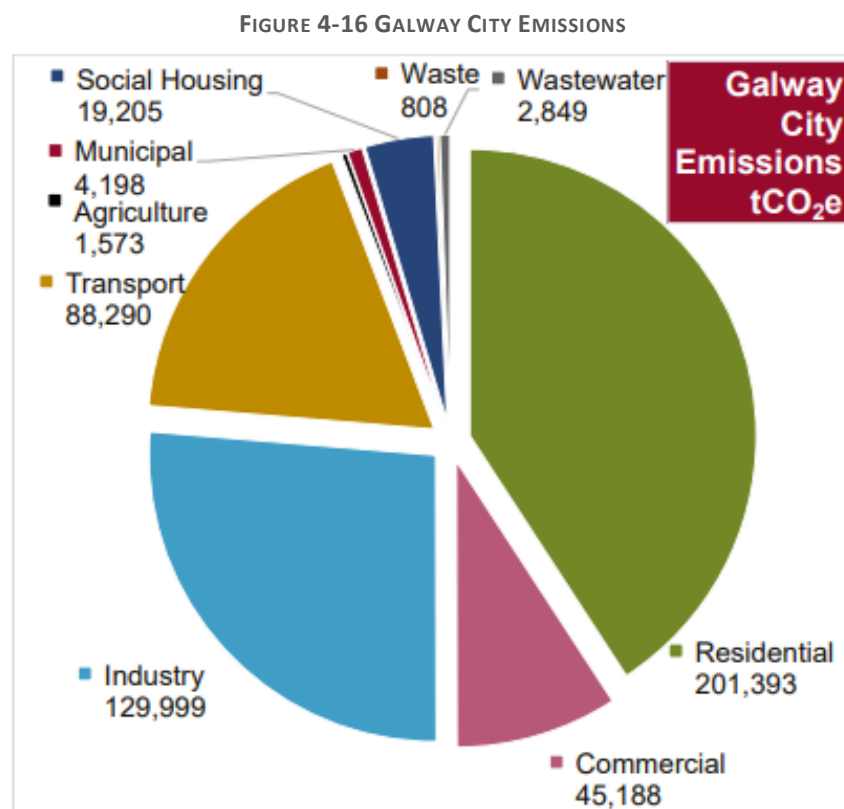
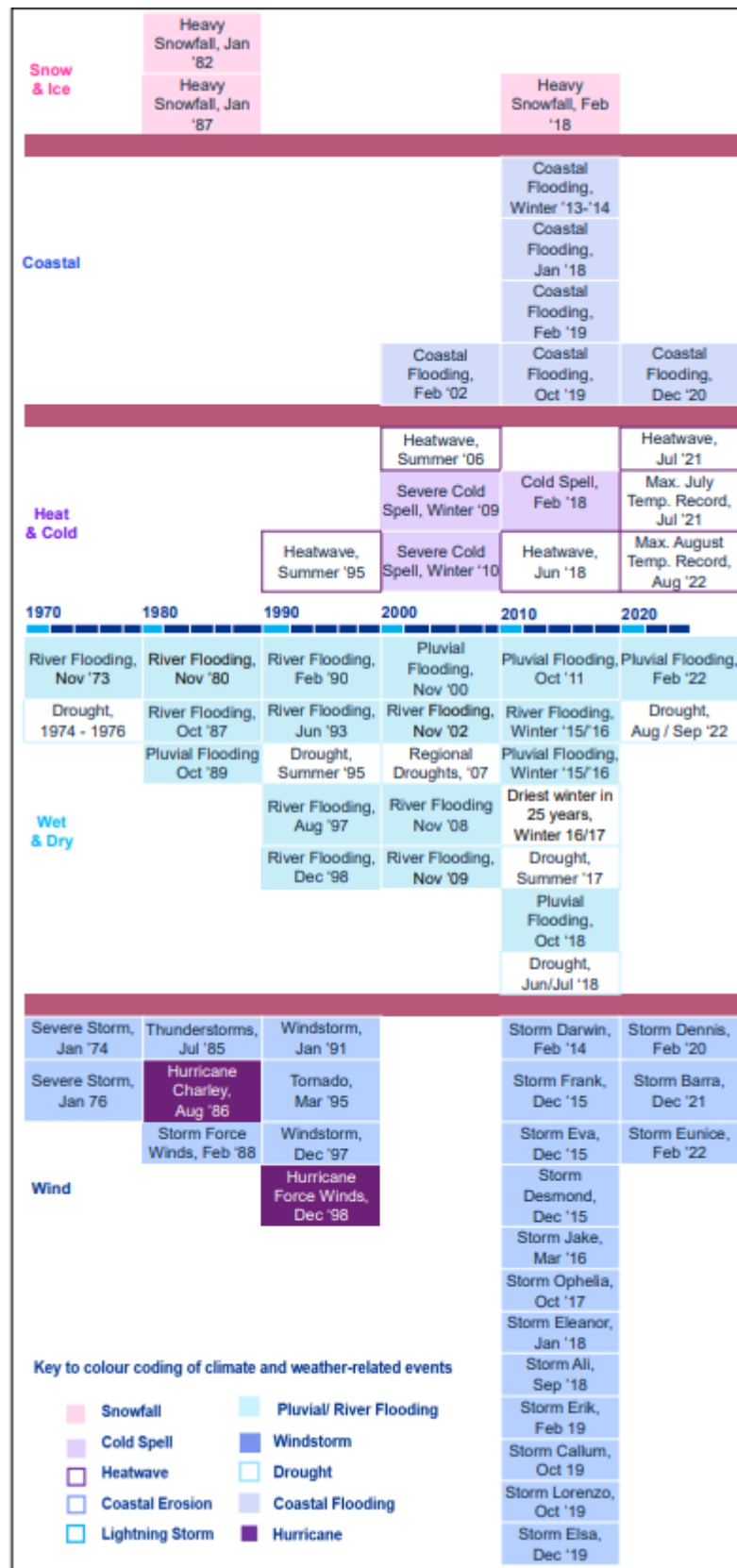


Figure 4.17 presents the extreme climate events in Galway City, from the CAP 2024.

FIGURE 4-17 EXTREME CLIMATE EVENTS – CLIMATE HAZARD PROFILE GALWAY CITY 1970 TO 2022



4.7.2 Key Air Quality and Climate Issues related to the Climate Action Plan

These have been identified as cross cutting impacts across all the SEA topics scoped into the SEA ER and are presented throughout the document.

Climate change is impacting ecosystems through changes in mean conditions and in climate variability, coupled with other associated changes such as increased ocean acidification and atmospheric carbon dioxide concentrations. It also interacts with other pressures on ecosystems, including degradation, defaunation and fragmentation. At the same time, ecosystems can also assist in the mitigation of, and adaptation to, climate change.

4.7.3 SEA recommendations

Actions in the CAP should be cross cutting and encompass all the sectors for emission reductions:

- Electricity
- Transport
- Built Environment (Residential, Commercial & Public Sector)
- Industry & Other
- Agriculture
- Land Use, Land Use Change and Forestry (LULUCF)

A focus on nature based solutions, the opportunity to provide co benefits for other environmental topics and strong evidence based approach to solutions is recommended.

EPA data is clear that reaching the 2030 target requires implementation of policies that deliver emission reductions across all sectors in the short term. Current decarbonisation actions are being outpaced by increased energy demand across the economy and dependence on fossil fuels for energy generation. A continued lack of delivery of large-scale practical actions to decarbonise activities in all sectors will see an exceedance of the first two carbon budgets.

4.8 Material Assets:

Access to an efficient transport network contributes to opportunities for all sectors of the population to access services, facilities and social networks that are necessary to meet daily needs. Ease of accessibility enhances quality of life, promotes social inclusion, presents opportunities, and promotes human health through expansion of cycle and walking infrastructure.

4.8.1 Transport

Galway City has a compact, walkable core, and its suburbs have developed as a succession of low density residential and employment areas, leading to the predominance of private car usage as a means of travel. The geography of Galway City is impacted by the River Corrib and Lough Atalia, as well as being bounded to the south by Galway Bay and to the north by Lough Corrib. This has resulted in the limitations to free movement and developments of the road network. There are currently four bridges crossing the River Corrib, three of which are near the city centre, which results in traffic congestion during peak hours with heavy cross-city and city-bound travel.

NTA (National Transport Authority), in conjunction with the City Council and Galway County Council, are currently in the process of developing the Galway Metropolitan Area Transport Strategy (GMATS) and this will ultimately replace the current Galway Transport Strategy.

National climate policy aims to transform from petrol and diesel to electric vehicles in order to reduce greenhouse gas emissions has a target to have 840,000 passenger electric vehicles by 2030. This compares with just 2,718 electric vehicles in 2017. This is an ambitious target which will require a significant expansion of the charging network within the city.

4.8.2 Water services

Uisce Eireann has completed the water services infrastructure at national level and identified priority projects for inclusion in the Capital Investment Plan, which involves the following for Galway City¹:

¹ Investment Plan 2017-2021

- Galway City Water Conservation (Drinking Water)
- Galway City Wastewater Network (Wastewater).

Uisce Eireann is responsible for the city water supply¹. The Galway City Water Supply Scheme covers the Terryland Water Treatment Plant (Phase 3)², which supplies water for the city from the Terryland River (linked to the River Corrib). Recent improvements to the existing water infrastructure has resulted in the replacement and upgradation of 19.8km of old pipeline in Galway.

4.8.3 Energy

Improving existing energy efficiency in housing stock will contribute to lower GHG emissions from carbon sources, as well as reduce fuel poverty and improve air quality. Building Energy Ratings (BER) show that the city core and older suburbs are more intensive in energy consumption, with BER – E Ratings. This is often suggestive of poor heating systems and/or poor insulation. Ratings tend to improve with increasing distance from the city centre, with a median of BER – D and BER – C, and very rarely, BER – B.

4.8.4 Waste

The waste sector was responsible for 1.5% of Ireland's Greenhouse Gas emissions in 2018. The waste sector includes emission estimates from solid waste disposal, composting, waste incineration, open burning of waste and wastewater treatment and discharge. The largest of these sources is solid waste disposal on land (landfills) where CH₄ is the gas concerned. The Climate Action Plan includes specific targets combatting waste including reductions in household waste, landfill reliance, plastics and food waste. It also sets out ambitious recycling targets for municipal, plastic and packaging waste. The Circular economy relates to a transition from carbon heavy, linear resource use. Circular economy systems:

- keep the added value in products for as long as possible and aim to eliminate waste.
- keep resources within the economy when a product has reached the end of its life, so that they can be productively used again and again and hence create further value.

A recent OECD study found that Ireland has a circular material use rate of 1.8 per cent, relative to an EU average of 12.8%. Systemic change is needed across all economic sectors to shift the focus to designing out and reducing waste and promoting reuse and recycling.

Food waste is a serious issue and in Ireland, approximately 800,000 tonnes of food waste is generated a year and the government has made a commitment under UN SDG 12.3 to reduce food waste by half by 2030. Food waste is also a source of Greenhouse Gas Emissions. The only way to reduce food waste is through its prevention, so the focus in the food use hierarchy must be on food waste prevention. The national food waste prevention programme sits within the EPA's Circular Economy Programme. Stop Food Waste is the consumer-facing national food waste prevention campaign. In relation to food waste prevention in the food supply chain, a revised Food Waste Charter launched in June 2023, with a call to action to businesses across the food supply chain to sign up to this voluntary agreement and pledge to measure, take target-based actions and report on food waste³.

4.8.5 Key Material Asset issues relating to the Climate Action Plan

Flood events and possible consequent risk of subsidence may have a significant impact on critical infrastructure such as roads, rail, electricity, water and communications. This in turn would have a potential impact on productivity, economic confidence and general social wellbeing. Hotter summers could also place an additional stress on key infrastructure.

¹ From www.water.ie/ourprojects

² *Irish Water Capital Investment 2014-2016*

³ EPA submission Re: Call for Expert Evidence - Climate Action Plan 2024 (EPAC-1023)

- High temperatures can result in Hot-weather-related changes in demand (e.g. higher daily and peak demand). Higher precipitation levels can result in more frequent water/wastewater asset flooding, asset loss and potential for environmental pollution as well as increased drawdown in the autumn/winter for flood capacity, leading to resource issues in the following spring/summer.
- Low precipitation - Reduced availability of water resources (surface water and groundwater sources)
- Increased storminess Business continuity impacts/ interruptions
- More frequent water/wastewater asset flooding, asset loss and potential for environmental pollution. Interruption to business continuity¹.
- Actions relating to circular economy, food waste and local food production.

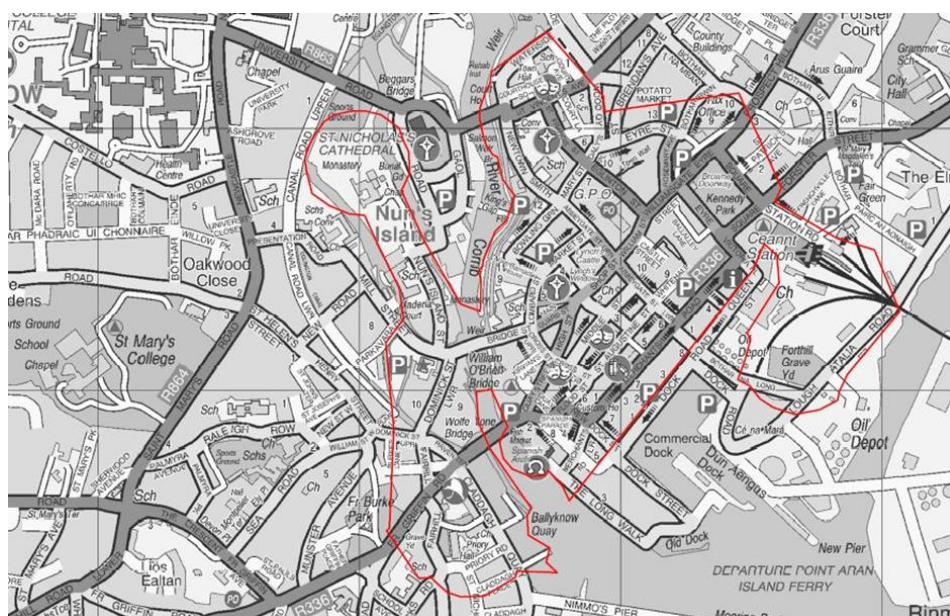
4.8.6 SEA Recommendations

- Identify material assets most at risk from impacts of climate change.
- Increase resilience to effects of climate change on critical infrastructure.
- Energy transition and decarbonise the plan area to help meet targets.
- Energy efficiency measures and the decarbonising zone.
- Support for nature based solutions to avoid over engineering responses to impacts on material assets.

4.9 Cultural Heritage:

Galway City has a rich archaeological heritage. Given its historic character, Galway City centre is identified as a Zone of Archaeological Notification, and there are many archaeological sites throughout the plan area, notably clustered around the historic core, as **Figure 4.18** shows. The Galway City Heritage Plan 2015-2021² aims to promote best practice in Heritage Conservation and Management, and collection and dissemination of the same, while boosting the economic and tourism value of Galway City.

FIGURE 4-18 GALWAY CITY ZONE OF ARCHAEOLOGICAL NOTIFICATION



Underwater archaeology is also a significant feature of cultural heritage and is associated with the coast, tidal areas and rivers/lakes. Lakes, rivers, estuaries, coastal and transitional waters within and surrounding the area to which the Plan relates, may contain many features and finds associated

¹ Water Quality and Water Services Infrastructure Climate Change Sectoral Adaptation Plan

² "Galway Heritage Plan 2015/2021."

with maritime/riverine heritage such as shipwrecks, piers, quay walls, fords, stepping stones and associated archaeological objects and features.

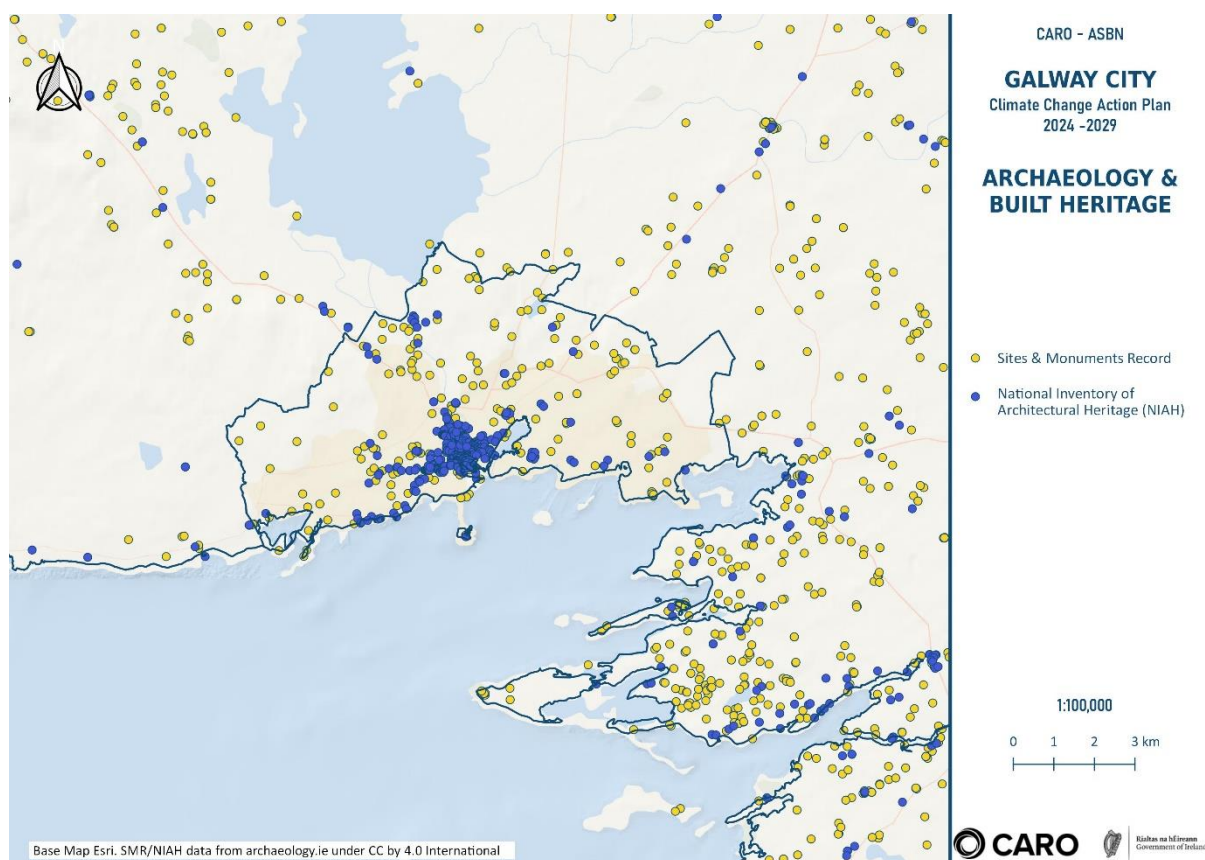
There are approximately 600 structures in the Record of Protected Structures in the plan area, examples of which include St. Nicholas' Church, the lighthouse at Mutton Island, the timber sculpture at the Salmon Weir Bridge and the King George V post box at Courthouse Square¹. The purpose of the National Inventory of Architectural Heritage (NIAH) is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister of Culture, Heritage and the Gaeltacht to the local authorities for the inclusion of particular structures in their Record of Protected Structures.

There is also, in the plan area, a rich heritage of stone buildings and examples of a rich vernacular building tradition which evolved, over many millennia, to suit life in Galway City. While many of these are not included in the Recorded of Protected Structures, they nevertheless contribute to the character of an area by their history, use of local, sustainable materials, classical proportions and inoffensive scale.

Figure 4.19 presents the sites and monuments record and the national inventory of architectural heritage data.

Finally local cultural features, both tangible and intangible are cumulatively very significant and contribute to sense of place. The Irish language and linguistic heritage is an intrinsic part of the cultural experience and life in the city.

