



STRATEGIC ENVIRONMENTAL
ASSESSMENT ENVIRONMENTAL REPORT

FINGAL COUNTY COUNCIL
**DRAFT CLIMATE CHANGE
ACTION PLAN**

2019-2024

CONTENTS

1.1 Purpose of the Non- Technical Summary	2
1.2 Background and Context	2
2 Contents of SEA Environmental Report	4
2.1 Approach to the SEA	4
Stage of SEA	4
Plan	4
2.2 Relationship to other relevant plans and programmes.	4
2.3 Current Environmental Baseline	4
2.3.1 Population and Human Health	4
2.3.2 Biodiversity, Flora and Fauna	5
2.3.3. Water Resources	5
2.3.4 Soil and Geology	6
2.3.5 Cultural Heritage	6
2.3.6 Landscape	6
2.3.7 Air Quality and Climatic factors	7
2.3.8 Material Assets	8
2.3.9 Inter-relationships	9
ECOSYSTEM SERVICES	9
NATIONAL ECOSYSTEM AND ECOSYSTEM SERVICES MAPPING PILOT (NPWS)	9
3 Strategic Environmental Objectives and Consideration of Alternatives	12
3.1 Strategic Environmental Objectives	12
3.2 Consideration of Alternatives	13
4 Assessment of Significant Effects and Mitigation Measures	15
4.1 Significant Effects	15
4.2 Mitigation Measures	17
5 Monitoring	18
5.2 Conclusion	23

1.1 PURPOSE OF THE NON- TECHNICAL SUMMARY

This is the Non- Technical Summary of the environmental report for the Strategic Environmental Assessment (SEA) of the Fingal County Council Draft Climate Change Action Plan (CCAP) 2019-2024. The purpose of the SEA is to formally and systematically assess the likely significant effects of implementing a plan or programme, in this instance the above Climate Change Action Plan 2019-2024.

The Environmental Report identifies the significant environmental effects of the plan on the environment and where significant effects are identified, recommends appropriate measures to avoid or reduce such effects. As the plan is being prepared the SEA identifies and influences proposals, particularly through avoiding areas of greatest environmental sensitivity. This Environmental Report forms part of the SEA process, documents the SEA process and is the key consultation document in the SEA process as it facilitates interested parties to comment on the environmental issues associated with the plan itself. This Environmental Report has been prepared under the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I 435 of 2004).

1.2 BACKGROUND AND CONTEXT

For the first time, Dublin's four local authorities have joined together to develop Climate Change Action Plans as a collaborative response to the impact that climate change is having, and will continue to have, on the Dublin Region and its citizens. While each plan is unique to its functional area, they are unified in their approach to climate change adaptation and mitigation, and their commitment to lead by example in tackling this global issue.

These CCAPs follow on from the publication of A Strategy for Climate Change Action Plans for the Dublin Local Authorities (DLAs), which was published in January 2017. The strategy used a structured approach that focused on seven key areas (Citizen Engagement, Planning, Energy, Transport, Water, Waste, and Ecosystems & Biodiversity), and set out how the DLAs would develop the four climate change action plans. The action plans will be unique to each local authority area but synchronised in their methodology.

This plan concentrates on the two approaches required to tackle climate change. The first, mitigation, consists of actions that will reduce current and future GHG emissions; examples of these include reductions in energy use, switching to renewable energy sources and carbon sinks. The second approach, adaptation, consists of actions that will reduce the impacts that are already happening now from our changing climate and those that are projected to happen in the future.

The actions in this draft CCAP for Fingal County Council will be continually monitored and updated by a dedicated climate action team working across all Council departments. They will be assisted by the newly established Dublin Metropolitan Climate Action Regional Office, which will ensure that the overall plan is fully updated every five years to reflect latest policy, technology and climate-related impacts. The new office will work with Codema, as technical support and research partner, to ensure that the plans continue to be informed by national and international best practice.

The actions in the CCAP are presented around a number of themes as follows:

- Energy and Buildings
- Transport
- Flood Resilience

- Nature Based Solutions
- Resource Management.

Collectively, these address the four targets of this plan, which are:

- A 33% improvement in the Council's energy efficiency by 2020
- A 40% reduction in the Council's greenhouse gas emissions by 2030
- To make Dublin a climate resilient region, by reducing the impacts of future climate change - related events
- To actively engage and inform citizens on climate change.

2 CONTENTS OF SEA ENVIRONMENTAL REPORT

2.1 APPROACH TO THE SEA.

The SEA has been carried out alongside the CCAP preparation. Table 1 below sets out the stages in the SEA process and how these relate to the plan preparation so far.