FIGURE 4-19 ARCHAEOLOGICAL AND BUILT HERITAGE



¹ GalwayCity - Heritage & Architectural Conservation

4.9.1 Key Cultural Heritage issues relating to the Climate Action Plan

- The direct effects of climate change on heritage may be immediate or cumulative. Thus, damage from catastrophic events such as floods and storms are likely to increase at the same time as slow-onset environmental deterioration mechanisms. The way these impacts manifest will vary according to the sensitivity of the heritage and its exposure (Murphy and Ings, 2013). Exposure will alter with location and aspect, while sensitivity will be determined by the nature of the heritage resource (type, material) and its current condition.
- In addition, there will be indirect impacts related to societal responses to climate change in terms of both adaptation (e.g. changes in land use) and mitigation (e.g. the renovation or upgrading of historic buildings to reduce energy consumption).
- The Urban heat island effect is likely to act as a risk multiplier, meaning that buildings in urban centres will be propelled more rapidly towards damaging temperature thresholds for microbiological and/or chemical decay mechanisms. Higher temperatures can provide conditions for established pest species to spread and increase in number.
- The EU-funded Climate for Culture research project used climate modelling and whole-building simulation tools to predict how climate change will affect historic interiors in Europe. Western Atlantic Europe is likely to see an increase in biodeterioration due to mould and pests as higher temperatures provide more hospitable environments for both.
- Cultural landscapes such as parks and gardens and archaeological clusters are at risk from increasing pests and diseases as well as droughts, wildfires and windthrow. Alterations in natural landscape characteristics will also impact indirectly on material cultural heritage by disturbing the 'sense of place' and on intangible culture, which expresses landscape through art, poetry and music.

4.9.2 SEA Recommendations

- Creative responses to engage on climate change through Creative Ireland support.
- Support for energy efficiency and adaptive reuse of existing buildings

4.10 Landscape and Visual:

The plan area encompasses the urban, built environment as well as open space, river, canal system and coastline. Other important elements of the city's landscape include views and prospects of amenity value, trees and the historic built environment¹. Inland waterways are a feature of the city, including the River Corrib, Eglington Canal, the Terryland River, lesser waterways of the Cathedral River, the West River and other headraces, tailraces and minor canals². The River Corrib is flanked by inland marshes along Dyke Road. Lough Atalia is classified as a coastal lagoon. Fringes of the plan area turning inland are a mix of pastures, green urban areas and land principally occupied by agriculture.

The Galway City Public Realm Strategy (2019), accompanied by its design, activity and delivery manuals is an important document that appraises the existing urban form including urban design, characterization, spaces and landmarks. The basis of the Strategy is formed by the uniqueness of Galway City, and it aims to making Galway more inclusive, accessible, and create greener, more quality public spaces. The strategy includes the typology of streets and public spaces and project proposals to improve the quality of Galway's city centre, streets, and public spaces. This is an important baseline description of the plan area and informs the public realm and masterplanning proposals and opportunities in the future. The promotion of compact growth equally relies upon good urban design and an attractive public realm.

Views of scenic amenity value and interest define the character of the city, engender a strong sense of place and significantly enhance local amenities. Important views in the city include panoramic views which allow expansive views over landscape for example Galway Bay and over the cityscape and

¹ *Strategic Environmental Assessment: Galway Public Realm Strategy 2019*

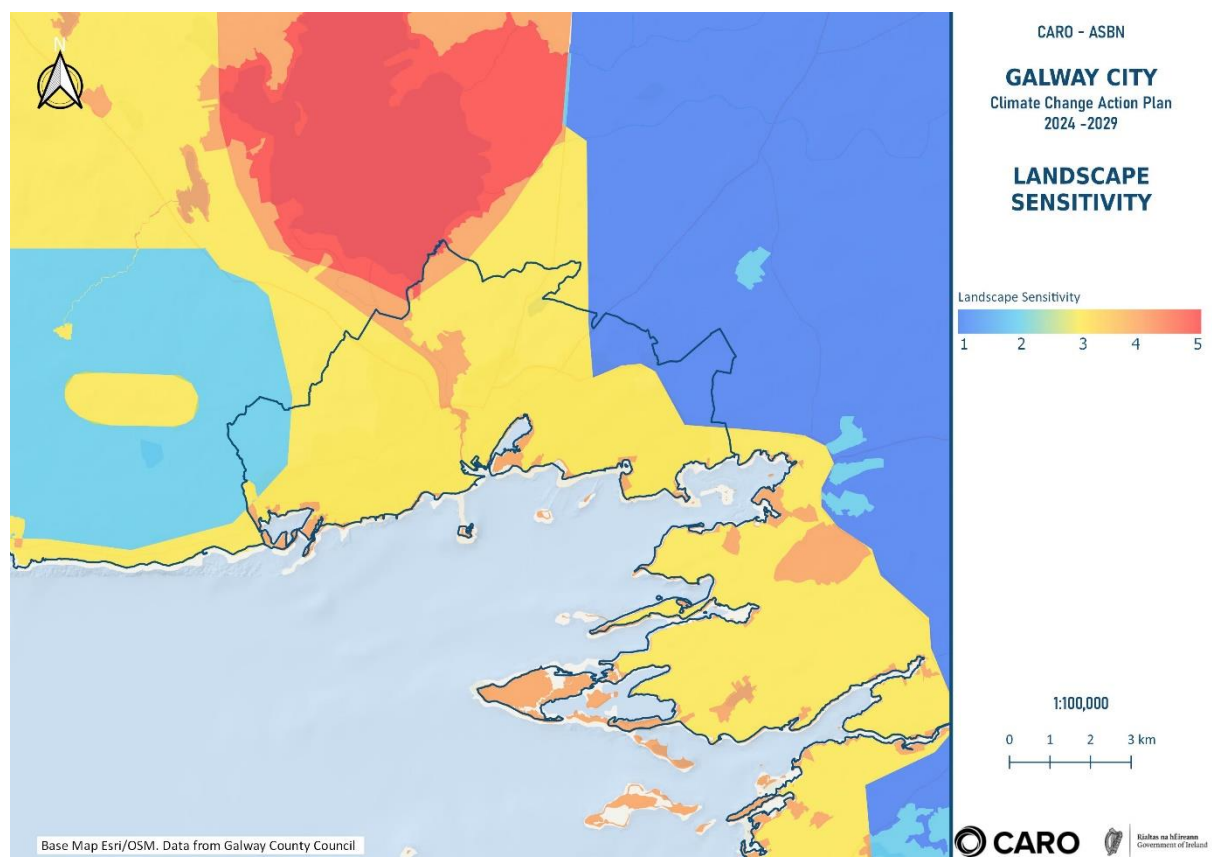
² *Galway City Development Plan (2017-2023) Strategic Environmental Assessment*

linear views which are views towards a particular landscape, observed from a particular point. The enjoyment of protected views by the community and visitors is a key part of the experience of the city. It is acknowledged that views are not static and some changes in a view can be absorbed without visually depreciating the integrity of the view and in some cases make a positive contribution to the characteristics and composition of protected views, while other changes can have a negative impact reducing the experience of that view irreparably. **Figure 4.20** presents landscape sensitivity for the plan area.

The Regional Seascape Character Assessment for Ireland (Marine Institute 2020) undertook an assessment to characterise and map the seascape character of the country at regional scale. The plan area is included within SCA 6 (Atlantic Galway Bay and Islands) and the summary description is provided below:

“A large limestone bay (Galway Bay) is framed by two distinctive and very different coastlines, north (Connemara) and South (Burren); this SCA extends to encompass the Aran Islands. East of Inverin this coastline becomes more regular and no bays are present until closer to Galway; though numerous quays occur. At this stage Galway City and Docks influence the coastal seascape and can be seen across the bay on the Clare coast. Settlements have taken advantage of sheltered bays where possible, including Galway City. The presence and influence of the sea on the landscape is largely consistent within this SCA; the network of minor roads and connectivity to islands, the frequently long coastal views allows for almost constant views to the sea and across Galway Bay. Closer to Galway City the visual aspect of the seascape character becomes less expansive.”

FIGURE 4-20 CITY LANDSCAPE SENSITIVITY



4.10.1 Key Landscape and Seascape issues relating to the Climate Action Plan

Landscape and townscape changes will result from climate change impacts on:

- soils and vegetation
- rivers and coasts
- hills and lowlands
- buildings

Landscapes will also be affected by adaptation and mitigation measures in response to climate change, for example renewable energy infrastructure, or interventions to address surface water management, modal shifts and flooding. There is also likely to be an increase in flooding, erosion and slope instability. Semi-natural habitats are likely to change as species' favoured conditions move north. This could affect native woodlands and aquatic habitats. There are likely to be direct effects on trees and forests reflecting changing patterns of rainfall, increases in storm damage and a potential increase in pests and disease. This could be most evident in agricultural areas, woodlands, designed landscapes and settlements. The pattern of snowfall and snow lie is likely to change. Along low lying sections of coast, or in areas where flooding or land stability are already issues, changes in landscape character could be quite dramatic. However, for the most part these changes will be more gradual and subtle - modifying rather than transforming the landscape.

4.10.2 SEA recommendations

- Landscape response to climate adaptation where possible
- Integration of blue and green infrastructure
- Engagement and awareness raising around landscape scale effects and response to climate change.

4.11 Decarbonising Zone.

*'A Decarbonisation Zone (DZ) is a spatial area identified by the local authority in which a range of climate mitigation, adaptation and biodiversity measures and action owners are identified to address local low carbon energy, greenhouse gas emissions, and climate needs to contribute to national climate action targets.'*¹

An Action Plan for the DZs must be included in the Local Authority Climate Action Plans (LA CAP) as identified in the LACAP guidelines. As a component of the LACAP, the DZ is subject to the same statutory processes, timeframes, and other procedural requirements of making the LA Climate Action Plan. The DZs are a demonstration and test bed to focus on a range of climate mitigation, adaptation and biodiversity measures including the identification of projects and outcomes to assist in the delivery of the National Climate Objective.

GCC has selected the "Westside" area as the DZ, for the inclusion in a focused Implementation Plan for decarbonisation and complementary sustainability measures. The selection of the DZ was based on selection criteria which included themes such as transport/active travel, the built environment, green spaces, demographics, air quality, community, social infrastructure and energy use. The "Westside" area emerged as the preferred DZ as result of an assessment using these themes, in addition to the existence of several strong partners such as University of Galway, and the Galway Energy Co-Operative Sustainable Energy Community. The area covered comprises 167ha and encompasses a variety of public buildings, community facilities, commercial units and educational buildings. The wide variety of services within the DZ make it a useful location to act as a test bed of focused decarbonisation measures. The population figure within the DZ is supplied by GCC as being 5,541 (in 2021) covering two Electoral Divisions (ED's) and 22 small areas. See **Figure 4.21** for the boundary of the DZ and environmental maps and **Figure 4.22** for environmental sensitivity map, this map shows the ranking and data used to generate the overall environmental sensitivity map.

¹ DHLGH, Circular Letter LGSM01-2021, 10/02/21

FIGURE 4-21 DECARBONISING ZONE BOUNDARY AND ENVIRONMENTAL PROFILE

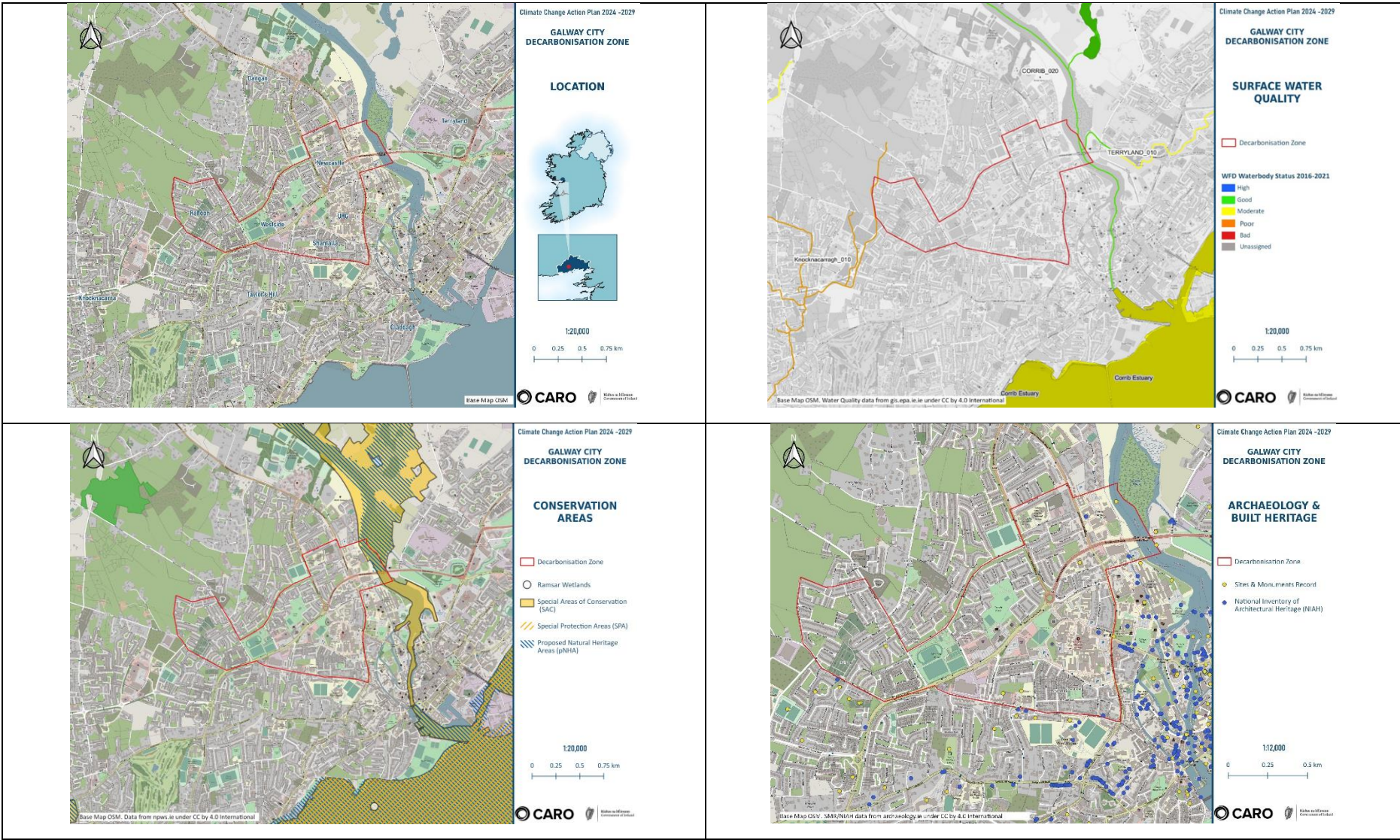
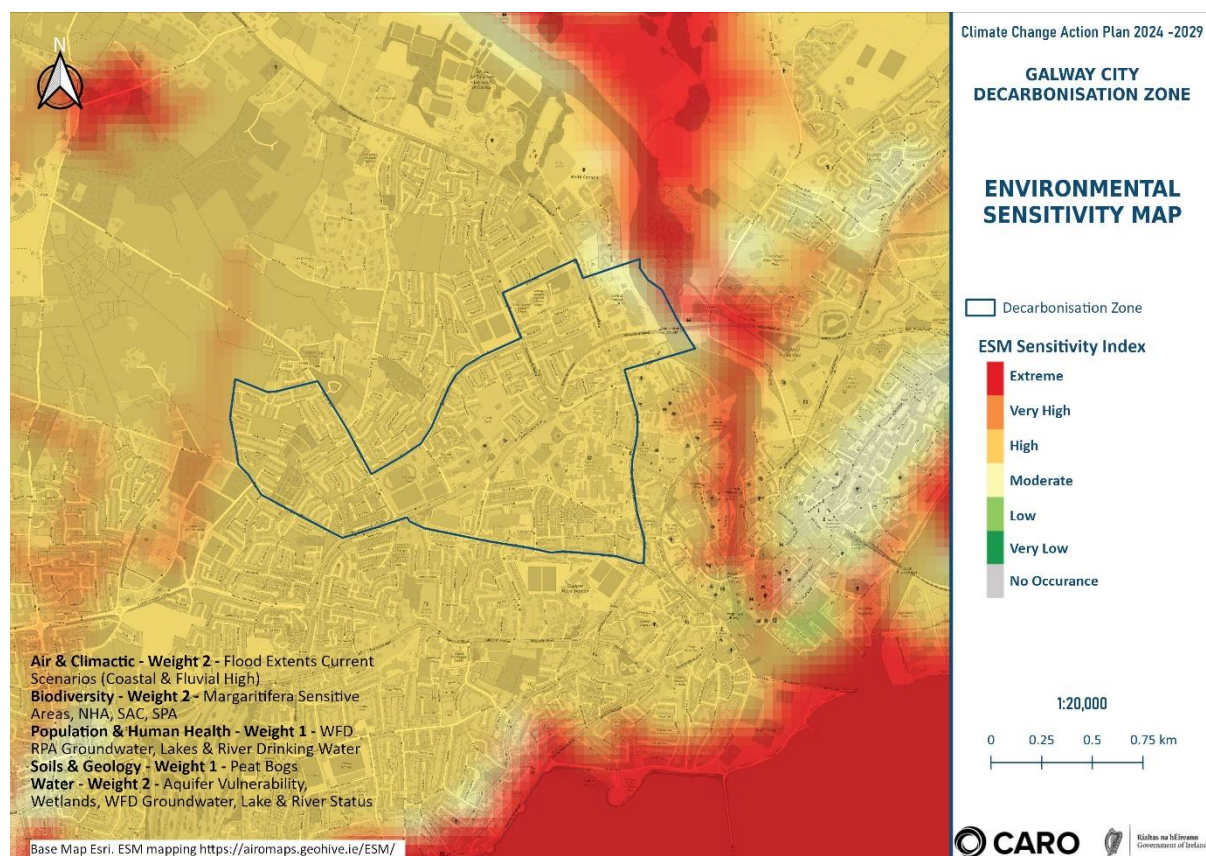


FIGURE 4-22 ENVIRONMENTAL SENSITIVITY MAP FOR DECARBONISING ZONE



4.12 Evolution of the plan area in the absence of the Climate Action Plan

The SEA legislation requires that consideration is given to the likely evolution of the current baseline where implementation of the CAP 2024-2029 does not take place. In the absence of the CAP the environment would evolve under the requirements of the Galway City Development Plan 2023-2029. Overall, this Climate Action Plan will be monitored and updated on an annual basis, with a review and revision every five years. Whilst the CDP-2023 -2029 will remain the primary landuse framework for the city, in the absence of the CAP, the detailed actions accompanied by targets and indicators will not allow for the annual measuring of progress in this area. This presents a lost opportunity to implement changes at local authority, and community level across the city.

Key actions relating to nature based solutions which offer a suite of positive environmental effects would not be implemented with subsequent opportunities lost to green up infrastructure, promote food security and enhance tree planting. Other actions such as peatland projects would be omitted. At city level, the local authority would be less likely to contribute to continue to the reduction in carbon emissions associated with their fleet, lighting and buildings. Promoting regional or inter city actions relating to public transport, walking and cycling may be less effective in the absence of this action plan.