Table 1 Stages in the SEA and Plan preparation process

Stage of SEA	Plan
Stage 1 Screening	Screening is the first stage of SEA to determine if the plan requires full SEA. A SEA and Screening for Appropriate Assessment were carried out in December 2018 and it was determined that the CCAP needed to progress to full SEA and Stage II Appropriate Assessment.
Stage 2 Scoping	The purpose of this stage is to work out what environmental topics and issues should be included in the SEA. The Scoping report was issued to statutory bodies including the EPA and National Parks and Wildlife Service to discuss the potential environmental issues, baseline information, and approach to the SEA.
Stage3 Environmental Report-Current Stage	<i>This is the current stage of the SEA and the CCAP 2019-2024. The Environmental Report tells the story of the CCAP and how environmental considerations have been addressed and included during the draft plan preparation process. The screening for appropriate assessment and Natura Impact Report is also discussed in the Environmental Report. This report is the main consultation document of the SEA process and hence is on display alongside the plan along with supporting reports. Following the public display period there may be changes to the plan and the SEA will also assess these and update the Environmental Report as required.</i>
Stage 4 SEA Statement	This stage is the final output of the SEA process and tells the story of the SEA process. It is prepared once the plan is finalised and adopted.

2.2 RELATIONSHIP TO OTHER RELEVANT PLANS AND PROGRAMMES.

Under the SEA Directive, the relationship between the plan and other relevant plans and programmes must be taken into account. A review of the relevant plans and programmes can be found in Appendix B of the SEA ER and a list of same is presented in Chapter 3 of the SEA ER.

The preparation of the plan 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 plan will operate.

2.3 CURRENT ENVIRONMENTAL BASELINE.

2.3.1 POPULATION AND HUMAN HEALTH

This section provides information on the current population and demographic trends in Fingal County. 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.

When compared with their surrounding regions, urban areas are considered to be particularly vulnerable to these climatic changes. This is due to: the high concentrations of population,

infrastructure and economic activities located in these areas, the exacerbation of climate impacts by urban-scale phenomena and dependency on surrounding regions for service provision¹.

Based on the Census 2016 data, population density varies throughout the county, with implications in terms of provision of services, ecological connectivity and maximising sustainable transport and landuse. In terms of broad trends however greater population densities are present closer to Dublin city at Castleknock and west Dublin, at Blanchardstown, along with a concentration of settlements along the coast such as Sutton, Malahide, Rush and Lusk.

Human health can be adversely affected by a range of environmental factors and these include air quality with emissions from transport a particular issue; noise can also adversely affect human health.

2.3.2 BIODIVERSITY, FLORA AND FAUNA

Within the County there are habitats of high biodiversity and conservation value and a number of designated sites associated within the county which are designated as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs).

As natural habitats become more fragmented as a result of human activity, habitat patches and corridors within a landscape mosaic become increasingly important for species to allow movement between populations. Within the plan area, ecological corridors can include in particular, roadside grassy verges and streams and other waterbodies. Hedgerows and treelines can also function as locally important corridors for a number of species. Hedgerows are also particularly important for facilitating movement through the landscape for flying insects including butterflies, and bees.

Stepping stones relate to small pockets of habitat can be used by species to shelter, rest or food provision. They can play an important role in facilitating longer distanced dispersal as well as refuges for species to breed in. These can provide important links between larger protected areas and corridors, in this context, this could include small areas of wet grassland, ponds, meadow grassland habitats, and treelines. The Fingal coast is especially important for its bird life. For example, Rogerstown Estuary holds internationally important numbers of Brent geese and Lambay Island is internationally important for its breeding seabirds such as guillemots, razorbills and kittiwakes.

2.3.3. WATER RESOURCES

Water resources and their quality have a clear interaction and impacts with other environmental parameters, therefore its protection and enhancement is of particular importance.

The Water Framework Directive is the key overarching water protection framework and it uses a catchment based approach. A catchment is an area where water is collected by the natural landscape and flows from source through river, lakes and groundwater to the sea. Fingal County is situated largely within the Liffey and Dublin Bay Catchment (code: 09). The area of this catchment covers 1,624,42km² and supports a total population density of 777 people per km². The Nanny Delvin catchment drains the northern part of the county. The main rivers within Fingal are the Mayne River, sections of the Tolka River, the Ward River, the Broadmeadow River and the Delvin River, and their associated tributaries.

A strategic flood risk assessment was undertaken as part of the Fingal County Development Plan 2017-2023. Fingal is vulnerable to adverse effects from changes in the occurrence of severe rainfall

¹ This paragraph is taken from the Urb Adapt Project Summary running till 2019 will use the Dublin Region as a case study that will allow for the integrated assessment and management of current and future climate vulnerabilities within the context of existing climate and non-climate pressures and spatial planning practices. <https://urbadapt.com/>

events, other adverse weather conditions and associated flooding of the county's rivers combined with changes in sea level. Local conditions within the county also increase the risk of flooding; these include bridges and culverts, which restrict high flows, debris which can cause blockages and land use changes.

2.3.4 SOIL AND GEOLOGY

The oldest bedrock in Fingal is Cambrian (lower Palaeozoic) in age, and comprised of hard quartzites, forming the outcrops at Howth head and Ireland's Eye. Ordovician age volcanics along the east coast are related to a time of volcanic activity, with Lambay Island representing the remnants of an extinct volcano. The majority of the bedrock underlying the rest of the county is limestone.

The dominant soils types across much of Fingal, are characterised by fine loamy drifts with limestones and siliceous stones. Clayey soils occur towards the north of Fingal. Urban/made ground is interspersed throughout the county, particularly along the coast and in the south of the county, reflecting settlement patterns. The coastal areas are by their nature characterised by the presence of rock outcroppings, beaches, sand dunes and tidal/marshy areas. Soils in the river valleys are comprised of riverine alluviums with marine alluviums deposited near the coast.

It is important to both recognise and promote this role in terms of the carbon storage capacity of soil, potential biodiversity and water benefits (subject to agricultural practice) and food security.

2.3.5 CULTURAL HERITAGE

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects, complete or in part, which have been left on the landscape by previous and indeed current generations. It contains a number of actions to include communicating the story of the County's heritage, caring for and managing that heritage, and increasing the level of community involvement in heritage.

Overall, there are currently 1,070 known archaeological sites and monuments in Fingal. The wealth of archaeological sites ranges from cairns and passage graves to medieval churches and castles. The towns of Swords, Balrothery and Lusk are of particular archaeological significance with very important medieval structures surviving intact above ground and the potential of archaeological finds below ground.

Fingal County has a diverse building stock ranging from farmsteads, small cottages and large country houses to the architecture of a capital city, including an international airport, large shopping centres and modern office blocks. Most people identify the large estates of Luttrellstown, Newbridge, Ardgillan and Malahide as being of significant architectural merit, but more modest and functional structures also form part of the architectural heritage of the County. This includes lighthouses; the 19th century railway stations; the Martello towers; holy wells; milestones; waterpumps and individual thatched buildings. Many of these structures are listed on the National Inventory of Architectural Heritage contained within the Fingal Development Plan.

2.3.6 LANDSCAPE

Ireland is a signatory to the European Landscape Convention, which aims to promote landscape protection, management and planning and to organise European cooperation on landscape issue. The Landscape Character Assessment for Fingal currently divides the county into 7 Landscape Character Areas. These are:

f Coastal Character Area – the landscape feature that dominates the entire eastern edge of the county, with beaches, headland hills and cliffs;

- f Estuary Character Area – the intertidal sand and mudflats, and saltmarshes at Rogerstown, Swords/Malahide and Baldoyle;
- f River Valleys/Canal Character Area – the Tolka and the Liffey Valleys together with the Royal Canal Corridor constitute this Character Area
- f Airport and Swords Character Area – increasing industrial activity in this area is beginning to encroach on agricultural land;
- f High Lying Agricultural Character Area – an area of upland rising to 176 metres at Hillfort Mound, to the southeast of Naul village. These hills provide views of the Mourne Mountains to the north, the coastline to the east and the Wicklow Mountains in the south;
- f Low Lying Agricultural Character Area – large open areas of pasture, arable and grassland that are uninterrupted by large settlements; and
- f Rolling Hills with Tree Belts Character Area – the valleys of the River Ward and River Broadmeadow and their surrounding farm and woodland

2.3.7 AIR QUALITY AND CLIMATIC FACTORS

The Air Quality Index for health (EPA) provides air quality information with health advice for both the general public and people sensitive to air pollution. The index is displayed on a colour-coded map, updated hourly. The index is based on information from monitoring instruments at representative locations in each region. Fingal is located within a number of different regions –Dublin City, Large towns and Rural. Air Quality is generally classified as ‘good’.

Adaption and responding to climate change is a key objective the CCAP and the following baseline is taken from the Fingal CCAP. The adaptation baseline has identified that the effects of climate change are already impacting Fingal at a significant rate and are very likely to increase in their frequency and intensity. Fingal County Council (FCC) is responsible for the energy use and emissions from its buildings and facilities, its public lighting, and also from its vehicle fleet. The Council’s public lighting was the highest energy consumer, accounting for 51% of the Council’s overall primary energy consumption. Buildings and facilities were the second highest energy consumer, accounting for 38% of the total energy consumption, while the municipal fleet accounted for 11% of the total energy use.

Public lighting was the highest contributor, accounting for 51% of the total emissions. This was followed by buildings and facilities, and the municipal fleet, each contributing 37% and 12% to the Council’s emissions, respectively.