4.13 Environmental Sensitivity Mapping and inter-relationships

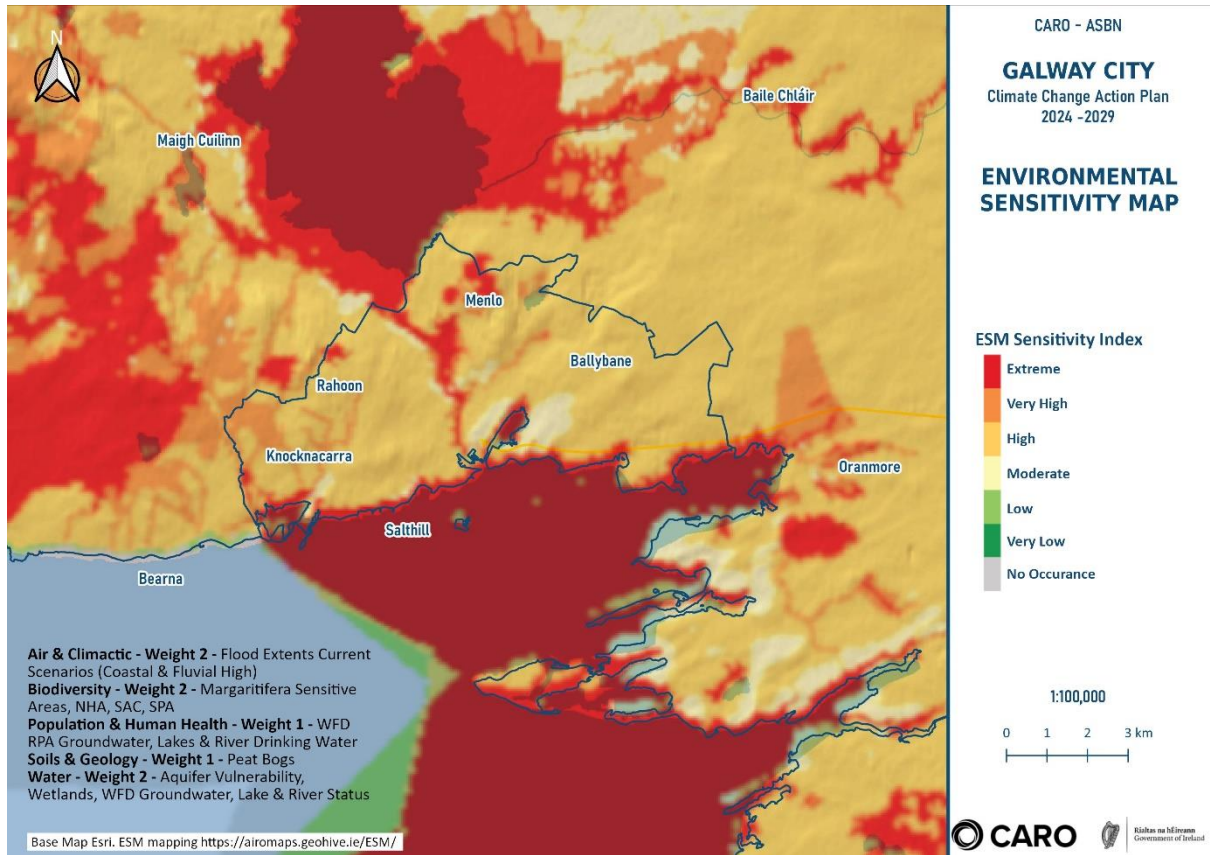
Environmental sensitivity mapping was prepared to inform the overall assessment of the CAP and to aggregate different environmental themes to help identify areas of greater and lesser environmental sensitivity. The key datasets used to inform this sensitivity mapping are shown in the ESM map in **Figure 4.23**. The environmental sensitivities map shows the level of overlap of environmental sensitivities and the range of physical environmental factors. It is important to note that the environmental factors not reflected on this map, e.g. those that are point specific, like protected structures, were not included as it was considered by their inclusion; it would potentially give a visual mis-representation of sensitivity when considering potential areas for future growth. Also, important

to note is that the physical extent of the environmental sensitivity can extend beyond the defined area on the map, as the potential impact can be generated at a location remote from the mapped area. For example, a development outside of a designated site boundary does not mean that it cannot impact on it.

The areas of greatest overall environmental sensitivity are associated with the western and southern parts of the plan area with numerous international designations for natural heritage, significant cultural heritage resources, landscape sensitivity and aquifer vulnerability;

The mapping also highlights the interaction of key environmental parameters, whilst all environmental parameters interact with each other to an extent, key interactions as shown below relate to water, biodiversity and with climate change in particular. All the parameters interact with Population and Human Health.

FIGURE 4-23 ENVIRONMENTAL SENSITIVITY MAPPING



5 Strategic Environmental Objectives

5.1 Introduction

The purpose of the Strategic Environmental Objectives (SEO) is to ensure that the assessment process is transparent and robust, and that the CAP and SEA considers and addresses potential environmental effects. SEOs have been set for each of the environmental topics outlined in **Table 5.1** and are from the SEA of the Galway City Development Plan 2023 -2029, with some new/amended SEOs proposed to reflect the CAP. The results of this are summarized in a table, called an evaluation matrix as shown in Annex A of this SEA ER.

TABLE 5-1 STRATEGIC ENVIRONMENTAL OBJECTIVES

SEA Topic	Strategic Environmental Objectives
Biodiversity Flora and Fauna	B1: Protect, conserve and promote the enhancement of habitats, species and their sustaining resources in international and national designated sites and prevent adverse impacts (direct, cumulative and indirect) from development within or adjacent to these sites.
	B2: Protect and conserve rare and threatened habitats and species, including those listed in the Habitats Directive and the Wildlife Acts.
	B3: Protect and conserve the marine environment and promote the appropriate sustainable management of the coastal zone taking cognisance of potential direct, indirect and cumulative impacts on European sites.
	B4: Support measures to control and manage alien/invasive species.
	B5: Protect areas of local biodiversity value and stepping stones which provide connectivity for species and prevent wildlife habitat fragmentation.
	B6: Promote ecological awareness and biodiversity.
Population, Human Health, Noise	PHH1: Promote good quality of life based on high-quality residential, working and recreational environments and on sustainable travel patterns, land uses, including potential adverse noise quality impacts.
	PHH2: Promote social inclusion and wellbeing/healthy living in the city.
	PHH3 Minimise noise, vibration and emissions from traffic and minimise impact on residential amenities.
Air and Climate	C1: Promote climate adaption and mitigation measures in line with the Galway City Climate Change Adaption Strategy and any future plans.
	C2: Enable sustainable development by encouraging new and existing development to reduce carbon emissions and build climate resilience.
	C3: Improve air quality within the city
	C4: Comply as appropriate with the provisions of the Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG, 2009).
Water	W1: Maintain and improve, where possible, the quality of surface water, rivers, lakes and groundwater to meet the requirements of the National River Basin Management Plan.
	W2: Maintain and improve, where possible, the quality of transitional and coastal waters, and to prevent the contamination of bathing water.
	W3: Support the maintenance and improvement of drinking water supplies.
	W4: Support the promotion of water conservation.
	W5: Progressively reduce discharges of polluting substances to waters.
Soil and Geology	S1: Maintain the quality of soils.
	S2: Maximise the sustainable re- use of brownfield lands, and the existing built environment.
	S3: Minimise the consumption of non-renewable sand, gravel and rock deposits.
	S4: Protect and conserve important and audited geological heritage sites
Material Assets	M1: Maximise use of the built environment in a sustainable and efficient manner.
	M2: Maximise and support sustainable modes of transport.
	M3: Ensure water and wastewater are planned for and provided as critical services infrastructure

	M4: Facilitate measures to reduce all forms of air pollution.
Cultural Heritage	CH1: Promote the protection and conservation of the city's cultural, built archaeological and linguistic heritage, and where appropriate enhance character.
Landscape	L1: Conserve and enhance the built heritage and landscape features of the city.
Interrelationships	IR1: Maintain and improve the health of people, ecosystems and natural processes
	IR2: Actively seek to integrate opportunities for environmental enhancement.

6 Consideration of Alternatives

6.1 Introduction

The SEA Directive requires that reasonable alternatives be assessed to demonstrate how the preferred strategy performs against other forms of action. Alternatives must be developed, described and assessed within the SEA process, with the results presented in the Environmental Report.

- Alternative 1 - Prioritise reducing GHG emissions from largest GHG emitting sectors in the City to mitigate against climate change impacts.
- Alternative 2 - Adopt a multi-pronged approach and focus on a range of priority areas to mitigate against and adapt to climate change impacts.
- Alternative 3 -: Adopt a multipronged approach - that has a strong community engagement emphasis - and focus on a range of priority areas to mitigate against and adapt to climate change impacts.

A 'Do Nothing' or 'Do Minimum' alternative is not a reasonable alternative in this instance as the preparation of an effective LACAP is a statutory requirement under Section 16 of the Climate Act

6.2 Key environmental challenges at city scale





















In addition to the environmental sensitivity map presented in Chapter 4, the following key environmental issues are relevant to the CAP and alternatives under consideration:

- Flood risk;
- Energy efficiency and adaptation to climate change;
- Seeking a meaningful reduction in the growth in demand for private transport;
- Ensuring that land use and transportation planning are integrated;
- Protection of the built and cultural heritage of the area;
- Protection of the environment by minimising waste and pollution;
- Promote the involvement of the local community in decision making and encourage social inclusion.

6.2.1 Climate Hazard Impacts

The key results from the Climate Change Risk Assessment including impacts experienced to date in Galway City and future risks are summarised below in Figure 6.1.

FIGURE 6-1 CLIMATE CHANGE RISK ASSESSMENT IMPACTS EXPERIENCED TO DATE AND FUTURE RISKS

Hazard		Projected Change	Future Frequency
	Heatwave	Projections indicate an overall increase in average temperature (bottom left) of between 1.1 and 1.4°C for Galway City relative to the 1981-2000 period.	Frequent 
	Drought	Under a high emission scenario, projections indicate that heatwaves will become more frequent (bottom middle) by mid-century. Summer rainfall is expected to reduce by between 6 and 8% in the future when compared with the baseline period of 1981 to 2000, in both the RCP4.5 and RCP8.5 scenario contributing to potential drought conditions.	Common 
	Cold Spell	As a consequence of the increasing temperatures, a decrease in the number of frost days and ice days in the 2041-2060 future period when compared with the baseline period of 1981-2000, is projected for both the RCP4.5 and RCP8.5 scenario.	Rare 
	Heavy Snowfall	The annual snowfall in the region is projected to decrease substantially by the middle of the century for the RCP4.5 and RCP8.5 scenarios (bottom right).	Rare 
	Severe Windstorms	Projections of storms are subject to a high level of uncertainty. By mid century, projections indicate that average wind speed will remain similar to those currently experienced. There is limited evidence of a potential increase in the frequency of more intense storms which are currently rare events. However, more research is needed to confirm this increase.	Frequent 
	Coastal Flooding	Rising sea levels projections under a high emissions scenario indicate an increase of up to 0.24 m by 2050 which will increase the frequency of coastal inundation.	Very Frequent 
	Coastal Erosion	A rising sea level is strongly linked with coastal erosion and an increase in erosion rates and extent.	Common 
	Pluvial Flooding	Projections indicate an increase in the frequency of heavy rainfall days (days with precipitation >30mm) for Galway City with some areas projected to see increase of up to 37% (bottom right). This will likely result in an increased frequency of associated fluvial and pluvial flooding.	Frequent 
	River Flooding		Frequent 
	Groundwater Flooding	Projections of changes in groundwater flooding are currently not available, therefore there is uncertainty in the change in groundwater flooding frequency that can be expected.	Rare 

6.2.2 Assessment of Consideration of Alternatives

Table 6.1 presents the criteria used in the assessment matrix and the SEOs that the alternatives are assessed against are those presented in the previous Chapter Five SEOs. Table 6.2 presents the evaluation of the alternatives.

TABLE 6-1 ASSESSMENT CRITERIA

(+)	reflects a potential positive effect
(-)	reflects a potential negative effect
(+/-)	reflects that positive and negative effects are likely or that in the absence of further detail the effect is unclear
(0)	reflects a neutral or uncertain effect

TABLE 6-2 EVALUATION OF ALTERNATIVES

	Alternative 1 Prioritise reducing GHG emissions from largest GHG emitting sectors in the City	Alternative 2 Adopt a multi-pronged approach and focus on a range of priority areas t	Alternative 3 Adopt a multipronged approach - that has a strong community engagement emphasis -	Comment
Climatic Change and air quality	+/-	+/-	(+)	<p>For Galway the largest emissions are derived from Residential (201,393 t CO₂e), followed by industry (129,999 tCO₂ e), and transport (99,290t CO₂e). Under Alternative 1 the CAP would prioritise these sectors above others, and a significant focus of actions in the Galway City CAP prioritise in particular residential emissions, through the Energy and Built Environment Theme.</p> <p>Addressing industrial emissions is supported more indirectly through the CAP and Transport through the CDP and the CAP. However, the requirement for DZs and recognised need to support inclusion, engagement, communication, capacity building and governance are not addressed through this alternative and therefore the uptake and buy in by communities may be varied through this alternative.</p> <p>Alternative 2 and 3 provide the most holistic approach to climate action with Alt 3 focus on community engagement performing better as it increases awareness and ownership of climate actions via local authority framework.</p>
Population and Human health and Noise	+/-	+/-	(+)	<p>As recent research¹ has demonstrated, 85% of respondents in the County of Galway (inclusive of the city) are worried about climate change and support action with concern about practicality of actions.</p> <p>Environmental issues can be cross cutting with similar levels of concern about water quality issues in local areas (82%). Therefore Alt 1 and Alt 2 present a more top down focus driven and under Alt 2 by a weaker focus on community scale input and responses.</p> <p>In this scenario, Alt3 performs the best and as it aligns closely with the Galway City DP and supporting plans including the City LECP, as well as sectoral actions around residential, transport and biodiversity; measures can be brought forward that can generate cumulatively positive effects.</p>

¹ EPA 2023.

	Alternative 1 Prioritise reducing GHG emissions from largest GHG emitting sectors in the City	Alternative 2 Adopt a multi-pronged approach and focus on a range of priority areas t	Alternative 3 Adopt a multipronged approach - that has a strong community engagement emphasis -	Comment
Biodiversity, Flora and Fauna (BFF)	+/-	(+)	(+)	Alt 1 with key focus on residential, industrial and transport emissions may not provide as many co benefits as under Alt 2 and Alt3 with less focus on nature based solutions and potential positive interactions across the BFF SEOs. Alt 2 and Alt 3 perform well but again Alt 3 performs more strongly in terms of priority areas for mitigation and adaption with stronger community engagement element.
Soil and Geology	0/-	(+)	(+)	Alt 1 would include priority for residential as the largest sector for city emissions and may contribute to achieving SG 1 in particular. However, the CDP also has strong supporting policy objectives around brownfield and reuse so this could be addressed through all Alternatives. Again a multi pronged approach is identified as more consistent with SG SEOS as it is more holistic in scope with greater potential for positive interactions and co benefits. Alt 3 with community engagement also increase scope for interventions around Just Transition and potential projects relating to adaptive reuse, community gardens and research on ecosystem services..
Water (W)	0/-	(+)	(+)	Greater focus and support through residential, industry and transport sectors under Alt 1 are not identified as generating strong effects on Water SEOs. Whilst Galway CC can support these they are not the driving agent and under this scenario the co benefits around nature based solutions are less supported as is the more holistic approach under Alt 2 and 3. Under all scenarios, application of CDP policies and priority actions under the Draft River Basin Management Plan would apply.

	Alternative 1 Prioritise reducing GHG emissions from largest GHG emitting sectors in the City	Alternative 2 Adopt a multi-pronged approach and focus on a range of priority areas t	Alternative 3 Adopt a multipronged approach - that has a strong community engagement emphasis -	Comment
Material Assets	-	(+)	(+)	Alt 1 performs the weakest for Material Assets SEOS although for all three, the CDP and LAP policies would apply for landuse projects. As Alt 2 and 3 include multi pronged approaches, measures under these scenarios are more broad and holistic including water conservation, circular economy and community planning.
Cultural Heritage	0/-	(+)	(+)	Alt 1 would include priority for residential as the largest sector for city emissions and may contribute to achieving CH 1 in particular. However, the CDP has strong supporting policy objectives around reuse so this could be addressed through all Alternatives. Again a multi pronged approach is identified as more consistent with CH SEOS as it is more holistic in scope with greater potential for positive interactions and co benefits. Alt 3 with community engagement also increase scope for interventions around renovation of existing buildings and local cultural heritage including via Creative Ireland support measures.
Landscape	-	(+)	(+)	Alt1 is not identified as generating positive longer term interactions with L SEOS and actions under residential/transport/industry do not have a strong landscape focus. Therefore, Alt 2 and 3 perform better given the multiple elements that contribute to landscape and seascape including soil, geology, population , cultural heritage, biodiversity, therefore the multi- pronged approach is more robust for L SEOS and the focus on community action reinforces the environmental performance under Alt 3.

6.3 Preferred alternative and reason for selection

Following the above evaluation and assessment, the preferred strategic alternative for the approach to the CAP 2024 -2029 Alternative 3. This is based on the following:

In terms of all SEOs, Alternative 3 is identified as creating most positive interactions as it provides greater environmental performance overall and also allows for a greater environmental gain, than may be achieved through Alternatives 2 and 1. In addition, the multi- faceted approach contributes to greater co-benefits by providing for a wider range of environmental effects particularly around nature based solutions and resource management. The inclusion of measures for citizen engagement and awareness raising through the CAP option is also positive for a number of SEOs.

7 Assessment of Likely Significant Effects

The purpose of this section of the Environmental Report is to predict and evaluate as far as possible the environmental effects of implementing the draft CAP. Having established the environmental baseline and the key environmental sensitivities for the strategy area in Chapter 4, and the Strategic Environmental Objectives in Chapter 5, an assessment for any potential environmental effects from implementing the draft Strategy can be undertaken.

Two elements of assessment have been undertaken which include:

1. An assessment of the draft actions (See **Annex A**);
2. An assessment of cumulative and in-combination effects (See **section 7.2**).

The assessment process has been undertaken using matrix assessments which reflect ratings in relation to potential significant effects on the environment as a result of implementation. Where there is a combination of these symbols (0/+ or 0/-) this indicates that any effect may be neutral or positive, or neutral or negative depending on how the objective is delivered. Where negative effects are identified mitigation measures are recommended to either include new objectives, or to amend or include additional text within the Plan objectives. In terms of impacts the following definitions are used:

- **Profound:** An impact which obliterates sensitive characteristics.
- **Moderate:** An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends.
- **Slight:** An impact which causes noticeable changes in the character of the environment without affecting its sensitivities.
- **Imperceptible:** An impact capable of measurement but without noticeable consequences.

Thirdly the potential duration of identifiable impacts is discussed. The following terms are used:

- **Short:** Impact lasting one to seven years.
- **Medium:** Impact lasting seven to fifteen years.
- **Long term:** Impact lasting fifteen to sixty years.
- **Permanent:** Impact lasting over sixty years.
- **Temporary Impact** lasting for one year or less.

7.1 Summary of significant effects

TABLE 7-1 SUMMARY OF SIGNIFICANT EFFECTS

Topic	Discussion
Population and human health	<p>Many of the actions identified in the CAP give rise to medium to term positive effects on population and human health both by responding and adapting to the impacts of climate change, and also reducing greenhouse gas emissions through a series of measures.</p> <p>Reflecting the opportunity for co-benefits of the CAP, measures around energy efficiency and retrofitting plus renewable energy opportunities can help address fuel poverty in relation to vulnerable individuals as well as the support for projects that reduce energy and monitor and rectify consumption trends, for example: <i>DZ Action DZ 3 Energy efficiency upgrades for all low BER homes (below C1)</i></p> <p><i>Action 22: Implement opportunity projects outlined in "gap to target tool" which tracks energy and emission consumption reduction progress towards 2030 targets which inculcates growing energy demand and includes all action measures such as building retrofits, removal of fossil fuel heating systems, renewable energy systems, alternative fuel sources, electric vehicles and public lighting.</i></p> <p>Reflecting key objectives in the Galway CDP 2023-2029 such as <i>Sustainable Mobility and Transportation Policy 1. Develop a compact city, where sustainable land use and transportation are integrated and where there is choice and accessibility to a range of transport modes, with increasing support for a shift to more sustainable modes in line with national aims on climate action and where safety and ease of movement is provided to and within the City and onward to the wider area of the MASP, County Galway and the Northern and Western Region.</i></p> <p>The CAP will support and encourage a modal shift in transport by expanding the walking and cycling network, making walking and cycling safer and encouraging and promoting greater engagement and awareness raising in relation to walking and cycling and promoting behavioural change; for example see: <i>Action 47: Support the development of greater accessibility, modal shift and active travel throughout Galway City through implementation of work programmes and Galway Transport Strategy (GTS)</i> <i>Action 49 Support uptake of active travel across Galway City engaging with key stakeholders, community groups, institutions and schools through workshops, co-design and engagement to increase. Including delivery primary, secondary school and business cycle training programme.</i> <i>Action 50 Support and promote community mobility schemes including bike share schemes, mobility hubs, community EV carsharing and EV charging, carpooling, and community taxis.</i></p> <p>Interactions between active travel support in the CAP, and the Galway City DP and supporting strategies will support modal shifts, in terms of making walking and cycling safer and more attractive on daily basis.</p>

Topic	Discussion
	<p>Addressing GHG emissions from the Transport and Residential sectors as the above actions do, have accompanying positive impacts in terms of local air quality and therefore on human health. In addition, the impact of particulate matter and other airborne particles extend beyond human health to the entire terrestrial and aquatic environment (Tositti et al., 2018¹).</p> <p>In the absence of mitigation, whilst the current Galway City DP 2023-2029 policies will apply, there could be adverse environmental effects around capacity building, training, embedding nature based solutions that can provide co benefits across many environmental resources, subject to robust assessment and design.</p> <p>These could result in localised and synergistic impacts on parameters including cultural heritage, landscape that may affect population and human health. Equally grey infrastructure measures particularly at sensitive locations such as coastal habitats can impact sense of place, landscape character, as well as cross cutting adverse effects such as coastal squeeze and longer term adverse effects on aquatic habitats and species reliant on same.</p> <p>Encouraging and accessing local knowledge and capacity is provided for within the CAP but additional recommendations are made in this regard, based on supporting nature based solutions, referencing recent EPA research on coastal resilience and communities (<i>new action recommended to strengthen alignment with the City Development Plan and supporting environmental assessments.</i>).</p>
Biodiversity, Flora and Fauna	<p>The promotion of a nature based measures and resource management in particular along with blue and green infrastructure actions all strengthen overall protection of biodiversity resources and the Biodiversity SEOS. For example,</p> <p><i>DZ 42 Implement a policy to increase permeable areas in the DZ (through greenspaces, planting and landscaping) Qualitative measure with indirect emissions savings</i></p> <p><i>Action 27; Work in partnership with local community, business, and education groups to support initiatives that promote climate action and just transition on the following:</i></p> <ul style="list-style-type: none"> - <i>Climate challenges and solutions, mitigation & adaptation</i> - <i>Active travel</i> - <i>Energy saving</i> - <i>Low carbon energy</i> - <i>Waste management & circular economy</i> - <i>Local food production, food waste management & reduction</i> - <i>Water conservation and harvesting</i> - <i>Local level carbon offsetting</i> - <i>Nature based solutions, net biodiversity gain.</i> - <i>Supplier engagement and green procurement aimed at SME's</i>

¹ Particulate pollution and its toxicity to fish: An overview ,Gokul, Ramesh Kumar, Prema, Arun, Paulraj, Faggio. Comparative Biochemistry and Physiology Part C Vol:270. 2023.