The most recently-available information for total emissions in the entire Fingal area is based on Census 2016 data. Therefore, using this data, Codema was able to calculate that the total emissions for the Fingal area amounted to 1,976,230 tonnes of CO₂ equivalent in 2016. The sectors that produced the most emissions were the transport, residential and commercial sectors, accounting for 44%, 26% and 25% of the total emissions, respectively. Fingal County Council’s emissions amounted to only 1% of the total County emissions, with social housing contributing another 1%. This highlights the need for collaboration and action from all stakeholders to tackle the remaining 98% of emissions from public and private sector sources in the County.

2.3.8 MATERIAL ASSETS

The presence of Dublin International Airport in Fingal is a notable material asset; it is the 'gateway' into Dublin and Ireland as well as outward to the rest of the European Union and the wider world. It provides a dynamic presence within Fingal. The key transport route within Fingal is the M1 motorway which runs in a north/south direction from Drogheda to Dublin. The M50 runs through the southern part of Fingal. The Northern Commuter mainline railway also runs in a north/south direction through the eastern part of the county and forms an important link from Dublin City centre through Fingal and into Belfast in Northern Ireland.

In addition to air and road transport, Fingal has 5 harbours and 2 marinas. In June 2015 the NTA and Dublin City Council published their joint Dublin City Transport Study which sets out proposals to enhance movement within and across the city and to facilitate a modal shift to greater use of public transport, cycling and walking. The National Transport Authority (NTA) has commissioned a cycle network plan which comprises the Urban Greater Dublin Area Cycle Network Plan: <https://www.nationaltransport.ie/>.

The treatment of wastewater is governed by the Urban Waste Water Treatment Directive (91/271/EEC) (amended by Directive 98/15/EEC) transposed into Irish law by the Urban Waste Water Treatment Regulations 2001 (SI 254 of 2001) and the Urban Waste Water Treatment (Amendment) Regulations 2004 (SI 440 of 2004). The Directive aims to protect the environment from the adverse effects of the wastewater discharges by ensuring that wastewater is appropriately treated before it is discharged to the environment. The treatment of wastewater is relevant to the Water Framework Directive which requires all public bodies to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted and bring polluted water bodies up to good status by 2027.

The wastewater strategy for the Greater Dublin Region is set out in the Greater Dublin Strategic Drainage Study (GSDS). As agents for Irish Water, the Council currently operates wastewater treatment plants at Swords (60,000 population equivalent (PE) capacity) and Malahide (21,000 PE capacity) in addition to a Design, Build and Operate Plant serving Balbriggan (70,000 PE capacity). A plant at Portrane also serves this community as well as Donabate, Rush and Lusk and has a capacity of 65,000 PE. A number of smaller plants treat wastewater in the rural towns and villages.

Wastewater from the GDA including Blanchardstown/Castleknock, south Fingal/Dublin Airport and the Howth/Sutton/Baldoyle and Portmarnock areas is piped to the Ringsend Wastewater Treatment

The Greater Dublin Drainage Scheme will represent a significant wastewater infrastructure development for the Greater Dublin Regional area which will allow for an underground orbital sewer and two pumping stations, a new wastewater treatment plant at Clonshaugh (in Dublin City) and an outfall pipe located 6km out to sea from Baldoyle Bay. This project is subject to technical studies with a view to submitting a planning application accompanied by an Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) in 2018.

Water Services are currently provided in the GDA on a regional basis. Fingal operates a water treatment plant at Leixlip that produces a maximum treatment capacity of 215 million litres of drinking water per day from the River Liffey; this plant supplies approximately 30% of the drinking requirements for the Dublin Region including north Dublin City and county, parts of South Dublin and Kildare. A ground water treatment plant at Bog of The Ring produces 3.2 million litres per day for the Balbriggan/Skerries area.