Topic	Discussion
	<p><i>Action 42 Explore the potential for integrating Nature Based Solutions (NBS) on all internal and GCC planning permitted projects to ensure climate resilience and promoting biodiversity net gain, thereby creating vibrant, liveable and sustainable public realm. Further to include sustainable urban drainage systems, with appropriate regard to environmental protection requirements, including designated European sites. Increase in leaf cover in Galway City area, considering trees and vertical shading solutions.</i></p> <p>Action 37 (tree strategy) and Action 41 (Blueways strategy) are recommended for additional mitigation to provide greater clarity and support for tree planting in appropriate locations and of appropriate mixes, to avoid indirect or direct loss of habitat that is important for a range of species including birds as well as supporting co benefits and nature based solutions approach.</p> <p>Reference should be made to good practice guidelines and references around NBS for example, the Grow Green Compendium of Nature Based Solutions (2020). Compendium of nature-based and 'grey' solutions - GrowGreen (growgreenproject.eu)</p> <p>Actions in particular those under the theme of Environment and Biodiversity are identified as positive for BFF as well as interacting positively across other SEOs namely soil, water, air, climate change with indirect positive effects and direct positive effects on population and human health and material assets. Mitigation is recommended to further support and strengthen protection of habitats and species for certain actions within this theme.</p> <p>In relation to other actions, such as those relating to landuse such as transport and Decarbonising zone existing mitigation in the Galway CDP would apply at development management and consenting, for example:</p> <p>Policy 5.2 Protected Spaces: Sites of European, National and Local Ecological Importance</p> <p>Protect Local Biodiversity Areas, wildlife corridors and stepping stones based on the Galway Biodiversity Action Plan 2012-2024 and support the biodiversity of the city in the Council's role/responsibilities, works and operations, where appropriate.</p> <p>Encourage, in liaison with the NPWS, the sustainable management of features which are important for the ecological coherence of the network of European sites and essential, by their linear or continuous nature or as stepping stones for the migration, dispersal and genetic exchange of wild species.</p> <p>Support the actions of the Galway City Council Heritage Plan 2016-2021 and any update and Biodiversity Action Plan 2014-2024 relating to the promotion of ecological awareness and biodiversity, the protection of wildlife corridors and the prevention of wildlife habitat fragmentation.</p> <p>Co-operate with the NPWS, landowners and stakeholders in the preparation and implementation of management plans for designated sites.</p> <p>Protect and conserve rare and threatened habitats and their key habitats, (wherever they occur) listed on Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000.</p> <p>Ensure that plans and projects with the potential to have a significant impact on European sites (SAC or SPA) whether directly, indirectly or in combination with other plans or projects are subject to Appropriate Assessment, under Article 6 of the Habitats Directive (92/43EEC) and associated legislation and guidelines, to inform decision making.</p>

Topic	Discussion
	<p>Mitigation is recommended for a number of actions to emphasise focus on nature based solutions and co benefits as well as a number of new additional actions to align the actions closely with environmental and ecological assessments generally and the CDP in particular.</p> <p>Walking and cycling actions, if they were to take place on or near sensitive habitats or species vulnerable to disturbance would give rise to adverse effects. However, the existing environmental protection provisions in the CDP will apply and provide sufficient mitigation measures. In addition mitigation measures are recommended for a number of these actions.</p>
Water resources	<p>Potential effects on water resources (and frequently biodiversity) in the absence of mitigation include:</p> <ul style="list-style-type: none"> • Surface water runoff from impermeable surfaces leading to reduced water quality in groundwater springs or surface waters affecting qualifying habitats and species downstream (impacts can range from short to long term); • Changes in the flow rate of watercourses arising from an increased footprint of impermeable surfaces within the Plan area - increasing the extent of impermeable surfaces will result in a decrease in infiltration and an increase in runoff; • Generally, land use practices can result in water quality impacts and whilst surface water impacts may be identified quickly, impacts to groundwater can take much longer to ascertain due to the slow recharge rate of this water resource; • Water quality impacts can also have human health impacts in the case where bacterial or chemical contamination arises. Pressures and impacts on material assets from climate change such as flooding with damage to wastewater treatment facilities or water supply is particularly relevant in this regard. <p>The Galway CDP 2023-2029, already include a range of provisions and measures to address and minimise the above effects, including measures around green and blue infrastructure such as <i>Policy 5.1 Green Network and Biodiversity</i></p> <p><i>1. Support sustainable use and management of areas of ecological importance, parks and recreation amenity areas and facilities through an integrated green network policy approach in line with the Galway Recreation and Amenity Needs Study and where superseded by the Greenspace Strategy, where it can be demonstrated that there will be no adverse impacts on the integrity of European sites.</i></p> <p>Flood risk management (Policy 9.1 Flood Risk:4. <i>Protect and promote sustainable management and uses of water bodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains</i> and development control as well as adaptation measures that support nature based solutions. The CAP however further enhances and strengthens these through support for nature based solutions, sustainable food production and circular economy actions.</p> <p>Implementation of the Biodiversity Plan for the City creates positive interactions for Water SEOS as well as cross cutting other SEOS in a positive manner.</p> <p>A key focus on the actions should be to prioritise Nature Based solutions and learn from other relevant case studies and examples from Ireland and with EU that have demonstrated excellent outputs that provide co benefits. See for example the Compendium of Nature Based Solutions (2020) – Green Cities for Climate and Water Resilience, Sustainable Economic Growth, Healthy Citizens and Environments - Compendium of nature-based and 'grey' solutions - GrowGreen (growgreenproject.eu)</p> <p>Measures around nature based solutions, creating long term direct positive effects on water resources, as well as soil and biodiversity, population and human health.</p>

Topic	Discussion
Soil and Geology	<p>Soil quality and function may be enhanced through particular measures associated with flood resilience, nature based solutions and resource management in particular. The carbon sequestration function of soil and healthy soil quality are extremely significant, across several environmental parameters. Given the nature of landuse within the city area, agriculture emissions are low with residential the largest emissions sector and therefore much of the CAP focuses on this sector. The additional positive impact for retrofitting existing buildings generates positive impacts across SG SEOS as they reduce the need for greenfield land, reduce resource requirements and provide for adaptive reuse. Adaptive reuse and retrofitting of existing buildings locks in existing carbon and addresses climate change adaption through energy efficiency as well as reducing need for new land and resources for construction.</p> <p>EPA Research¹ report identifies 4 main priorities for adaptive reuse and these should be referenced and applied across such actions in the CAP:</p> <ol style="list-style-type: none"> 1. Mainstreaming adaptation in the built environment. This includes prioritising adaptation as a critical second pillar of climate action; focusing on the full range of climate change risks (not simply flooding); integrating built environment adaptation with the wider land use system; capturing mitigation and adaptation benefits through holistic approaches; and focusing on the whole built environment and not only new-builds. 2. Evidence and uncertainty in decision-making. Adaptation of the built environment requires a robust and geographically tailored evidence base; there is a need for granular and useable information on climate impacts. Uncertainty strengthens the case for early investment and points to adopting the precautionary approach, xii Built Environment Climate Resilience and Adaptation and further research is needed in relation to costs, responsibilities of key stakeholders, behaviour of building occupants and social vulnerability in relation to climate risks. 3. Co-designing of adaptation interventions. This includes collaborative stakeholder engagement, the inclusion of climate scenarios as part of statutory public consultation and the testing of novel public engagement methods. 4. Capacity-building requirements. This includes improving resourcing and institutional capacity, adopting new ways of working to avoid traditional siloed thinking and continued professional development and training for elected representatives. <p><i>Action CE 1.1 Support circular initiatives such as prevention, reuse, repair and recycling of resources. Support the development of cooperative, community-owned and other collaborative ventures to foster more effective use and sharing of resources.</i></p> <p>Support for the circular economy in particular supporting enterprises, and local food production is also positive, particular if composting can be applied to enhance soil function.</p> <p>A number of the measures relating to soil are identified for mitigation via NBS, to further strengthen the environmental performance of these actions.</p>
Air Quality and Climate	<p>Overall, the CAP will contribute positively to climate change adaptation, and mitigation through the actions as well as the KPIs included in the plan that will allow robust monitoring of actions. In summary, actions relating to nature based solutions give rise to increased surface water storage and potential carbon sequestration with accompanying co benefits across most SEOS in particular landscape, population and human health, air quality, water and soil and biodiversity. These are dependent on such green and blue infrastructure resources (existing) being understood and</p>

¹ Built Environment Climate Resilience and Adaptation (2019-CCRP-DS.21) EPA Research Report Prepared for the Environmental Protection Agency by School of Architecture, Planning and Environmental Policy University College Dublin Authors: Mark Scott, Louise Burns, Mick Lennon and Oliver Kinnan [Research Report 418.pdf \(epa.ie\)](#)

Topic	Discussion
	<p>surveys, with interventions underpinned by scientific and robust evidence base. The SEA and AA has recommended additional text for certain actions to increase the focus on Nature based solutions and ecological and environmental surveys and assessment.</p> <p>The focus on energy efficiency and innovation as seen through the actions identified in the CAP, examples include : <i>Action 13 GCC to achieve and maintain ISO50001 Energy Management Certification</i></p> <p>Other related measures including key measures relating to behavioural change around transport and the increase in walking/cycling and public transport measures are essential in addressing transport emissions over the lifetime of the CAP and beyond.</p> <p>The support and actions in the DZ will facilitate peer to peer learning amongst communities and demonstrate successful actions at community and local scale. Key actions relate to GHG emission reductions on housing and transport the principal sectors for GHG emissions in the city. These also will provide co benefits in terms of addressing fuel poverty, local air quality (reduction in using fossil fuel) and active travel and public transport options as well as capacity building. The selection of an area consisting of parts of Newcastle, Ragoon, Shantalla, and Westside as the area which satisfies the requirements of a DZ in terms of size, feasible pathway to 51% reduction in GHG emissions over the decade, the potential influence of the Council, and stakeholder collaboration is also supported through a just transition approach where the overall deprivation rating of the area is marginally below average – disadvantaged based on HP Deprivation index (Pobal).</p> <p>Recognising the ecosystems functions of soil, water and biodiversity is a key element in the Nature Based solutions theme and is an important acknowledgement that also provides for positive effects across a number of SEOs.</p>
Material Assets	<p>Many of the measures provide for mitigation and adaptation with a view to minimising adverse effects of climate change on material assets, including water conservation, also responding and facilitating behavioural and modal change in energy use and transport. Examples of these include the following:</p> <p><i>Action:30 Development and implementation of infrastructure and technology across the city to reduce water wastage, such as water fountains, and increase rainwater harvesting, in collaboration with Uisce Éireann where necessary.</i></p> <p><i>Action: 8Develop an energy master plan to include renewable and energy storage for Galway City, factoring medium and long-term scenarios (beyond 2030). Plan to include map of potential sites for development and quantifying power generation potential across the City.</i></p> <p><i>Action 9 Conduct climate risk assessment on the future impacts of climate change in Galway City.</i></p> <ul style="list-style-type: none"> • Promotion of nature based solutions and SuDs • Climate proofing local authority actions <p>Actions relating to energy efficiency, renewable energy and circular economy are also identified as generating positive, long terms effects, being consistent with Material Asset SEOS, as well as soil and geology and accompanying positive medium term effects on population and human health and water, biodiversity.</p>
Cultural Heritage	<p>Archaeology and Built heritage features are present throughout the plan area, and in particular those archaeological or built heritage features associated with the coastline or River Corrib may be particularly vulnerable to climate change effects. Clusters of built heritage features and historic settlements on the coastline and at riverine locations, increases their vulnerability to the effects of climate change. Cultural heritage is not often considered or captured adequately in coastal zone management planning and this can give rise to adverse effects on cultural heritage, for example:</p>

Topic	Discussion
	<p>Overlooking cultural resources can result in</p> <ul style="list-style-type: none"> • loss of cultural identity associated with certain habitats; • loss of tourism, recreational and educational opportunities; • decline in local ecological knowledge, skills and technology pertaining to habitat management; • and loss of opportunities for social and cultural capital¹. <p>Actions within the CAP identified as positive directly for CH SEOS include:</p> <p><i>Action 19 Establish annual climate festival week with events across the city including expert speakers, workshops, action demonstrations, incorporating culture and the arts.</i></p> <p>The following action will also contribute directly and indirectly to retention of older buildings that can support vernacular or protected architecture heritage:</p> <p><i>Action 24 Maximise utilisation of built environment throughout the city, support the upgrade of existing vacant and derelict residential and commercial properties include buy and release, repair and lease, Croí Cónaithe Cities, and so on and including utilising legislative powers such as Compulsory Purchase Orders/ Acquisition to facilitate such reuse where possible.</i></p> <p>This should interact with policies in the CDP as well as support for adaptive reuse/ reuse of existing buildings.</p> <p>Research and risk assessment is important to ensure cultural heritage assets (tangible and intangible) are identified and managed with sensitive interventions to the fabric of the tangible cultural heritage feature.</p> <p>Potential actions with Creative Ireland relating to climate change should be explored in the CAP.</p>
Landscape	<p>Long term positive effects are identified for the CAP and landscape primarily through the nature based solutions, green and blue infrastructure, increased tree planting etc.</p> <p>Many of the measures in the CAP require a landscape level response such as recognition of green and blue infrastructure and corridors and this an important approach to take when responding to climate change.</p> <p>Overall, positive effects identified for Landscape SEOs, as landscape change can be considerable with climate change effects in terms of changing water levels, habitat change, transport measures and adaptation measures such as flood risk management.</p> <p>An increase in blue and green infrastructure, public realm and permeability would all create long term positive effects for the Landscape SEOs.</p> <p>Mitigation measures are recommended for a number of actions to strengthen consideration of landscape.</p>

¹ Coastal cultural heritage: A resource to be included in integrated coastal zone management [SornaKhakzad^aMarnixPieters^bKoenraadVan Balen^c](#)
[Ocean & Coastal Management Volume 118, Part B](#)

7.2 Cumulative effects

This section of the Environmental Report provides an outline of the potential cumulative effects on the environment as a result of implementation of the CAP 2024-2029.

Cumulative effects are referred to in a number of SEA Guidance documents and are defined in the EPA SEA Process Checklist as *“effects on the environment that result from incremental changes caused by the strategic action together with other past, present and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or space”*. These effects can be insignificant individually but cumulatively over time and from a number of sources can result in the degradation of sensitive environmental resources. The assessment of cumulative effects is a requirement of the SEA Directive (2001/42/EC).

The 2004 Guidelines produced by the DECLG outlines that the SEA process is in a good position to address cumulative effects for which the Environmental Impact Assessment process is not equipped to deal with. Due to the strategic nature of the SEA process a forum is provided in which cumulative effects can be addressed. The EPA Strive Report 2007-2013 on ‘Integrated Biodiversity Impact Assessment’ describes cumulative effects as incremental effects resulting from a combination of two or more individual effects, or from an interaction between individual effects – which may lead to a synergistic effect (i.e. greater than the sum of the individual effects), or any progressive effect likely to emerge over time.

- Cumulatively and in combination, several of the CAP Actions encourage a modal shift and in turn gives rise to indirect positive effects, for example by creating more physical activity in terms of travel to work and school, positively affecting air quality with accompanying benefits to both population and human health .
- In addition, this can create a reduction in emissions associated with Particulate Matter and Nitrogen Dioxide. This benefits both human health as well as Biodiversity, flora and fauna and surface water features.
- In combination and cumulative effects are particularly relevant to the Nature Based solutions actions which together create long term positive effects across Population, Landscape, Biodiversity, Soil and Geology, Water and Material Assets whilst responding to climate change effects.
- Landuse effects are identified particularly for certain energy and transport measures; including active travel, renewable energy, protection of coast. In the absence of mitigation adverse effects could arise but the compliance with the statutory land use plans notably the City Development Plan will provide appropriate protection.
- In turn, positive short to medium term effects are identified in the case of significant reductions in emissions from transport and residential energy with cross cutting positive effects on air quality with accompanying positive effects on human health, water, habitats and climate.
- Threaded throughout the CAP is the theme of citizen engagement and awareness raising and this is critical to both inform, educate and engage citizens in relation to responding to climate change, whilst also identifying positive measures. Many of the engagement actions should increase public awareness and a sense of responsibility, collective and individual action in addressing and adapting to climate change. Positive in combination effects are identified for human health around modal shifts, and green infrastructure, behavioural change, tree planting and responding to flood risk. The DZ can function as an local example of good

practice and support learning and lessons across the city and supports a Just Transition approach.

- The purpose of the actions within the CAP are to significantly reduce the city's GHG emissions and these actions together, if fully implemented are positive for addressing this significant challenge that requires immediate and urgent implementation of actions.
- Collaboration within the local authority but also with other agencies and departments and research with academic institutions should result in positive effects in the medium to longer term.
- A key challenge is assessing how the pace of climate change impacts interact with the CAP actions, potential cascading effects and ensuring that the monitoring is accurate, frequent and able to influence remedial actions.