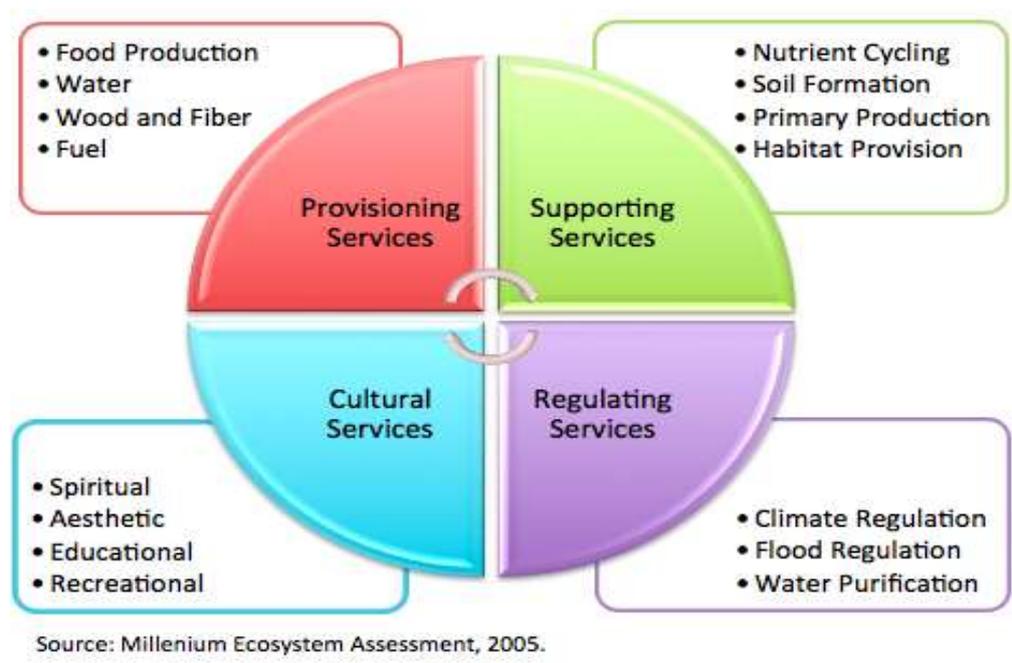
The Regional Waste Management Plan 2015-2024 for the Eastern-Midlands Region encompasses the local authorities: Dublin City, Dún Laoghaire- Rathdown, Fingal, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow. The regional plan provides the framework for waste management for the next six years and sets out a range of policies and actions in order to meet the specified mandatory and performance targets.

2.3.9 INTER-RELATIONSHIPS

ECOSYSTEM SERVICES

Awareness about the roles and functions of ecosystems has increased in recent years and it can be a useful means to highlight their importance and value services to society. The Economics of Ecosystem Services and Biodiversity (TEEB) study defines ecosystem services as: *‘the benefits people receive from ecosystems’*. Humans are ultimately dependant on the natural environment and ecosystem services highlight how these systems provide and interact to create the essential components for human well- being. Four key services are identified for ecosystems and are shown in the following **Figure 1**.

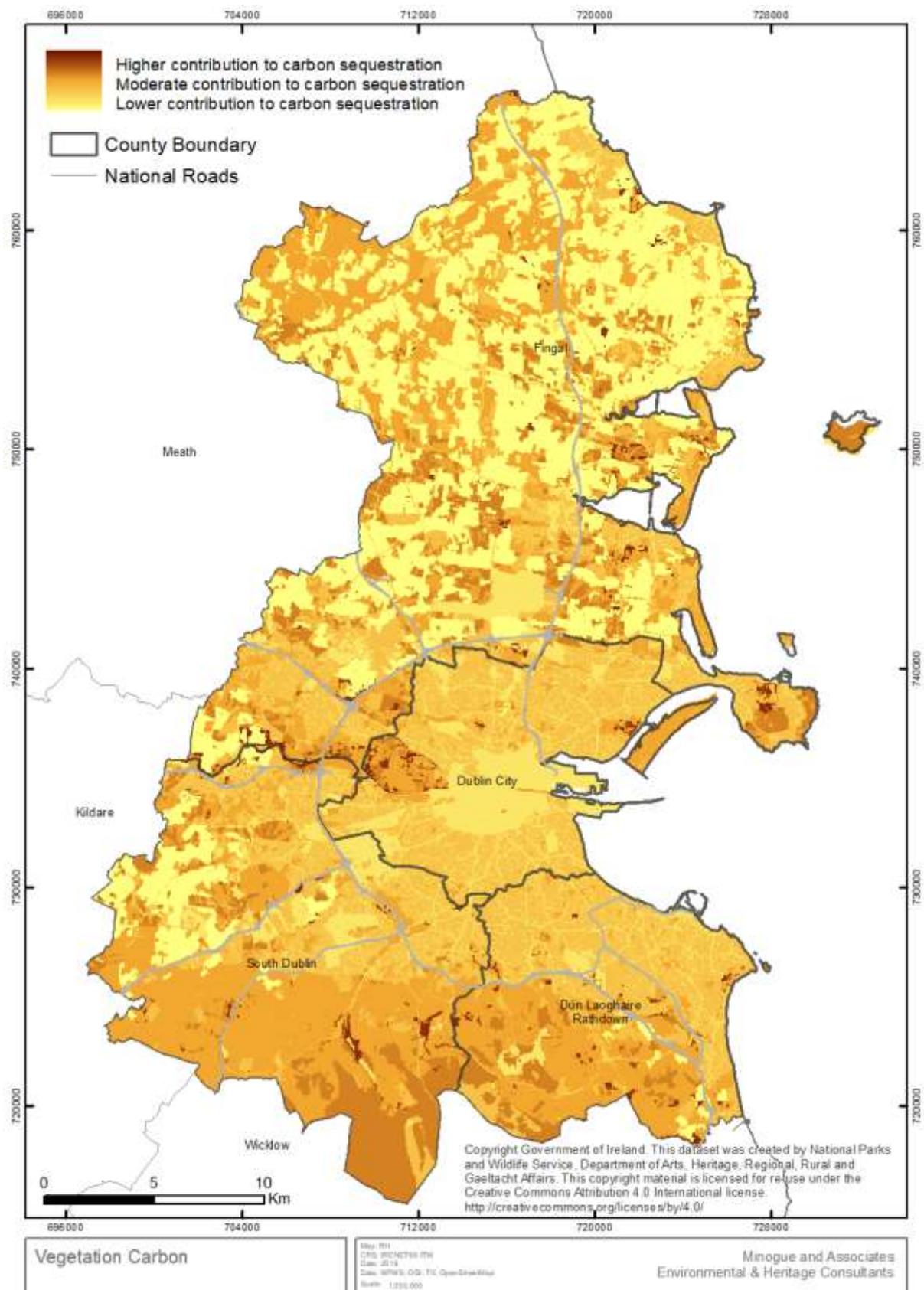
FIGURE 1 ECOSYSTEM SERVICES.