TABLE 7-2 KEY PLANS CONSIDERED FOR CUMULATIVE IMPACTS

Principal Plans	Comment	Statement
National Planning Framework 2030	<p>The NPF amongst a range of issues, addresses the future development direction of our cities, towns and rural areas. The framework specifically includes:</p> <ul style="list-style-type: none"> • The role of our Cities and Towns • The potential of our Regions • Rural Development • Providing better quality of life for people and communities • Provision of homes to meet future needs • Our coastal and marine areas • Co-ordination of place making with our neighbours • The role of planning in responding to climate change • The context for future infrastructural investment <p>The National Planning Framework seeks to:</p> <ul style="list-style-type: none"> • Guide the future development of Ireland, taking into account a projected 1 million increase in our population, the need to create 660,000 additional jobs to achieve full employment and a need for 550,000 more homes by 2040 • Enable people to live closer to where they work, moving away from the current unsustainable trends of increased commuting • Secure more compact forms of urban development in all types of settlements • Regenerate rural Ireland by promoting environmentally sustainable growth patterns 	<p>The Natura Impact Statement for the NPF concludes that subject to the mitigation proposed in the NIS being incorporated, there will be no adverse effects on the integrity of any European Sites as a result of implementation of the NPF.</p> <p>Otherwise the Environmental Report for the NPF identifies a variety of positive, neutral and negative effects in each of the environmental categories. It is therefore difficult to neatly categorise the effects of the NPF on all environmental categories opposite.</p> <p>However Section 8.3.10 Cumulative Impacts of said Report states that ‘the greatest cumulative benefit should be in relation to Population and Human Health’ and otherwise states that ‘there is potential for cumulative negative impacts on receptors such as biodiversity, water, soils, cultural heritage and landscape’.</p> <p>Negative effects arising from the NPF on Biodiversity and Water may also impact on said receptors in Galway city and are thus categorised as negative in the assessment opposite. However, it is unlikely that the NPF will give rise to negative impact on landscape receptors in Galway its given its emphasis on compact growth, and otherwise any negative effect arising from the NPF on soils and cultural heritage elsewhere are unlikely to affect said receptors within the city. Consequently, the impact of the NPF on these receptors is categorised as insignificant. No in-combination impacts were predicted as a result of implementation of the Plan, the revised NPF will be subject to full SEA and AA.</p>

Principal Plans	Comment	Statement
	<ul style="list-style-type: none"> • Plan for and implement a better distribution of regional growth, in terms of jobs and prosperity • Transform settlements of all sizes through imaginative urban regeneration and bring life / jobs back into cities, towns and villages • Co-ordinate delivery of infrastructure and services in tandem with growth, through joined-up NPF/National Investment Plan and consistent sectoral plans, which will help to manage this growth and tackle congestion and quality of life issues. 	
Northern and Western Regional Economic and Spatial Strategy 2020-2032;	<p>The RSES Growth Framework provides a clear sustainable strategy for compact growth and delivering those key elements known to inform business location choices. It identifies a pathway through the inclusion of a Metropolitan Area Strategic Plan (MASP) for Galway, tailored Regional Growth Centre Strategic Plans for Sligo, Athlone and Letterkenny (incorporating the strategic cross-border partnership with Derry-Strabane) and the identification of priority actions for Key Towns and places. This region is also defined by its strong connection to our rural areas and rural economies. The RSES provides for the careful management and encouragement of development within rural areas, to ensure that they remain and grow as vibrant communities.</p>	<p>The Natura Impact Statement for the RSES concludes that ‘the NW RSES would not adversely affect the integrity of a European site (whether individually or in combination with other plans or projects) subject to application of all of the mitigation measures identified in this NIR.’ Otherwise, the Environmental Report for the RSES identifies a variety of positive, neutral and negative effects in each of the environmental categories. It is therefore difficult to neatly categorise the effects of the RSES on all environmental parameters and these should be addressed through planning hierarchy and appropriate levels and scale of plans and accompanying environmental assessments.</p> <p>However, Section 8.4 Cumulative Effects of the Environmental Report for the RSES (which takes into account the ‘interaction of regional policy objectives within the RSES’) states that: ‘the greatest cumulative benefit should be in relation to PHH’, and otherwise states that ‘there is potential for cumulative negative impacts on receptors such as biodiversity, water, soils, cultural heritage and landscape,’.</p> <p>Negative impacts on biodiversity, and water arising from the RSES outside Galway City may also negatively impact on said environmental receptors in the city as the plan area is inherently linked to wider ecosystems and hydrological systems. (e.g. additional development within the River Corrib catchments)</p> <p>However, given the emphasis on the ‘sustainable growth of more compact urban and rural settlements’ contained within the RSES it is considered that the strategy will not have a negative effect on landscape receptors in Galway City. Consequently, the effect of the RSES on landscape has been rated as insignificant.</p>

Principal Plans	Comment	Statement
		<p>In addition, negative impacts on receptors which are geographically specific to Galway City such as its soil resource, and cultural heritage are unlikely to be significantly impacted by any negative effects arising from the RSES elsewhere. Consequently, the impact of the RSES on these receptors has rated as insignificant.</p> <p>No in-combination impacts were predicted as a result of implementation of the Plans.</p>
Third Cycle River Basin Management Plan for Ireland 2022-2027 draft	The third and current cycle aims to build particularly on the initiatives of the second cycle, particularly the governance and implementation structures, and to improve the establishment of Irish Water, An Forum Uisce, the Local Authority Waters Programme and the Agricultural Sustainability Support and Advisory Programme.	<p>These objectives support the policies in the CAP. However, any developments that may arise as a result of this plan will be required to have a project level AA and EIA which will assess these in detail and provide suitable mitigation measures where appropriate.</p> <p>The Third Cycle RMP is subject to full SEA And AA. No in-combination impacts were predicted as a result of implementation of the Plans</p>
Galway City Development Plan 2023 - 2029	<p>The CDP was adopted in 2023 and was prepared in accordance with the Planning and Development Act 2000, and was subject to full SEA, AA and SFRA.</p> <p>The plan sets out the overall strategy for planning and sustainable development for the city. Chapter 5 of the plan outlines the aims of the Galway City Council to protect and enhance the natural heritage and biodiversity of designated and non-designated ecological sites and sets out the policies and objectives for this.</p> <p>Chapter 2 Climate Action provides additional policy support relating to climate action and policies.</p>	<p>The SEA ER states:</p> <p>Key cumulative and in combination effects are presented below:</p> <ul style="list-style-type: none"> • Many of the policies across Chapter 2: Climate Action, Chapter 3:, Chapter 5: Natural Heritage, Biodiversity, Recreation Housing and Sustainable Communities and Amenity in particular, if successfully implemented and delivered can support adaptation to climate change as well as positive interactions across many SEOs including Water, Soil and Geology, Biodiversity, Flora and Fauna and Population, Human Health and Noise. For transport, provisions including in the Chapter 4: Sustainable Mobility and Transportation is of particular relevance. These are identified as generating positive impacts for a number of SEOs including Population, Human Health and Noise, Air and Climate and Material Assets . Several transport measures (in particular public transport and walking and cycling) create positive impacts as they support more sustainable transport options with cumulative and in combination positive impacts relating to Population, Human Health and Noise, Biodiversity, Flora and Fauna and Air and Climate SEOs. • As with other policies and objectives relating to sustainable communities, place making, regeneration and compact growth, positive long term effects are achieved for cultural heritage SEOS relating to sustainable buildings, reuse of existing buildings both protected and vernacular, in city centre and suburban areas. These represent embodied carbon and their reuse is positive in terms of Air Quality and climate SEOS. In addition, these features contribute to local landscape and townscape character,

Principal Plans	Comment	Statement
		<p>with accompanying positive interactions in placemaking - Population, Human Health and Noise, Soil and Geology. Cultural Heritage and Landscape SEOs.</p> <ul style="list-style-type: none"> • Whilst greenways and blueways are identified as generating positive, long term effects in relation to Population and Human Health SEOs, Material assets, Air and Climate and Landscape SEOs, these, if not carefully designed with ecological and other environmental considerations from the outset can contribute to habitat fragmentation, adverse effects to biodiversity and water quality through disturbance, increased noise and emissions and loss of local landscape character. • Nature based solutions in relation to water management, flood risk and public realm are identified as being consistent and positive across all SEOs, in particular measures that promote natural based solutions such as tree planting and SUDs are all positive across all parameters and provide multi-functional benefits in the landscape and townscape. In combination and cumulative effects are particularly relevant to the nature based solutions actions which together create long term positive effects across Population, Human Health and Noise, Landscape, Biodiversity Flora and Fauna, Soil and Geology, Water and Material Assets SEOs whilst responding to climate change effects. <p>The NIR concluded that in NIR through the implementation of the overarching policies and objectives of the Plan no negative in-combination effects from other plans and projects to European sites are expected through the implementation of this Plan.</p>
Galway City Local Economic and Community Plan (LECP) 2017 -2022; new LECP in prep.	These plans were subject to SEA and AA screening and concluded that subject to full adherence and implementation of measures likely significant effects were not identified.	No in-combination impacts were predicted as a result of implementation of the current LECP 2017.
Galway City Climate Change Adaptation Strategy 2019-2024	Galway City Council Climate Change Adaptation Strategy (2019-2024 and any subsequent versions). This Plan has been subject to SEA/AA screening and is being replaced by the CAP 2024 -2029	No in-combination impacts subject to full implementation and adherence to mitigation measures were predicted as a result of implementation of the Plans.

8 Mitigation Measures

8.1 Introduction

This chapter outlines the mitigation measures that will prevent, reduce, and offset as much as possible any significant adverse effects on the environment of the plan area resulting from the implementation of the CAP. Section (g) of Schedule 2B of the SEA Regulations (as amended) requires *'The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the Plan'*.

Mitigation involves ameliorating significant negative effects. Where the environmental assessment identifies significant adverse effects, consideration is given in the first instance to preventing such impacts or where this is not possible, to lessening or offsetting those effects. Mitigation measures can be generally divided into those that:

- Avoid effects;
- Reduce the magnitude or extent, probability and/or severity of effect;
- Repair effects after they have occurred, and
- Compensate for effects, by balancing out negative impacts with positive ones.

The iterative process of the CAP preparation has facilitated the integration of environmental considerations into the CAP. In addition, potential positive effects of implementing the CAP have been and will be maximized and potential adverse effects have been and will be avoided, reduced or offset.

Many impacts will be more adequately identified and mitigated at project and EIA level. In general terms, all proposals for development will be required to have due regard to environmental considerations outlined in this Environmental Report and associated assessments including the Screening for Appropriate Assessment/Natura Impact Report. Proposals for development which are deemed contrary to the environmental objectives contained in the Galway City Development Plan 2023-2029 will not normally be permitted, and if permitted, not without the appropriate site and development specific mitigation measures. There were also a number of actions associated with the CAP that were identified as potentially generating significant adverse impacts on the environment, and/or were identified as benefiting from additional text amendments. Suggested rewording of these proposals are put forward for consideration and recommended for inclusion in the CAP.

This chapter is structured as follows:

8.2 Environmental Protection Measures in the Galway City Development Plan 2023 -2029

8.3 Mitigation measures –amendment of text or new actions in the CAP 2024 -2029.

8.2 Environmental Protection Measures in the Galway CDP 2023-2029

TABLE 8-1 EXISTING ENVIRONMENTAL PROTECTION MEASURES GALWAY CDP 2023-2029

Policy 2.1 Circular Economy	
1.	Support a successful transition to a circular economy where waste and resources are minimised in accordance with emerging legislation and national strategy including the Circular Economy Programme 2021-2027.
Policy 2.2. Climate Action	
1.	Support the implementation of International, European and National objectives as detailed in the following: <ul style="list-style-type: none"> - EU Climate Adaptation Strategy 2021 - the European Green Deal; - The Climate Action and Low Carbon Development Amendment Act 2015 to 2021; - The Climate Action Plan (2019) and any updated plan; - The National Climate Adaptation Framework 2018; - The National Climate Change Strategy; - Sectoral Adaptation Plans - EU Biodiversity Strategy for 2030 - The National Climate Mitigation Plan (when prepared and adopted)
2	Support the implementation of national objectives for climate change adaptation and climate change mitigation to achieve a just transition to a climate resilient, biodiversity rich, environmentally sustainable, carbon neutral economy.
3	Support through plan policy and objectives, the national objective of the legally binding path to net-zero emissions no later than 2050, and to a 51% reduction in emissions by the end of 2030; through implementation of 5 year carbon budgets, by way of reducing greenhouse gases, promotion of sustainable transport, use of renewable resources, improving energy efficiency and supporting nature based solutions.
4	Support, facilitate and advance the implementation of policies and actions set out in the Galway City Council Climate Adaptation Strategy 2019-2024.
5	Prepare and make a five year Local Authority Climate Action Plan in accordance with the Climate Action and Low Carbon Development Amendment Act 2021 and future supporting guidelines. Review the development plan to ensure consistency with the Local Authority Climate Action Plan and future climate action policy and guidance and if required bring forward a variation of the plan.
6	Support national sectoral emissions ceilings and carbon budgets once adopted where applicable.

7	Manage the climate risks associated with climate change through the development of climate adaptation measures and sustainable planning and development, including through the planning, design and implementation of the Coirib go Cósta Galway City Flood Relief Scheme in conjunction with the OPW.
8	Support the implementation of water management measures through mechanisms such as SUDS, rain water harvesting, use of grey water, water storage and nature based solutions to adapt to the impacts of climate change.
9	Support the designated and any future Decarbonising Zone (DZ) in the city and associated implementation plan promoting measures to reduce Greenhouse Gas (GHG) emissions and improve general environmental conditions in this area.
10	Support Energy Master Plans prepared by Sustainable Energy Communities in Galway City in particular to support the recommendations of the Galway City Energy Master Plan and associated Energy Action Plan setting out pathways for reducing greenhouse gas emission associated with energy use in Galway City (due to be completed by mid-2022)
11	Support initiatives to advance good soil management, carbon capture and carbon sequestration where feasible in the city.
12	Collaborate with the Climate Action Regional Office (CARO) and any other relevant stakeholder in respect of the implementation of existing and future climate change adaption and mitigation strategies and climate action policy to support the transition to a low carbon economy.
13	Increase awareness and support behavioural change in relation to climate change, climate resilience and the transition to a low carbon economy.
14	Enable opportunities to activate EC funded projects such as the EU Horizon Europe Missions under the two missions of (i) Climate-Neutral and Smart Cities and (ii) Adaptation to Climate Change, including societal transformation.
15	Require a climate action statement that considers energy, emissions and sustainable transport as part of every Local Area Plan, masterplan, spatial framework, and regeneration and opportunities site
16	Support and facilitate measures to reduce the reliance on single use plastics in the city with a particular emphasis on taking single use plastic bottles out of use as a measure to be pro-active in supporting the Climate Action Plan.
17	Support the Third-Level Education Sector to become centres for Climate Mitigation and Learning
Policy 2.3 - Renewable Energy	
	1.Promote and facilitate the development of renewable sources of energy within the city, and support national initiatives, which offer sustainable alternatives to dependency on fossil fuels and a means of reducing greenhouse gas emissions, subject to the avoidance of unduly negative visual and environmental impacts, or impacts on residential amenity.

	<p>2. Support and work in partnership with SEAI, local Sustainable Energy Communities and relevant stakeholders in the development of energy efficient and renewable energy projects and investigate the potential for the use of emerging renewable technologies in the city.</p> <p>3. Ensure that the development of renewable energy and its associated infrastructure avoids negative impacts on European sites and adhere to the requirements of Article 6 of the Habitats Directive (92/43EEC).</p> <p>4. Promote small scale, on-site energy development, where energy generated is primarily required to meet the needs of households, communities and businesses to reduce their carbon emissions. Examples could include micro wind/solar energy generation, low carbon district heating, waste heating recovery and utilisation, geothermal and air to water energy technologies.</p> <p>5. Support transmission network integration requirements facilitating linkages of renewable energy proposals to the electricity and gas transmission grid, in a sustainable and timely manner, subject to proper planning and environmental considerations. 6. Support the development of appropriate land-based infrastructure at suitable locations in the city to support off-shore renewable energy production subject to adequate visual, environmental and ecological protection</p>
Policy 2.4. Sustainable Building Design and Construction	
1	Increase the energy performance of new buildings in the city by encouraging energy efficiency and energy conservation in the siting, layout, design, and construction of development.
2	Encourage and ensure new development to limit greenhouse gas emissions and make use of opportunities for renewable and low carbon energy including through design, layout, orientation and construction practices.
3	Encourage high standards of energy conservation and improved energy performance in all existing and planned local authority housing and include for a deep retrofit programme of works (currently under the Energy Efficiency Retrofit Programme).
4	Liaise with the SEAI and other agencies to develop standards, procedures and targets for energy conservation in the Council's housing stock.
5	Support the retrofit and reuse of existing buildings in the interests of sustainability and in line with delivery of the proposed National Aggregated Model of Retrofitting.
6	Promote energy efficiency and sustainability in both existing and new buildings and support the implementation of the EU Energy Performance in Buildings Directive and the Building Energy Rating Certification (BER).
7	Support flexibility, accessibility and adaptability in terms of layout and design of new housing.
Policy 3.3. Sustainable Neighbourhood Concept	

1	Promote the development of compact, well designed safe and attractive neighbourhoods that deliver efficient use of land and have effective integration with social and physical infrastructure including public transport, and that will enable the development of successful communities and facilitate the growth strategy for Galway City as envisioned in the NPF and RSES.
2	Endeavour to contribute to decarbonisation and achievement of national emission targets in the housing sector through encouraging sustainable densities in housing, adherence to sustainable practices in construction, use of materials and standards, facilitating retrofitting, re-use and effecting Decarbonisation Zones that include residential areas.
3	Support neighbourhoods that can meet the needs of an aging and increasingly diverse society and that can accommodate social and physical inclusiveness and contribute to a good quality of life and general wellbeing.
4	Encourage sustainable neighbourhoods, through appropriate guidelines and standards and through the implementation of local area plans, masterplans / frameworks / area plans.
5	Encourage higher residential densities at appropriate locations as guided by the Urban Density and Building Height Study. Such locations include strategic regeneration and opportunity sites, and residential and mixed use zoned sites located close to public transport routes and routes identified in the Galway Transport Strategy as suitable for high frequency, public transport services.
6	Protect and enhance new/existing residential neighbourhoods through appropriate guidelines and standards, preparation of framework plans and through the use of development briefs and design statements.
7	Ensure the design of residential developments have regard to the Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (2009) and demonstrate compliance with the Urban Design Manual–A Best Practice Guide and the Design Manual for Urban Roads and Streets (2019).
8	Support through policy and design standards the concept of a “15 minute city” where the daily needs of communities can be accessed within a 15 minute walk, cycle or by public transport.
9	Ensure designated residential amenity open spaces, which are in use and reflect high residential value and are allied to existing residential developments are protected for such use. Exceptions to allow for infill development will only be considered on underutilised lands which do not contribute positively to the urban structure and form and lack community value. Such development will only be considered where it contributes to place making and community, improves the quality of the neighbourhood and can enhance the built environment with better informal supervision of the public realm and can, where housing is part of the proposal, provide a mix in size and type of housing units.
Policy 3.7 City Centre Residential Areas	
1	Prioritise the provision of new homes on designated regeneration and opportunity sites in the city centre at appropriate scales to enable the development of new sustainable city centre communities.

2	Protect and enhance established city centre residential communities by discouraging encroachment from commercial development and unacceptable infill developments.
3	Enhance city centre residential areas through implementation of environmental improvement schemes and improvements to the public realm, including, where appropriate, homezones and recreational facilities in conjunction with local residents.
4	Encourage the expansion of the city centre residential community by requiring a residential content in new development proposals.
Policy 4.2 Land Use and Transportation	
1	Promote close co-ordination between land use and transportation through policies, land use zoning and objectives.
2	Support and facilitate the integration of land-use and transportation in order to facilitate compact city growth, supported by sustainable modes of transport that will encourage economic well-being and ensure the movement of people and goods in a manner that is sustainable, safe and provides ease of access for all, enhances quality of life and supports a reduction in transport related greenhouse gas emissions.
3	Provide for the development of high volume, trip intensive, developments such as commercial centres and employment hubs at locations that will minimise the need, distance and time taken to travel and promote the use of sustainable transport modes such as walking, cycling and public transport to access these locations.
4	Promote effective sustainable residential densities in the city particularly along and close to the existing and planned public and sustainable transport route network.
5	In line with Core Strategy and to give direction for future settlement expansion prepare Local Area Plans and masterplans where appropriate that includes for integration of land use with transportation.
6	Encourage the concept of a “15 minute city” where land use policies facilitate residents to access their daily needs within a 15 minute walk or bike ride and thereby reduce the dependence on car transport.
Policy 5.1. Green Network and Biodiversity	
1	Support sustainable use and management of areas of ecological importance, parks and recreation amenity areas and facilities through an integrated green network policy approach in line with the Galway Recreation and Amenity Needs Study and where superceded by the Greenspace Strategy, where it can be demonstrated that there will be no adverse impacts on the integrity of European sites.
2	Support the actions of the Galway Recreation and Amenity Needs Study and the upcoming Greenspace Strategy with particular emphasis on the progression and completion of both the existing South Park and Kingston Land Masterplans.

3	Support the retention and enrichment of biodiversity throughout the city in recognition of the need to protect and restore biodiversity to increase the resilience of natural and human systems to climate change.
4	Support the implementation of the National Biodiversity Action Plan (2017- 2021) and the All-Ireland Pollinator Plan (2021-2025) and support the actions of the City Council's Heritage Plan 2016-2021 and Biodiversity Action Plan 2014-2024 relating to the promotion of ecological awareness and biodiversity.
5	Support climate action through implementation of nature based solutions that enhance biodiversity in the green network, including measures such as tree planting, SUDS, use of green infrastructure. Such measures will be informed by the Greenspace strategy.
6	Promote the integration of nature-based solutions in all new developments as appropriate to contribute to the city's climate resilience and require large scale development proposals to include a green infrastructure and biodiversity plan.
8	Achieve a sustainable balance between meeting future recreational needs (both passive and active) and the preservation of the city's biodiversity and ecological and cultural heritage.
10	Support the outcomes of the Greenspace Strategy and any objectives to progress delivery of new urban parks including an additional urban park close to the city centre.
11	Support the Healthy Green Spaces initiative which seeks to improve the quality of green spaces in the city, to enhance climate change resilience, aesthetic value, biodiversity and improve public health and wellbeing.
12	Improve accessibility to the City Parks, recreation and amenity areas and facilities and include for sustainable modes of transport, where appropriate.
15	Co-operate with the NPWS, landowners and stakeholders in the preparation and implementation of management plans for designated European sites.
17	Enhance linkages and connectivity within the green network identified in Table 4.1.
19	Ensure that all passive and active recreational proposals are considered in the context of potential impact on the environment, sites of ecological and biodiversity importance and general amenity.
20	Ensure that notwithstanding land use zoning objectives, significant change of use from existing recreational facilities will only be considered if it is clearly demonstrated that either the loss of such a facility would not have an unacceptable impact on recreation and amenity provision in the city, or if an alternative facility is provided of equal or preferably superior benefit to the local community or the city's hierarchy of facilities and amenities.
23	Continue to implement measures to increase and restore biodiversity in open spaces and road verges through the no mow grass management initiative, and ornamental pollinator projects such as the perennial bulb planting scheme.
Policy 5.2. Protected Spaces: Sites of European, National and Local Ecological Importance	

1	Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation.
2	<p>Ensure that all plans or projects within the Plan area will only be authorised and /or supported after the competent authority has ascertained based on scientific evidence, screening for appropriate assessment and /or a Habitats Directive Assessment that :</p> <ul style="list-style-type: none"> i. The plan or project will not give rise to an adverse direct, indirect or secondary effect on the integrity of any European site (either individually or in combination with other plans or projects); or ii. The plan or project will have an adverse effect on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or iii. The plan or project will have an adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of 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. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.
3	Protect, conserve and promote the nationally designated sites of ecological importance, including existing and proposed Natural Heritage Areas (NHA and pNHAs) in the city.
4	Protect, conserve and support the development of an ecological network throughout the city which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive.
5	Continue to recognise sites of County Geological Interest in the city identified by the Geological Survey of Ireland (GSI) and protect such sites from inappropriate development and protect geological NHAs should they become designated and notified to the Local Authority, during the lifetime of the Plan.
6	Protect Local Biodiversity Areas, wildlife corridors and stepping stones based on the Galway Biodiversity Action Plan 2012-2024 and support the biodiversity of the city in the Council's role/responsibilities, works and operations, where appropriate.
7	Encourage, in liaison with the NPWS, the sustainable management of features which are important for the ecological coherence of the network of European sites and essential, by their linear or continuous nature or as stepping stones for the migration, dispersal and genetic exchange of wild species.
8	Support the actions of the Galway City Council Heritage Plan 2016-2021 and any update and Biodiversity Action Plan 2014-2024 relating to the promotion of ecological awareness and biodiversity, the protection of wildlife corridors and the prevention of wildlife habitat fragmentation.

9	Co-operate with the NPWS, landowners and stakeholders in the preparation and implementation of management plans for designated sites.
10	Protect and conserve rare and threatened habitats and their key habitats, (wherever they occur) listed on Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000.
11	Ensure that plans and projects with the potential to have a significant impact on European sites (SAC or SPA) whether directly, indirectly or in combination with other plans or projects are subject to Appropriate Assessment, under Article 6 of the Habitats Directive (92/43EEC) and associated legislation and guidelines, to inform decision making.
12	Achieve a sustainable balance between meeting future recreational needs (both passive and active) and the protection of the city's ecological heritage.
13	Support the inclusion of natural features, such as trees, hedgerows, stone walls, ponds and the use of green design features and the incorporation of biodiversity measures in developments layouts.
14	Support and implement measures to control and manage alien/invasive species.
15	Protect the ecological integrity of statutory Nature Reserves, refuges for fauna and Annex 1 Habitats.
Policy 5.3 Blue Spaces: Coast, Canals and Waterways	
1	Protect and maintain the integrity of the coastal environment and waterways by avoiding significant impacts and meeting the requirements of statutory bodies, national and European legislation and standards.
2	Conserve and protect natural conservation areas within the coastal area and along waterways and ensure that the range and quality of associated habitats and the range and populations of species are maintained.
3	Develop and enhance the recreational and amenity potential of the city's waterways and coastal area, while not compromising the ecological importance of these areas.
4	Investigate the extensive water resource in the city with a view to exploring where public access and enjoyment can be improved and where potential sustainable uses and water based recreation can be developed to the benefit of the city, and have regard to ecological conservation and safety considerations.
5	Support the implementation of the recommendations of the River Basin Management Plan in relation to the protection of water quality of surface waters, groundwater and coastal waters.
6	Ensure development and uses adhere to the principles of sustainable development and restrict any development or use which negatively impact on water quality.

7	Have regard to European and national best practice when assessing development in or near coastal areas which is likely to have significant effects on the integrity, defined by the structure and function, of any designated European sites, protected coastal and marine fauna and flora.
8	Ensure the conservation of the canal corridor and require that developments abutting the canal relate to the context of the adjacent environment and contribute to the overall amenity, and explore the possibility of opportunities for public access.
9	Work with stakeholders, including IW, OPW, EPA, Inland Fisheries and Corrib Navigation Trust in the management of the river and canal systems.
10	Encourage uses which will facilitate conservation of the industrial archaeology legacy of mill buildings, warehouses and associated features.
12	Ensure the protection of the River Corrib as a Salmonid River, where appropriate.
13	Restrict the location of structures other than structures with essential links to the waterway and public utilities within 10 metres of the River Corrib in G agricultural zoned lands.
14	Facilitate sustainable flood defence and coastal protection works in order to prevent flooding and coastal erosion, subject to environmental and visual considerations as guided by the Corrib go Cósta, Galway Flood Relief Scheme project
15	Maintain and extend the achievement of the Blue Flag Beach Status in co-operation with IW.
16	Ensure any development within the aquatic environment shall be carried out in consultation with prescribed bodies and with adherence to their guidelines.
17	Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries.
18	Ensure that development does not have a significant adverse impact, incapable of satisfactory mitigation, on protected species.
20	Implement the outcomes of the emerging strategy for the marine environment set out in the forthcoming Marine Planning and Development Management legislation.
21	Ensure the conservation of the special recreational value of the riverside walk from Wolfe Tone Bridge to Salmon Weir Bridge and require that developments abutting the walkway incorporate measures to minimise noise levels in their design and reduce the emission and intrusion of any noise which might have potential to adversely impact on amenities and quiet space attributes
Policy 5.4. Green Spaces: Urban Woodlands and Trees	
1	Manage and develop woodlands in the ownership of Galway City Council for natural heritage, recreation and amenity use, including Terryland Forest Park, Merlin Park Woods and Barna Woods/Lough Rusheen City Park.

2	Make Tree Preservation Orders for individual trees or groups of trees within the city, where appropriate.
3	Integrate existing trees and hedgerows on development sites where appropriate and require tree planting, as part of landscaping schemes for new developments.
4	Continue to promote partnerships with the community for the management and improvement of biodiversity in local open spaces, through schemes such as the Green Flag Awards.
Policy 8.7 Urban Design and Placemaking	
1	Encourage high quality urban design in all developments.
2	Improve qualitative design standards through the application of design guidelines and standards of the Development Plan, the 'Galway Public Realm Strategy 2019 and accompanying design, activity and delivery manuals', 'Galway Shopfront and Signage Design Guidelines (2012)' and 'Design Guidelines Canopies (2011)'.
3	Ensure that development delivers high quality urban design, place making and public realm that contributes to urban regeneration in the city and that is resilient to potential impacts of climate change.
4	Encourage innovation in architecture and promote energy efficiency and green design.
5	Progress the implementation of the Ardaun Local Area Plan 2018-2024.
6	Prepare Local Area Plans, masterplans and spatial/design frameworks which provide an urban design framework to contribute to the development of sustainable, vibrant working and living environments.
7	Promote sustainable and inclusive urban design, urban form and architecture that positively contributes to the city's existing character and distinctiveness.
8	Adhere to the <i>Galway City Urban Density and Building Height Study (2021)</i> and promote development which incorporates high quality sustainable and inclusive urban design, urban form and architecture that positively contributes to the city's character, heritage and neighbourhood areas.
9	Proposals for buildings which are taller than the prevailing benchmark heights will only be considered where they do not have an adverse impact on the context of historic buildings, ACA's, residential amenity or impinge upon strategic views, in accordance with the Urban Density and Building Height Study for the city.
10	Promote the reuse and adaptation of derelict and vacant buildings.
Policy 9.1 Flood Risk	

1	Support, in co-operation with the OPW, the implementation of EU Flood Risk Directive (2007/60/EC), the Flood Risk Regulations (SI No, 122 of 2010) and the DECLG and OPW Guidelines for Planning Authorities for Planning Authorities, the Planning System and Flood Risk Assessment Management (2009), updated/superseding legislation or departmental guidelines and have regard to the findings and relevant identified actions of the Corrib Catchment Flood Risk Management (CFRAM) Study.
2	Support and facilitate the implementation of the Coirib go Cósta Galway City Flood Relief Scheme in conjunction with the OPW to support a climate resilient city, protect against flooding and minimise the impact of future climate events. Support in general the associated mitigation and adaptation measures in order to prevent flooding and coastal erosion, subject to appropriate environmental, visual, built heritage and other relevant considerations.
3	Ensure the recommendations of the Strategic Flood Risk Assessment (SFRA) for the Galway City Development Plan 2023-2029 are taken into consideration in the assessment of developments in identified areas of flood risk and require site specific Flood Risk Assessment (FRA) and associated design and construction measures where appropriate.
4	Protect and promote sustainable management and uses of water bodies and watercourses from inappropriate development, including rivers, streams, associated undeveloped riparian strips, wetlands and natural floodplains.
5	Ensure flood risk is incorporated into the preparation of any future local area plans, framework plan and masterplans in the city.
6	Ensure any proposed measure designed to alleviate flooding/coastal erosion is subject to Appropriate Assessment in accordance with Article 6 of the EU Habitats Directive, where appropriate.
7	Continue to protect the coastal area and the foreshore and avoid inappropriate development in areas at risk of coastal erosion and/or would cause and escalate coastal erosion in adjoining areas.
8	Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries.
Policy 9.2 Water Quality	
1	Support the actions of the River Basin Management Plan 2018-2021 and future River Basin Management Plan in order to promote and achieve a restoration of good status, reduce chemical pollution and prevent deterioration of surface, coastal and groundwater quality, where appropriate.
2	Continue to pursue the maintenance of good bathing water quality at the city beaches through monitoring and management actions in accordance with the Bathing Water Quality Regulations 2008.
3	Ensure development adheres to prevailing environmental standards and guidelines and accords with emerging legislation and strategy on the marine environment.

4	Maintain and extend the Blue Flag Beaches status in regard to water quality, infrastructure and amenity provision for beaches in the city.
5	Protect the city's groundwater resource in accordance with the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (Groundwater) Regulations, 2010 (SI No. 9 of 2010) or any updated legislation and limit any development which has potential to impact the objectives for protection, enhancement and/or restoration.
6	Minimise and control discharges to inland surface water bodies, in particular Terryland/Sandy River, groundwater and coastal waters to prevent water pollution and protect the environment.
Policy 9.4 Sustainable Urban Drainage Systems	
1	Ensure the use of Sustainable Urban Drainage Systems (SuDS) and sustainable surface water drainage management, wherever practical in the design of development to enable surface water run-off to be managed as near to its source as possible and achieve wider benefits such as sustainable development, water quality, biodiversity local amenity and climate adaptation.
2	Promote the use of green infrastructure e.g. green roofs, green walls, bioswales, planting and green spaces for surface water retention purposes as an integrated part of SUDS and to deliver all the ancillary benefits.
Policy 9.6 Air Quality and Noise	
1	Maintain air quality to a satisfactory standard by regulating and monitoring atmospheric emissions in accordance with EU policy directives on air quality and Ambient Air Quality and Cleaner Air for Europe (CAFÉ) Directive (2008/50/EC) by promoting and supporting initiatives to reduce air pollution and by increasing the use of sustainable transport modes and developing urban woodlands, encouraging tree planting, conserving and creating green open space.
2	Ensure the design of development incorporates measures to minimise noise levels in their design and reduce the emission and intrusion of any noise or vibration which might adversely impact on amenities, in particular residential amenities where appropriate.
3	Consider the details of Galway City Council Noise Action Plan 2019-2023 in the assessment and design of relevant development applications in the interests of protecting future amenity.
4	Implement environmental noise mitigation measures as outlined in Galway City Council Noise Action Plan 2019-2023.
5	Promote best practice in the implementation of radon prevention and mitigation measures in partnership with relevant agencies.
Policy 9.7 Light Pollution	

1	Ensure the design of external lighting minimises the incidence of light pollution, glare and spillage into the surrounding environment and has due regard to the visual and residential amenities of surrounding areas and is so designed to mitigate adverse impacts on wildlife and ecosystems.
2	Require all new developments to be designed with the inclusion of energy efficient lighting schemes.
Policy 10.2 Strategic Regeneration and Brownfield Sites	
1	Facilitate and enable the redevelopment of strategic Regeneration and Opportunity sites in the city to support the sustainable and compact growth of the city which will add value and create more attractive places in which people can live and work and achieve alignment with the National Strategic Outcomes of the NPF and the Regional Policy Objectives of the RSES and implementation of the Core Strategy.
11.2	An Ecological Impact Assessment (EclA) will be required to be undertaken for proposed developments likely to impact on locally important natural habitats and wildlife corridors, developments proposed in areas that support, or have the potential to support, protected species or features of biodiversity importance, and that appropriate avoidance and mitigation measures are incorporated into all development proposals where the requirements of section 11.32 do not apply.

8.3 SEA and AA Mitigation Measures to Galway City Climate Action Plan (reworded/new text in blue font)

TABLE 8-2 MITIGATION MEASURES TO GALWAY CITY CLIMATE ACTION PLAN

Action No.	Action Description	Included in Draft CAP? Yes/no
new action	In implementing this Galway City Climate Action Plan, ensure compliance with Galway Plan 2023-2029 and local area plan objectives and policies relating to environmental management, the protection of statutory Conservation Areas and ensure compliance with specific environmental management measures relating to this plan. Landuse plans and projects arising from this Climate Action Plan will be underpinned by Strategic Environmental Assessment, Environmental Impact Assessment, Appropriate Assessment, and Ecological Impact Assessments as relevant.	Yes Action 21
new action	Galway City Council will take account of any relevant recommendations in the EPA State of Our Environment Report 2024, once published, in implementing the Plan over its lifetime.	Included in Section 3.2 thematic focus of the CAP
new action	Galway City Council will consider any relevant updated actions, measures or recommendations that may arise in updates to the National Climate Action Plan over the lifetime of the Plan.	Included as a Key Performance indicator under Action 21 above
15	Establish climate ambassador program and forum to facilitate knowledge sharing, capacity building and just transition on climate and energy initiatives and nature based solutions and actions across the city. Program to include climate/ energy/NBS leaders and pioneers from throughout the city including businesses and community groups.	Yes
32	Deliver the community climate action fund and work to identify further funding streams for local climate action projects and support communities and voluntary sector in developing and implementing climate adaptation and mitigation projects at local level supporting nature based solutions that can provide co benefits to people and nature.	Yes
34	Develop and implement green space strategy (GSS) for Galway City Council owned green spaces that supports space for nature	Yes
37	Develop tree strategy for the Galway City area, including detail to increase tree canopy cover throughout the city through management of existing stock and new planting in appropriate places with appropriate planting mixes.	Yes
41	Develop a City Blueway Strategy for rivers and canals informed by ecological assessment and provision of appropriate buffers and wildlife corridors in collaboration with Office of Public Works (OPW), Inland Fisheries Ireland (IFI) and Lough Corrib Navigational Trustees (LCNT).	Yes
New action	With respect to DZ actions, ensure that they are aligned with the conservation objectives for the Lough Corrib Special Area of Conservation (SAC) (Site Code: 000297), Galway Bay Complex (SAC) (Site Code: 000268) and Inner Galway Bay Special Protected Area (SPA) (Site Code: 004031).	To be included in final CAP

9 Monitoring

9.1 Introduction

It is proposed, in accordance with the SEA Directive, to base monitoring on a series of indicators which measure changes in the environment, especially changes which are critical in terms of environmental quality, for example water pollution levels. Monitoring will focus on the aspects of the environment that are likely to be significantly impacted upon by the implementation of the CAP 2024-2029.

The targets and indicators are derived from the Strategic Environmental Objectives (SEOs) discussed in Chapter Five. The target underpins the objective whilst the indicators are used to track the progress of the objective and targets in terms of monitoring of impacts.

The monitoring programme will consist of an assessment of the relevant indicators and targets against the data relating to each environmental component. Similarly, monitoring will be carried out frequently to ensure that any changes to the environment can be identified.

This Climate Action Plan will be implemented by Galway City Council. Implementation of the LACAP and in turn monitoring and reporting will be pivotal in demonstrating commitment and leadership in climate action at the local level.

A key part of the CAP is the provision of key performance indicators (KPIs) and annual reporting. Therefore, the suggested monitoring table below, whilst adapted for the SEA monitoring prepared for the City Development Plan 2023 -2029 should cross reference and integrate the KPIs identified for the CAP 2024 -2029. These will be used in annual reports to inform the performance of the local government sector on climate action, as part of the local government DECA 2030 Strategy. In accordance with part 3(w) of the Local Authority Climate Action Charter, Galway City Council will report annually to the Department of the Environment, Climate and Environment on progress on climate action at local level as part of the delivery of the national climate objective. Progress on all actions will be reported via a reporting tool developed by CARO. Further, Galway City Council intends to complete and monitor a Sustainable Energy and Climate Action Plan (SECAP) as a future signatory member of the Covenant of Mayors for Climate.

Key implementation and reporting activities that Galway City Council will undertake are:

1. **Planning for Implementation:** Devising an approach for the implementation of actions on an annual basis.
2. **Tracking and reporting progress through Key Performance Indicators:** Development and inclusion of plan level KPIs to track, measure and report on progress.

TABLE 9-1 MONITORING TABLE FROM GALWAY CITY DEVELOPMENT PLAN 2023 -2029 SEA MONITORING TABLE

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
Biodiversity Flora and Fauna BFF	Condition of European Sites Biodiversity gain	Control significant adverse impacts (direct, cumulative and indirect impacts) to relevant habitats, species or their sustaining resources in designated ecological sites and networks Control significant adverse impacts on rare and threatened habitats and species or their sustaining resources, including those in the Habitats Directive and the Wildlife Acts . Improvements to the green network and public realm whilst projecting the city's ecological heritage Delivery of actions identified under River Basin Management Plan, All Ireland Pollinator Plan 2021-2026 and local plans including Galway Biodiversity Action Plan, Heritage Plan, Public Realm Strategy and forthcoming Greenspace Strategy.	GCC, NPWS, DHLGH, DTCAGSM, EPA, RBD stakeholders, GCC Biodiversity Action Plan and Heritage Plan stakeholders	NPWS and Department reports and database, National Biodiversity database centre, consultation with stakeholders where appropriate, LAPS, masterplans, large scale developments	Ongoing monitoring through the development management process Consultation with stakeholders to feed into 2 year report.