NATIONAL ECOSYSTEM AND ECOSYSTEM SERVICES MAPPING PILOT (NPWS)

The National Parks and Wildlife Service (NPWS) commissioned a short project for a National Ecosystem and Ecosystem Services mapping pilot for a suite of prioritised services based on available data. The project completed in 2016. Maps showing water filtration and storage are included in the SEA ER (chapter Seven) and the map (Figure 2) below shows carbon sequestration. In the context of Fingal County, the assessment demonstrates the importance of the surrounding areas in terms of water storage, filtration and carbon sequestration. The agricultural areas and in particular coastal areas around Lusk including Rogerstown Estuary fulfil an important role in a variety of ecosystem services.

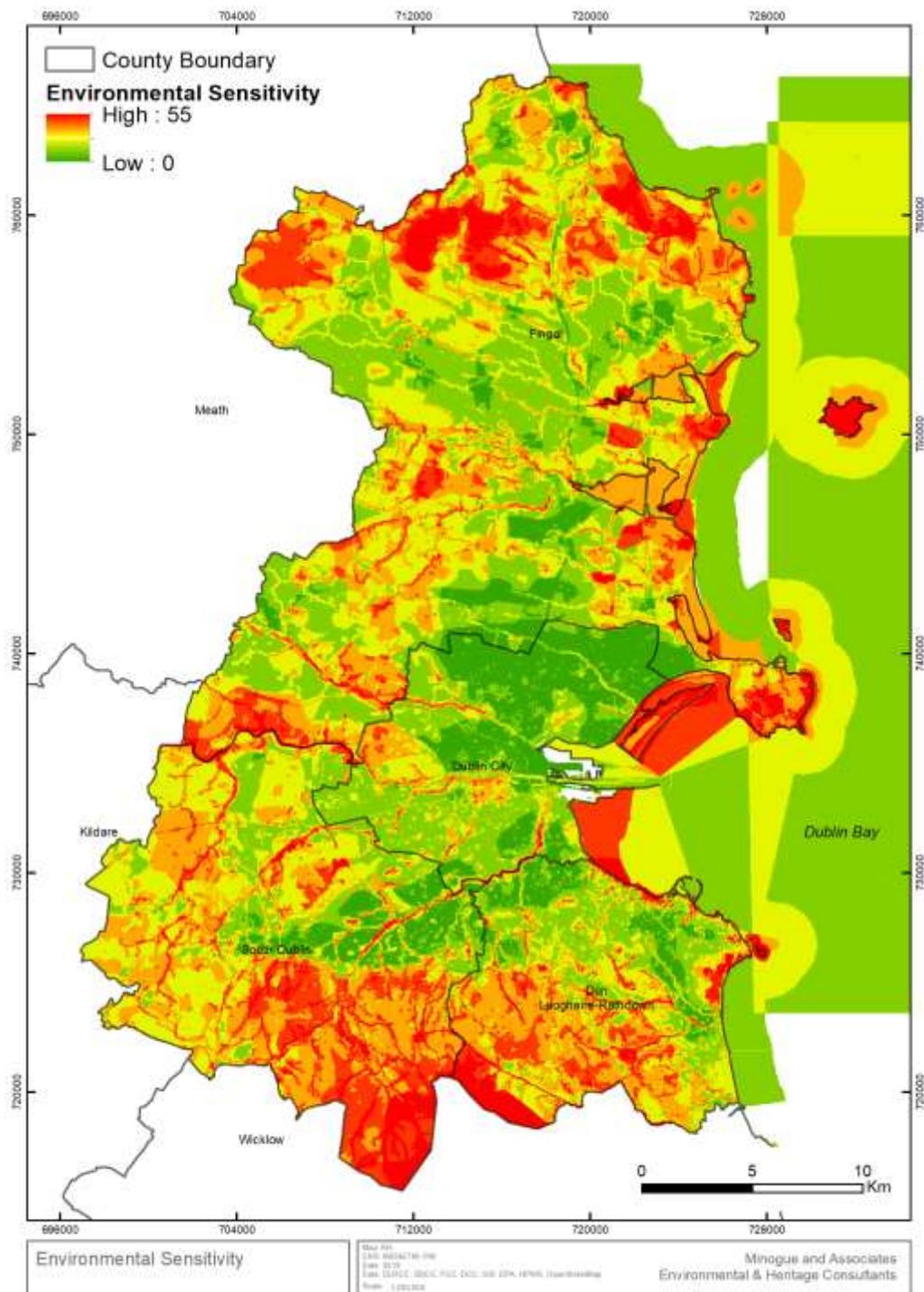
FIGURE 2 ECOSYSTEM SERVICES –CARBON SEQUESTRATION



2.3.10 ENVIRONMENTAL SENSITIVITY.

In accordance with the SEA Directive, the interrelationship between the environmental parameters above must be taken into account. Although all such parameters may be considered interrelated and may impact on each other at some level. The Figure below shows the overall environmental sensitivity for the plan area and sphere of influence, and follows the same approach (i.e.: ranking of environmental parameters) as that used in the Fingal CDP 2017-2023 SEA process.

FIGURE 3 Environmental sensitivity mapping of the four Dublin Local Authorities



3 STRATEGIC ENVIRONMENTAL OBJECTIVES AND CONSIDERATION OF ALTERNATIVES

3.1 STRATEGIC ENVIRONMENTAL OBJECTIVES

The purpose of the SEA Objectives is to ensure that the assessment process is transparent and robust and that the CCAP considers and addresses potential environmental effects. SEA Objectives have been set for each of the ten environmental topics identified at the Scoping Stage of the SEA process.

These objectives are derived from the principles identified through the plan, policy and programme review and align where possible with the SEOs developed for the South Dublin Development Plan 2016-2022. Where they differ from the CDP 2017-2023 objectives, the text is shown in italic bold font. The results of this are summarised in a table, called an evaluation matrix (See Chapter Seven and Annex A of the SEA ER).

TABLE 2 STRATEGIC ENVIRONMENTAL OBJECTIVES

SEA Topic	Environmental Protection Objective