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
Population, Human Health and Noise PHHN	<p>Implementation of plan measures in relation to meeting population targets, improvements to provision of social and physical infrastructure including availability of public transport / public and community facilities, services, public realm and amenities</p> <p>Reduction in travel times and distances to and within the city and alleviation of traffic congestion</p> <p>Increase in modal shift from private car to public transport and active travel</p> <p>Increase in social inclusion and accessibility</p>	<p>Improvements to physical and social infrastructure, green network, public realm, active travel</p> <p>Delivery of actions in Galway Transport Strategy, LECP, Public Realm Strategy, forthcoming Greenspace Strategy</p>	GCC, Co Co, NTA, TII LECP stakeholders	GCC, TII, CSO, LECP, Healthy City and Age Friendly research, consultation with stakeholders where appropriate, LAPS, masterplans, large scale developments	Ongoing monitoring through the development management process and of plans and strategies including Galway Transport Strategy Consultation with stakeholders to feed into 2 year report
Air and Climate AC	<p>Implementation of Plan measures relating to climate reduction targets</p> <p>Traffic volumes and % modal shift, see also PHH monitoring measure</p> <p>Changes in air quality as identified during air quality monitoring programmes</p> <p>Improvements to the green network and public realm</p>	<p>Achievement of measures relating to climate reduction targets in plan and Galway Climate Adaption Strategy and 5 year action plan, future energy plan and energy action plan, implementation of Noise Action Plan</p> <p>Increase the percentage of population travelling by public transport including cycling and walking, and decrease in private vehicle dependency</p> <p>Improvement in Air Quality trends, particularly in relation to transport related emissions of NOx and particulate matter</p>	GCC, EPA, NTA, TII, DECC, CARO, SEAI, Climate Adaption Strategy stakeholders	GCC, SEAI, CSO databases, consultation with stakeholders where appropriate	Ongoing monitoring through the EPA monitoring programmes and regulation through development management process – planning conditions and enforcement Consultation with stakeholder to feed into 2 year report

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
Water W	<p>Status of water bodies and drinking water quality as reported by the EPA Water Monitoring Programmes</p> <p>Trends in water conservation</p> <p>Flood Risk Assessment incorporated into development proposals in flood risk areas</p> <p>Number of flood protection measures provided</p>	<p>Not to cause deterioration in the status or affect the ability of any surface water groundwater, transitional and coastal waters to achieve 'good status'</p> <p>Implementation of the objectives of the River Basin Management Plan 3rd Cycle (once finalised)</p> <p>Implementation of objectives of River Basin Management Plan, Water Framework Directive, EU (Drinking Water) Regulations, Bathing Water Quality Regulations</p> <p>Minimise development on land susceptible to significant flood and/or coastal erosion risk</p>	EPA, Irish Water, OPW, CFRAM stakeholders, RBD stakeholders including GCC and GCoCo	EPA, Irish Water Monitoring Programmes and databases, GCC, EPA, Irish Water reports, consultation with stakeholders where appropriate	<p>Ongoing monitoring through the EPA monitoring programmes and regulation through development management process – planning conditions and enforcement.</p> <p>Consultation with stakeholders to feed into 2 year report</p>
Soil and Geology SG	<p>Area of brownfield land developed</p> <p>Increased densities appropriate to neighbourhood character</p> <p>Reduction in vacant sites and derelict buildings on registers</p> <p>Monitoring of historical landfill sites, enforcement</p> <p>Increase in recycling, and recovery of C&D waste,</p> <p>Conservation status of GSI sites</p>	<p>Achievement of measures in plan to meet NPF AND RSES targets of at least 50% of all new homes be delivered within the existing built-up footprint (2032 target)</p> <p>Reduce brownfield lands within the city</p> <p>Reuse and recycle C&D waste at source and encourage use of appropriate materials including from local sources, implementation of waste permit regulations</p> <p>Safeguard soil quality and quantity and to ensure that soils remain healthy and capable of supporting human activities and ecosystems</p> <p>Retain conservation status of important geological heritage sites</p>	GCC, EPA, GSI,	GCC, GSI and EPA databases, consultation with stakeholders where appropriate, LAPS, masterplans, large scale developments	<p>Ongoing monitoring through the EPA monitoring programmes and development management process.</p> <p>Consultation with stakeholders to feed into 2 year report</p>

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
Material Assets MA	<p>Increase in sustainable transport facilities and infrastructure throughout the city</p> <p>Number of people travelling to work or school by public transport, walking or cycling</p> <p>Improvements in the public realm</p> <p>Changes in water quality as identified during water quality monitoring programmes</p> <p>Volume of waste recycled and to landfill</p> <p>Control of inappropriate development within SEVESO III site consultation zone</p> <p>SEE also PHHN and AC and BFF</p>	<p>Achievement of measures in the plan to Maintain and improve a high quality built environment</p> <p>Have an integrated, sustainable transport and land use system that eases movement to and within the city and promotes sustainable transport modes</p> <p>Meet EU, national and regional objectives for water quality and for recycling of municipal waste and its diversion from landfill</p> <p>Control inappropriate development within SEVESO III site consultation zone</p> <p>Delivery of actions in Galway Transport Strategy, Public Realm Strategy, forthcoming Greenspace Strategy</p>	GCC, Irish Water, EPA, NTA,TII, Regional Waste Authority, HSA	GCC, CSO, NTA, TII, Irish Water and EPA databases, consultation with stakeholders where appropriate	<p>Ongoing monitoring through the EPA monitoring programmes, development management process and of plans and strategies including Galway Transport Strategy</p> <p>Consultation with stakeholders to feed into 2 year report</p>

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
Cultural Heritage CH	<p>Implementation of Plan measures relating to protect and promote cultural, built, archaeological and linguistic heritage</p> <p>Reuse and adaption of existing built heritage</p> <p>Number of grants administered for protected structures and cultural heritage projects/activities</p> <p>Number of ACA management plans prepared, number of additions to the RPS and any additional ACAs</p> <p>Increase in use of Irish in signage and place names of new residential developments, public roads, parks</p>	<p>Increase uptake of grants available for protected structures and to promote good conservation practice</p> <p>Expand the RPS and designate additional ACAs, where appropriate</p> <p>Increase the number of uninhabited and derelict structures that are restored opposed to demolition. Delivery of actions identified in Everybody Matters Cultural Strategy, Galway Heritage Plan, Public Realm Strategy, Cultural Strategy and Galway City Arts Plan</p>	GCC, DHLGH, DTCAGSM, GCC Heritage Plan, Cultural Strategy and Arts Plan stakeholders	GCC, NIAH databases, consultation with stakeholders where appropriate LAPS, masterplans, large scale developments	<p>Ongoing monitoring through Heritage plan and development management process</p> <p>Consultation with stakeholders to feed into 2 year report</p>
Landscape L	<p>Impacts on protected views/prospects, built heritage and G and RA zoned lands incorporated into development proposals as appropriate</p> <p>Improvements to the green network and public realm</p>	<p>Protect and enhance built heritage, designated ACAs, protected views/prospects and G and RA zoned lands</p> <p>Protect and enhance the green network and public realm in a sustainable manner</p> <p>Delivery of local area plans, environmental improvement schemes, ACA management plans and urban design framework plans, actions identified under Galway</p>	GCC, Galway Biodiversity Action Plan and Heritage Plan stakeholders,	GCC, NIAH databases, National Biodiversity data centre, consultation with stakeholders where appropriate, LAPS, masterplans, large scale developments	<p>Ongoing monitoring through development management process</p> <p>Consultation with stakeholders to feed into 2 year report</p>

SEA Topic	Indicators	Targets	Key responsibly authority /stakeholders	Data sources	Remedial Action
		Biodiversity Action Plan, Heritage Plan and Public Realm Strategy			

Annex A: Assessment matrix

Likely to improve status of SEOs	↑	No likely interaction with /insignificant impact with SEOs	0
Probable conflict with SEOs – unlikely to be mitigated	↓	Potential conflict with SEOs – likely to be mitigated	↕

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
Governance and Leadership									
1 Mainstream climate adaptation and mitigation as a core consideration in all policies and projects adopted by Galway City Council, integrating actions to mitigate and adapt to climate change in all GCC service deliverables. Climate action to be placed as a standing agenda item at all SPC meetings to ensure we achieve a just transition to positioning Galway City as a sustainable and climate resilient city.	0	↑	0	0	↑	0	0	0	↑
2 Include climate action deliverables into Galway City Council annual service delivery plans.	0	↑	0	0	↑	0	0	0	↑
3 Implement the Galway City Development Plan 2023 – 2029 to deliver the cross cutting policies and measures which support and facilitate a just transition to a low carbon and climate resilient society.	↕↑	↕↑	↕↑	↕↑	↑	↕↑	↕↑	↕↑	↕↑
4 Continue to engage with European Union, national, regional and local government, education, non-government organisations/ agencies to capture and share insights, knowledge and lessons learned to combat climate change. Supporting the removal of barriers to collaboration where possible in conjunction with stakeholders.	0	↑	0	0	↑	0	0	0	↑
5 Develop Galway City Council investment plan, inclusive of budget estimates, to deliver GCC 2030 energy, emissions targets and actions outlined within this LACAP. Plan to include climate related project funding options study for Galway City Council considering all options for local, regional, national and EU funding opportunities to support climate projects.	0	↑	0	0	↑	0	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
6 Facilitate Climate Action Regional Office (CARO) and Local Authority Training Group (LATG) climate action training to elected members and local authority staff to build understanding, knowledge and capacity to deliver on climate action targets.	0	↑	0	0	↑	0	0	0	↑
7 Implement climate positive requirements and life-cycle costing into all Galway City Council procurement process; including: tenders, procurement documents, specifications, terms of service, project plans, event licences and all other relevant documents. Therefore, ensuring climate positive impacts are part of all operational activities.	0	↑	0	0	↑	0	0	0	↑
8 Develop an energy master plan to include renewable and energy storage for Galway City, factoring medium and long-term scenarios (beyond 2030). Plan to include map of potential sites for development and quantifying power generation potential across the City.	↕↑	↕↑	↕↑	↕↑	↑	↕↑	↕↑	↕↑	↕↑
9 Conduct climate risk assessment on the future impacts of climate change in Galway City.	0	↑	0	0	↑	0	0	0	↑
10 Leverage actions from engagement in the EU Missions on Adaptation to Climate Change community of practice, which consists of leaders on climate adaptation in the European region to strive towards climate resiliency through a cooperative and just approach with the citizens of Galway.	0	↑	0	0	↑	0	0	0	↑
11 Review and update Galway City Council Major Emergency Plan for which shall include flash floods, storms, heatwaves, droughts and wildfires for Galway City.	0	↑	0	0	↑	↑	0	0	↑
12 Deploy weather impact register (WiRE) app to ensure GCC capture information of adverse climate events in a central location for future records, ease of location and reference.	0	↑	0	0	↑	0	0	0	↑
13 GCC to achieve and maintain ISO50001 Energy Management Certification	0	↑	0	0	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
14 Establishment of GCC Climate Action Steering Group and appropriate support sub-groups including employees across all functions of the organization, that is suitably resourced to deliver adaptation and mitigation actions against climate change	0	↑	0	0	↑	↑	0	0	↑
15 Establish climate ambassador program and forum to facilitate knowledge sharing, capacity building and just transition on climate and energy initiatives and nature based solutions and actions across the city. Program to include climate/ energy/NBS leaders and pioneers from throughout the city including businesses and community groups.	↕	↑	↕	↕	↑	↑	0	0	↑
16 Develop public website which displays progress on implementation of climate action plan and details example climate action projects.	0	↑	0	0	↑	↑	0	0	↑
17 Strive to position Galway City Council as a Lead Local Authority in Ireland on climate action by ensuring adequate staff assigned to the climate action team to support implementation of this Climate Action Plan and achievement of 2030 targets.	0	↑	0	0	↑	↑	0	0	↑
18 Deliver actions set out within the Galway City Council Westside Decarbonisation Zone (DZ) Implementation Plan	↕	↑	↕	↕	↑	↑	0	0	↑
19 Establish annual climate festival week with events across the city including expert speakers, workshops, action demonstrations, incorporating culture and the arts.	0	↑	0	0	↑	↑	0	0	↑
20 Encourage climate action and energy efficiency throughout the Galway City business community.	0	↑	0	0	↑	↑	0	0	↑

SEA Comment:

For many of these actions, the impacts are consistent with achieving the PHH, AQ C in particular as they relate to climate action through the local authority structure and governance. Actions around capacity building and training (eg Action 6) are positive for these SEOS directly and indirectly as they increase understanding about climate change and means to address same. Likewise collaboration through Action 10 are positive for peer to peer learning and understanding from experience elsewhere. For most of the other SEOS, impacts are neutral as they provide no direct landuse actions/impacts or are not identified in terms of location or area. The range of impacts will vary according to the potential use; however, for most of these SEOs, the impacts are considered to be addressed through mitigation at development management level and application of relevant mitigatory measures through the CDP 2023 -2029.

Action 3 relates to implementation of CDP 2023 -2029 which has been prepared and assessed for impacts on climate change and provides policies and objectives in Chapter 2 Climate Action. Application of existing environmental protection measures will apply for Action3, and other actions under this theme, including Action 8 preparation of Energy Masterplan. The following is a key mitigatory measure from the CDP as well as others included in Chapter 5 of the CDP:

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
Policy 5.2 Protected Spaces: Sites of European, National and Local Ecological Importance									
1. Protect European sites that form part of the Natura 2000 network (including Special Protection Areas and Special Areas of Conservation) in accordance with the requirements in the EU Habitats Directive (92/43/EEC), EU Birds Directive (2009/147/EC) and associated national legislation.									
2. Ensure that all plans or projects within the Plan area will only be authorised and /or supported after the competent authority has ascertained based on scientific evidence, screening for appropriate assessment and /or a Habitats Directive Assessment that :									
i. The plan or project will not give rise to an adverse direct, indirect or secondary effect on the integrity of any European site (either individually or in combination with other plans or projects); or									
ii. The plan or project will have an adverse effect on the integrity of any European site (that does not host a priority natural habitat type/and or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000; or									
The plan or project will have an adverse effect on the integrity of any European site (that hosts a natural habitat type and/or a priority species) but there are no alternative solutions and the plan or project must nevertheless be carried out for imperative reasons for overriding public interest, restricted to reasons of 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. In this case, it will be a requirement to follow procedures set out in legislation and agree and undertake all compensatory measures necessary to ensure the protection of the overall coherence of Natura 2000.									
New actions were recommended through the SEA and AA process and have been included in the plan for mitigation either through new actions (see Action 21) or integrated to the main body of the plan or as a Key Performance Indicator.									
New actions/ mitigatory text was recommended for the following:									
21 In implementing this Galway City Local Authority Climate Action Plan, ensure compliance with the Galway City Development Plan 2023-2029 and local area plan objectives and policies relating to environmental management, the protection of statutory Conservation Areas and ensure compliance with specific environmental management measures relating to this plan.									
Landuse plans and projects arising from this Climate Action Plan will be underpinned by Strategic Environmental Assessment, Environmental Impact Assessment, Appropriate Assessment, and Ecological Impact Assessments as relevant.									
Note: Included as a Key Performance Indicator under Action 21 above									
Galway City Council will take account of any relevant recommendations in the EPA State of Our Environment Report 2024, once published, in implementing the Plan over its lifetime. Galway City Council will consider any relevant updated actions, measures or recommendations that may arise in updates to the National Climate Action Plan over the lifetime of the Plan.									
Note: Included in Section 3.2 thematic focus of the CAP									
Theme - Energy & Built Environment									

22	Implement opportunity projects outlined in "gap to target tool" which tracks energy and emission consumption reduction progress towards 2030 targets which inculcates growing energy demand and includes all action measures such as building retrofits, removal of fossil fuel heating systems, renewable energy systems, alternative fuel sources, electric vehicles and public lighting.	↕	↑	↕	↕	↑	↑	0	0	↑
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Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
23 Support the upgrade of stormwater pipe capacity in collaboration with Uisce Éireann, arising from the completion of the Greater Galway Strategic Drainage Study (GGSDS).	↕↑	↑	↕	↕	↑	↑	0	0	↑
24 Maximise utilisation of built environment throughout the city, support the upgrade of existing vacant and derelict residential and commercial properties include buy and release, repair and lease, Croí Cónaithe Cities, and so on and including utilising legislative powers such as Compulsory Purchase Orders/ Acquisition to facilitate such reuse where possible.	↕	↑	↑	↑	↑	↑	↑	↑	↑
25 Update Galway City Council building register to include Meter Point Reference numbers (MPRN), Gas Point Reference Number (GPRN), M&R attribution status, floor area, occupancy and utilisation schedule. To include review of GCC building (including temporary buildings) inventory utilisation and efficiency to consolidate locations to reduce energy consumption and increase GCC owned space utilisation effectiveness.	0	↑	0	0	↑	↑	0	0	↑
26 At least 65% of Galway City Council social housing/ apartment stock to Building Energy Rating (BER) B2 standard.	0	↑	0	0	↑	↑	0	0	↑

SEA Comment:

Action 22 gap to tool projects may give rise to projects with landuse effects for example renewable energy and public lighting. In the absence of mitigation, these could give rise to adverse medium to longer term effects on water, biodiversity and soil /geology SEOs in particular as well as impacts on landscape/ townscape and cultural heritage.

Action 23 is positive in terms of upgrading storm water capacity which is a key challenge in terms of adverse effects of climate change through extreme weather events namely storms and flooding. The failure of stormwater capacity can generate adverse effects across all parameters with down stream impacts on water and biodiversity, human health and material assets. The Greater Galway drainage strategy will provide for SuDS which supports co benefits and can be applied using a NBS approach.

Action 24 is positive across all SEOS as it is the most sustainable approach to existing building stock, represents embodied carbon and enhances through reuse the existing public realm and townscape character. Biodiversity may be impacted in terms of disturbance where bats or birds may be using the derelict building but application of existing CDP policies will provide sufficient mitigation. EPA Research¹ report identifies 4 main priorities for adaptive reuse and these should be referenced and applied in this action:

1.Mainstreaming adaptation in the built environment. This includes prioritising adaptation as a critical second pillar of climate action; focusing on the full range of climate change risks (not simply flooding); integrating built environment adaptation with the wider land use system; capturing mitigation and adaptation benefits through holistic approaches; and focusing on the whole built environment and not only new-builds.

2. Evidence and uncertainty in decision-making. Adaptation of the built environment requires a robust and geographically tailored evidence base; there is a need for granular and useable information on climate impacts. Uncertainty strengthens the case for early investment and points to adopting the precautionary approach, xii Built Environment Climate Resilience and Adaptation and further research is needed in relation to costs, responsibilities of key stakeholders, behaviour of building occupants and social vulnerability in relation to climate risks.

¹ Built Environment Climate Resilience and Adaptation (2019-CCRP-DS.21)EPA Research Report Prepared for the Environmental Protection Agency by School of Architecture, Planning and Environmental Policy University College Dublin Authors: Mark Scott, Louise Burns, Mick Lennon and Oliver Kinnan [Research Report 418.pdf \(epa.ie\)](#)

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
3. Co-designing of adaptation interventions. This includes collaborative stakeholder engagement, the inclusion of climate scenarios as part of statutory public consultation and the testing of novel public engagement methods.									
4. Capacity-building requirements. This includes improving resourcing and institutional capacity, adopting new ways of working to avoid traditional siloed thinking and continued professional development and training for elected representatives.									
Mitigation should be provided for under the current CDP in particular policies such as Policy 5.2 Protected Spaces: Sites of European, National and Local Ecological Importance									
6 Protect Local Biodiversity Areas, wildlife corridors and stepping stones based on the Galway Biodiversity Action Plan 2012-2024 and support the biodiversity of the city in the Council's role/responsibilities, works and operations, where appropriate.									
7 Encourage, in liaison with the NPWS, the sustainable management of features which are important for the ecological coherence of the network of European sites and essential, by their linear or continuous nature or as stepping stones for the migration, dispersal and genetic exchange of wild species.									
8 Support the actions of the Galway City Council Heritage Plan 2016-2021 and any update and Biodiversity Action Plan 2014-2024 relating to the promotion of ecological awareness and biodiversity, the protection of wildlife corridors and the prevention of wildlife habitat fragmentation.									
9 Co-operate with the NPWS, landowners and stakeholders in the preparation and implementation of management plans for designated sites.									
10 Protect and conserve rare and threatened habitats and their key habitats, (wherever they occur) listed on Annex I and Annex IV of the EU Habitats Directive (92/43EEC) and listed for protection under the Wildlife Acts 1976-2000.									
11 Ensure that plans and projects with the potential to have a significant impact on European sites (SAC or SPA) whether directly, indirectly or in combination with other plans or projects are subject to Appropriate Assessment, under Article 6 of the Habitats Directive (92/43EEC) and associated legislation and guidelines, to inform decision making.									