Biodiversity Flora and Fauna	Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU and nationally designated sites and protected species.
 Population and human health	Provide high quality residential, working and recreational environments with access to sustainable transport options Protect Human Health
 Water	Protect and where necessary improve and maintain water quality and the management of watercourses and groundwater, in compliance with the requirements of the Water Framework Directive objectives and measures.
Air Quality and Climate	Minimise emissions of pollutants to air associated with transport.
 Soil and Geology	Minimise contribution to climate change by adopting adaptation and mitigation measures Safeguard the soil resources within Fingal in recognition of the strong agricultural and horticultural base.
 Material Assets	Make best use of existing infrastructure and promote the sustainable development of new infrastructure to meet the needs of Fingal's population
 Cultural Heritage	Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact as a result of development in

	Fingal.
Landscape 	Protect and maintain the special qualities of the landscape character, including coastal character within Fingal
	Interrelationships <i>Maintain and improve the health of people, ecosystems and natural processes</i> <i>Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change</i>

3.2 CONSIDERATION OF ALTERNATIVES

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative development scenarios, in this case the Dublin City CCAP 2019-2024. These alternative development scenarios should meet the following considerations:

- Take into account the geographical scope, hierarchy and objectives of the plan –be realistic
- Be based on socio-economic and environmental evidence – be reasonable
- Be capable of being delivered within the plan timeframe and resources –be implementable
- Be technically and institutionally feasible – be viable.

6.2 ALTERNATIVES CONSIDERED

In a *Strategy Towards Climate Change Actions Plans for Dublin 2017*, seven focus areas were identified as having the greatest potential to help the Dublin LAs move towards a zero-carbon society and adapt to the effects of climate change. These focus areas were as follows:

- Water, Waste, Planning, Transport, Energy, Ecosystems and Biodiversity and Citizen Engagement.