Theme - Communities Resiliency & Transition										
27	Work in partnership with local community, business, and education groups to support initiatives that promote climate action and just transition on the following: - Climate challenges and solutions, mitigation & adaptation - Active travel - Energy saving - Low carbon energy - Waste management & circular economy - Local food production, food waste management & reduction - Water conservation and harvesting - Local level carbon offsetting - Nature based solutions, net biodiversity gain. - Supplier engagement and green procurement aimed at SME's	↕↑	↑	↕	↕	↑	↑	0	0	↑
28	Require all organisations to outline climate actions which will be enabled through all grant funding to be provided by GCC as part of the grant application process. GCC to apply priority weighting to grant applications which contribute largest share to achieving climate action goals	↕↑	↑	↕	↕	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
29 Encourage businesses that can deliver low-carbon goods and services to continue development in or relocate to the city, delivered in conjunction with execution of the Galway City Council Local Economic Community Plan (LECP)	0	↑	0	0	↑	↑	0	0	↑
30 Development and implementation of infrastructure and technology across the city to reduce water wastage, such as water fountains, and increase rainwater harvesting, in collaboration with Uisce Éireann where necessary.	↕ ↑	↑	↕	↕	↑	↑	0	0	↑
31 Deliver Net Zero Cities work program for Galway City	0	↑	0	0	↑	↑	0	0	↑
32 Deliver the community climate action fund and work to identify further funding streams for local climate action projects and support communities and voluntary sector in developing and implementing climate adaptation and mitigation projects at local level supporting nature based solutions that can provide co benefits to people and nature.	↕ ↑	↑	↕	↕	↑	↑	0	0	↑

SEA Comment: action 27 is positive as it encourages delivery of initiatives across a range of key themes to address climate change effects, mitigation and adaptation. Robust technical advice and depending on type, scale, location of initiatives, application of environmental protection measures in the CDP 2023 -2029 would apply. It is important to provide evidence based solutions and support and reference to good/best practice across these topics , examples include the Grown Green Compendium of Nature Based Solutions, LAWPRO Guidance, Building for biodiversity and circular economy eg [Circular design case studies \(ellenmacarthurfoundation.org\)](https://ellenmacarthurfoundation.org/circular-design-case-studies)
Action 32 recommended for additional mitigation to strengthen focus on nature based solutions and provision of co benefits.
Other actions are not identified as giving rise to landuse effects at this time but are positive for PHH, AQ C and MA SEOs in particular.

Theme - Environment & Biodiversity									
33 Continue to support implementation of the Galway City Climate Adaptation Plan and the Coirib go Cósta - Galway City Flood Relief Scheme.	↕	↑	↕	↕	↑	↑	0	0	↑
34 Develop and implement green space strategy (GSS) for Galway City Council owned green spaces that supports space for nature	↕	↑	↕	↕	↑	↑	0	0	↑
35 Implement actions set out in the Galway City Biodiversity Action Plan 2014-2024.	↕	↑	↕	↕	↑	↑	0	0	↑
36 Develop and implement actions in the forthcoming Galway City Invasive Alien Species (GCIAS) 2024-2034 Strategy.	↕	↑	↕	↕	↑	↑	0	0	↑
37 Develop tree strategy for the Galway City area, including detail to increase tree canopy cover throughout the city through management of existing stock and new planting in appropriate places with appropriate planting mixes.	↕	↑	↕	↕	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
38 Develop woodland management plans for existing GCC woodland.	↕↑	↑	↕	↕	↑	↑	0	0↑	↑
39 Quantify the carbon benefit net gain resulting from green spaces, marine area and carbon sequestration measures embedded in developments.	0	↑	0	0	↑	↑	0	0	↑
40 Promote local and lower carbon footprint food production, including: - Promote and increase local growing and food sharing through community gardens/hubs and allotments throughout Galway City. - Identify new areas for community gardens. - Reduce use of fertilizers by increasing the use of locally produced compost.	0↕	↑	↑	↑	↑	↑	0	↑	↑
41 Develop a City Blueway Strategy for rivers and canals informed by ecological assessment and provision of appropriate buffers and wildlife corridors in collaboration with Office of Public Works (OPW), Inland Fisheries Ireland (IFI) and Lough Corrib Navigational Trustees (LCNT).	↕↑	↑	↕	↕	↑	↑	0	0↑	↑
42 Explore the potential for integrating Nature Based Solutions (NBS) on all internal and GCC planning permitted projects to ensure climate resilience and promoting biodiversity net gain, thereby creating vibrant, liveable and sustainable public realm. Further to include sustainable urban drainage systems, with appropriate regard to environmental protection requirements, including designated European sites. Increase in leaf cover in Galway City area, considering trees and vertical shading solutions.	↑	↑	↑	↑	↑	↕↑	↑	↕↑	↑↑
43 In conjunction with the "Clean Air Together" and "The Air We Share" initiatives, develop Air Quality Improvement Plan for Galway City to consider locations to pilot low emission zones (LEZ).	↑	↑	↑	↑	↑	↕↑	↑	↕↑	↑↑
44 Support HSE to develop a process to measure health improvement from climate action projects throughout Galway City.	0	↑	0	0	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
45 Assess the current herbicide and pesticide usage by Galway City Council, in line with the European Union Sustainable Use of Pesticides Directive 2009/128/EC, aiming to remove their application, proactively adopting environmentally-friendly alternatives where possible.	0	↑	0	0	↑	↑	0	0	↑
46 Implement actions in River Basin Management Plan as derived from the EU Water Framework Directive (WFD). Whilst further developing the evidence base to support this work considering environmental factors such as water quality, urbanisation, intensive farming, afforestation and the possible long term impact on climate change.	↑↑	↑	↑↑	↑↑	↑	↑	0	0↑	↑

Action 33 (Coirib go Costa flood relief scheme) is consistent with the CDP 2023 – Policy 9.1 see below.

Relating to coastal flooding, consideration should be given to recent research that highlights coastal and marine resilience and lessons learnt could similarly be applied in the context of Galway City; see EPA Research Report no 39:Building Coastal and Marine Resilience in Ireland Authors: Eugene J. Farrell, Glen Smith, Anne Marie O'Hagan and Martin Le Tissie

Also Policy 9.1 Flood risk in the City Development Plan 2023 -2029:

2. Support and facilitate the implementation of the Coirib go C6sta Galway City Flood Relief Scheme in conjunction with the OPW to support a climate resilient city, protect against flooding and minimise the impact of future climate events. Support in general the associated mitigation and adaptation measures in order to prevent flooding and coastal erosion, subject to appropriate environmental, visual, built heritage and other relevant considerations.

6. Ensure any proposed measure designed to alleviate flooding/coastal erosion is subject to Appropriate Assessment in accordance with Article 6 of the EU Habitats Directive, where appropriate.

7. Continue to protect the coastal area and the foreshore and avoid inappropriate development in areas at risk of coastal erosion and/or would cause and escalate coastal erosion in adjoining areas.

8. Protect and maintain, where feasible, undeveloped riparian zones and natural floodplains along the River Corrib and its tributaries.

Actions 35, 36, 37 and 38, should interact positively over the medium term, by addressing the actions in the biodiversity plan, delivery of action on IAS and support planting to trees in appropriate places. The development of woodland plans for existing woodland should be informed by ecological survey and expertise. Policy in the CDP will apply see Short Term actions: 7. *Prepare and implement a Tree Planting Strategy for the city which will provide for long term planting, protection and maintenance of trees, hedgerows and woodlands.*

Action 40 is positive relating to support for local food production and use of locally produced compost, these interact positive across a number of SEOS. New areas for community gardens should be accessible and close to residents/users to reduce private transport reliance on accessing these spaces and should avoid existing habitats of ecological value. Blueways strategy preparation is positive but recommended for mitigation to ensure full and proper consideration of effects on wildlife and landscape.

A number of other actions relate to research, plan preparation and do not in and of themselves give rise to landuse effects. Notwithstanding the research and data produced should be integrated and applied through the CAP implementation and other related plans including the LECP.

Action 46 implementation actions of the Water Framework Directive is positive in terms of seeking to achieve good water status by 2027 and the priority areas for actions; impacts are identified for mitigation for parameters including water and BFF as the actions scale, location and scope are not identified at this time and application of relevant planning and consenting processes should apply.

Theme - Transport & Mobility

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
47 Support the development of greater accessibility, modal shift and active travel throughout Galway City through implementation of work programmes and Galway Transport Strategy (GTS)	↕	↑	↕	↕	↑	↑	↑↕	↕	↑
48 To conduct a study into increased sustainable transport modes for Galway City, e.g. active travel, light rail.	0	↑	0	0	↑	↑	0	0	↑
49 Support uptake of active travel across Galway City engaging with key stakeholders, community groups, institutions and schools through workshops, co-design and engagement to increase. Including delivery primary, secondary school and business cycle training programme.	0	↑	0	0	↑	↑	0	0	↑
50 Support and promote community mobility schemes including bike share schemes, mobility hubs, community EV carsharing and EV charging, carpooling, and community taxis.	0	↑	0	0	↑	↑	0	0	↑
51 Collaborate with NTA/TFI to trial replacement of leap cards with contactless card payments on public transport within Galway City.	0	↑	0	0	↑	↑	0	0	↑
52 In collaboration with National Transport Authority(NTA) and Transport Infrastructure Ireland(TII), ensure adequate maintenance of active travel infrastructure for users	0	↑	0	0	↑	↑	0	0	↑
53 Encourage public and private transport providers to transition to a zero emission public transport and taxi fleet throughout Galway City as a priority.	0	↑	0	0	↑	↑	0	0	↑
54 Galway City Council employees to, whenever possible, replace business travel with virtual meetings. If travel is necessary, utilise environmentally friendly transportation methods. Reduce commuting travel for work through maintained remote working policy.	0	↑	0	0	↑	↑	0	0	↑
55 Conduct needs assessment, potential location and provision of Park and Ride facilities in appropriate locations at transport nodes and along strategic transport corridors in accordance with the NTA Strategy, assessment to consider inclusion of EV charge points and bike parking.	0	↑	0	0	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
56 Conduct demand management study for modal parking, on and off street, throughout the city	0	↑	0	0	↑	↑	0	0	↑
57 Develop electric vehicle charging infrastructure strategy for Galway City and support the rollout of EV infrastructure.	0	↑	0	0	↑	↑	0	0	↑

SEA comment : Many actions do not give rise to landuse effects relating to strategy preparation, studies (actions 57 and 56) for example. Action 47 whilst positive in providing for modal shift, active travels, safer spaces for pedestrians and cyclists are identified as giving rise to landuse effects and would require mitigation through environmental and ecological surveys, assessment, development consent and application of appropriate assessments including EIAR, AA, EclA as appropriate. The new actions around compliance with CDP and requirement for environmental and ecological assessments provides sufficient mitigation.

Theme - Sustainability & Resource Management

58 Implement initiatives to continue to prevent and reduce waste across Galway City in partnership with the private sector and communities, including implementation of the incoming draft national waste management plan for circular economy actions.	↑	↑	↑	↑	↑	↕↑	↑	↕	↑	↑	↑
59 Develop Galway City Council digital transformation pathway to move from paper to a digital based business management system	0	↑	0	0	↑	↑	0	0	↑		
60 Support Waste Enforcement Regional Lead Authority(WERLA) and Environmental Protection Agency(EPA) in relation to waste management compliance within the housing and construction industries by working with all actors along the construction chain to embed circular economy principles and practices in building developments in Galway City.	↑	↑	↑	↑	↑	↕↑	↑	↕	↑	↑	↑

SEA comment: circular economy actions, enforcement around waste management, and piloting of actions are positive across all parameters as it reduces resource use. Litter and waste in particular can have profound long to medium term effects on the receiving environment ranging from pollution of surface and groundwater bodies, adverse effects and injury to species from plastic pollution, bioaccumulation in water and species as waste moves into coastal and marine waters.

Awareness raising and behavioural change is essential to support these actions

Decarbonising Zone

Residential

DZ 1 Retrofit 60% of houses (988 dwelling) and 50% of apartments (444 dwellings) of high BER (above C3)	0	↑	↑	↑	↑	↑	↑	0	↑
DZ 2 Install heat pumps in 65% of low BER houses (below C1) (1,353 dwellings) (including 100% retrofitted homes)	0	↑	↑	↑	↑	↑	↑	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
DZ 3 Energy efficiency upgrades for all low BER homes (below C1)	0	↑	↑	↑	↑	↑	↑	0	↑
DZ 4 Installation of solar PV systems (68% of suitable homes)	0	↑	↑	↑	↑	↑	↑	0	↑
DZ 5 Implement an enabling policy for homeowners to support energy saving measures	0	↑	↑	↑	↑	↑	↑	0	↑
DZ 6 Provide a resource and technical support scheme for homeowners in DZ in collaboration with SEC*	0	↑	0	0	↑	↑	0	0	↑
DZ 7 Deliver an education and training program on retrofit, energy efficiency and heat pumps	0	↑	0	0	↑	↑	0	0	↑

SEA Comment

Positive long term interactions on AQ, CC, PHH and MA SEOs around improving BER ratings and this assists greatly in addressing fuel poverty which given deprivation levels in the DZ should provide for greater comfort in existing homes and contribute to alleviating fuel poverty as well as reductions in solid fuel burning for heating in particular. This interacts positively in terms of local air quality on population and human health as well as receiving habitats and waters. The upgrading of existing housing stock is also positive in terms of lifecycle of the building, extension of the housing stock and therefore reduces need for additional GHG emissions and use of resources including greenfield for housing provision. Capacity building and training are positive in terms of PHH. Actions relate to existing building's and/or capacity/training so no landuse effects at strategic level are identified.

Theme- Transport & Mobility									
DZ 8 60% of buses and taxis (15 buses and 22 taxis) switched to zero carbon fuel by 2030	0	↑	0	0	↑	↑	0	0	↑
DZ 9 40% of cars to electric vehicles (EVs) (1,435 vehicles) by 2030	0	↑	0	0	↑	↑	0	0	↑
DZ 10 50% reduction in vehicle kilometres travelled by 2030	0	↑	0	0	↑	↑	0	0	↑
DZ 11 80% of goods-vehicles powered by Hydrotreated Vegetable Oil (HVO) by 2030	0	↑	0	0	↑	↑	0	0	↑
DZ 12 Conduct a demand management study for the zone to identify opportunities to reduce car travel	0	↑	0	0	↑	↑	0	0	↑
DZ 13 Policy to provide enabling infrastructure and support schemes for households and local businesses	0	↑	0	0	↑	↑	0	0	↑
DZ 14 Implement walking, cycling, and public transport infrastructure projects in line with the GTS	↕	↑	↕	↕	↑	↑	↕	↕	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
DZ 15 Campaign to encourage and facilitate behaviour change and modal shift in the zone	0	↑	0	0	↑	↑	0	0	↑
DZ 16 70% reduction in electricity, primarily due to reductions by large electricity users	0	↑	0	0	↑	↑	0	0	↑
DZ 17 60% of electricity demand met by onsite, land-based, renewable energy generation*	0	↑	0	0	↑	↑	0	0	↑
DZ 18 20% of gas demand met by renewable biomethane	0	↑	0	0	↑	↑	0	0	↑
DZ 19 Provide a resource and technical support scheme for local businesses and SMEs within the zone	0	↑	0	0	↑	↑	0	0	↑
DZ 20 Conduct a research study for localised district heating potential in the zone in collaboration with key stakeholders	0	↑	0	0	↑	↑	0	0	↑
DZ 21 Implement a policy to incentivise and facilitate energy auditing, energy reduction and renewable uptake	0	↑	0	0	↑	↑	0	0	↑
DZ 22 Collaborate on and support the delivery of the zone's large energy user decarbonisation plans	0	↑	0	0	↑	↑	0	0	↑
DZ 23 Retrofit 17% of social housing homes (137 dwellings) and 15% of apartments (32 dwellings) of high BER (above C3) by 2030	0	↑	0	↑	↑	↑	0	0	↑
DZ 24 Install heat pumps in 37% of low BER houses below C1 (237 dwellings) (100% of retrofitted homes)	0	↑	0	↑	↑	↑	0	0	↑
DZ 25 Energy efficiency upgrades*** for 94% of low BER homes (below C1)	0	↑	0	↑	↑	↑	0	0	↑
DZ 26 Installation of solar pV systems (covering 85% of social housing)	0	↑	0	↑	↑	↑	0	0	↑
DZ 27 Explore RESS* opportunities with SEC** to implement solar in the zone	0	↑	0	0	↑	↑	0	0	↑
DZ 28 Provide resource and technical support in collaboration with SEC**	0	↑	0	0	↑	↑	0	0	↑

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
DZ 29 Deliver an education and training program on retrofit, energy efficiency and heat pumps	0	↑	0	0	↑	↑	0	0	↑
DZ 30 Implement comprehensive energy auditing of social housing in DZ to inform action	0	↑	0	0	↑	↑	0	0	↑

SEA comment: as above, these actions seek to increase overall % overtime of energy efficiency, heat pumps, solar power etc. Positive long term interactions on AQ, CC, PHH and MA SEOs around improving BER ratings and this assists greatly in addressing fuel poverty which given deprivation levels in the DZ should provide for greater comfort in existing homes and contribute to alleviating fuel poverty as well as reductions in solid fuel burning for heating in particular. This interacts positively in terms of local air quality on population and human health as well as receiving habitats and waters. The upgrading of existing housing stock is also positive in terms of lifecycle of the building, extension of the housing stock and therefore reduces need for additional GHG emissions and use of resources including greenfield for housing provision. Capacity building and training are positive in terms of PHH. Actions relate to existing building's and/or capacity/training so no landuse effects at strategic level are identified.

Theme- Municipal									
DZ 31 Retrofit measures to 100% of municipal buildings	0	↑	0	↑	↑	↑	0	0	↑
DZ 32 Heat pump installation to 100% of suitable municipal buildings	0	↑	0	↑	↑	↑	0	0	↑
DZ 33 Installation of solar pV systems to 50% of suitable municipal buildings in the zone	0	↑	0	↑	↑	↑	0	0	↑
DZ 34 Public lighting upgrades*	↕	↑	0	↑	↑	↑	0	0	↑
DZ 35 Implement comprehensive energy auditing of municipal buildings in the DZ to inform action	0	↑	0	↑	↑	↑	0	0	↑
DZ 36 Explore opportunities for sub-metering / smart metering in larger municipal buildings for granular target setting / monitoring	0	↑	0	0	↑	↑	0	0	↑
DZ 37 All new buildings to pursue highest sustainability standard / latest NZEB requirements	0	↑	0	0	↑	↑	0	0	↑

SEA comment: as with the preceding actions, however these apply in particular to the municipal activities and buildings. Action DZ34 Public Lighting upgrades, in the absence of mitigation, could give rise to adverse effects long term on local wildlife if excessive illumination spills onto existing or newly established wildlife corridors, as well as potential disturbance to humans. Policy 9.7 of the Galway CDP will apply:

Policy 9.7 Light Pollution: 1. Ensure the design of external lighting minimises the incidence of light pollution, glare and spillage into the surrounding environment and has due regard to the visual and residential amenities of surrounding areas and is so designed to mitigate adverse impacts on wildlife and ecosystems. 2. Require all new developments to be designed with the inclusion of energy efficient lighting schemes.

Theme -	BFF	PHH	W	SG	AQ CC	MA	CH	L	Ir
Theme- Sustainability & Resource Management									
DZ 38 Implement a resource and technical support scheme for businesses in the DZ to increase circularity (reuse, repair, supply chain, procurement)	0	↑	0	0	↑	↑	0	0	↑
DZ 39 Embed circularity in design and construction of new projects within the zone	0	↑	0	0	↑	↑	0	0	↑
DZ 40 Deliver an education and awareness campaign on sustainable consumption patterns (materials, water, food)	0	↑	0	0	↑	↑	0	0	↑
DZ 41 Engage and collaborate with the University, schools, community groups in the DZ to encourage and support reduced waste and water conservation	0	↑	0	0	↑	↑	0	0	↑
DZ 42 Implement a policy to increase permeable areas in the DZ (through greenspaces, planting and landscaping) Qualitative measure with indirect emissions savings	↑	↑	↑	↑	↑	↑	0	0↑	↑
DZ 43 Collaborate with schools, and / or community groups in the DZ to establish a community garden for urban food growth	0	↑	0	0	↑	↑	0	0	↑

SEA comment: Action DZ42 is positive across all parameters providing increase in permeable space via greenspace, planting etc. This should interact with the other CAP actions relating to tree planting in appropriate places of the appropriate mix, and also to design in nature based solutions for the permeable areas to increase co benefits. The enhancement of the public realm can create more positive surrounding landscape for residents to live in. Other actions relate to resource use – support, training, new projects all of which are positive for MA, AQ CC PHH SEOS in particular. Given the location of the DZ, a new action relating to the relevant European Sites is recommended:

With respect to DZ actions, ensure that they are aligned with the conservation objectives for the Lough Corrib Special Area of Conservation (SAC) (Site Code: 000297), Galway Bay Complex (SAC) (Site Code: 000268) and Inner Galway Bay Special Protected Area (SPA) (Site Code: 004031).