The focus areas can have predominately either mitigation or adaptation solutions, or both. For example, the Energy focus area mainly concerns mitigation (ie. reducing the use of fossil fuels and their associated CO2 emissions), while Water largely focuses on adapting to changes that are occurring or will occur in the near future due to climate change. Meanwhile, the Citizen & Stakeholder Engagement focus area concerns both mitigation and adaptation.

The aim of the CCAP is to work with the other Dublin local authorities in a co-ordinated manner to achieve the actions identified as being capable of implementing over a Five Year Period whilst also contributing to both mitigation and adapting to climate change. The following alternatives were considered:

- Alternative 1: Do-Nothing (rely CDP policies and objectives to address and adapt to climate change)
- Alternative 2: Prioritise largest greenhouse gas emission sectors –Energy and Transport
- Alternative 3: Approach the priority areas in a balanced manner to provide for both responses to climate change impacts (adaptation) and reduce greenhouse gas emissions-mitigation).

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 gains, 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 CCAP option is also positive for a number of SEOs.

4 ASSESSMENT OF SIGNIFICANT EFFECTS AND MITIGATION MEASURES

4.1 SIGNIFICANT EFFECTS

Population and Human health: Many of the actions identified in the CCAP give rise to long 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.

Reflecting the opportunity for co-benefits of the CCAP, measures around energy efficiency and district heating opportunities can help address fuel poverty in relation to vulnerable individuals as well as the chance to reuse energy from within the local area, for example *Action 22: Study potential for viable district heating projects within Fingal*.

Biodiversity, Flora and Fauna: 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.

Identifying sites for woodland (*Action 8*) and collection of data to inform preparation of a list of habitats and species in Fingal vulnerable to climate change (*Action 11*) and monitoring of same (*Action 12*), as well as *Action 2* Regional working group on nature based solutions are examples of actions that are long term positive and consistent with these SEOS.

Water Resources: The Fingal CDP 2017-2023 already includes a range of provisions and measures to address and minimise adverse effects, including measures around green infrastructure, flood risk management and development control.

The CCAP however further enhances and strengthens these through the flood resilience actions and nature based solutions in particular. Actions including 20 and 21 around SUDs, rain gardens and community support are all positive in relation to water and reduction in soil run off, plus facilitating water attenuation and filtration. Again this provides for longer, positive effects associated with linear habitat creation and ecological connectivity.

Soil and Geology: Soil quality and function may be enhanced through particular measures associated with flood resilience, nature based solutions and resource management in particular.

Air Quality and Climate: Overall the CCAP will contribute positively to climate change adaptation through the following:

- Blue and green infrastructure giving rise to increased surface water storage and potential carbon sequestration
- Focus on energy efficiency and innovation as seen through the actions identified in the Energy Theme, examples include Action 16 and 15.
- A number of actions relate to mapping and baseline evidence gathering which will underpin both future actions and forward planning. Examples include Action 10 in Flood Resilience, Action 11 in Nature Based Solutions and Action 4 in Energy relating to outputs of the Fingal Spatial Energy Demand analysis informing the next Fingal CDP.

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 CCAP and beyond.

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

The CCAP includes targets relating to 40% reduction in the councils' Greenhouse Gas Emissions by 2030 (primarily through lighting and energy measures), a 33% improvement in the councils energy efficiency by 2020. However the CCAP also acknowledges that the council's outputs are relatively minor given the wider sectoral emissions in the county and this is why many of measures relate to the council leading on climate action, promoting behavioural change, facilitating sustainable transport options, promoting increased energy efficiency and supporting nature based solutions and citizen engagement.

Cultural Heritage: Archaeology and Built heritage features are present throughout the plan area, and in particular those archaeological or built heritage features associated with the coast or floodplains may be particularly vulnerable to climate change effects.

Material Assets: Transport and Flood Resilience in particular provide for mitigation and adaptation with a view to minimising adverse effects of climate change on material assets, and also responding and facilitating behavioural and modal change in energy use and transport. Examples of these include the following:

- Energy: *Action 1: Create an Energy Masterplan for the Dublin Region,*
- Transport: *Action 12 Build out Fingals' cycle network Develop and extend cycle network; Action s 22 and 23 relating to park and ride and expansion of public transport.*
- Flood Resilience: whilst most of the measures here mitigate and adapt to climate change, with accompanying positive effects on material assets SEOs, *Actions 8 Develop template to capture impacts, response and costs for all major climate events* are recommended for mitigation to allow for the inclusion of 'environmental externalities' in any costing exercise, as well as promotion of natural flood measures as a priority in any updated guidelines or policies.
- Actions under Resource Management are also identified as generating positive, long terms effects particularly around the circular economy, reuse and awareness raising around food waste and recycling.

Landscape: Long term positive effects are identified for the CCAP and landscape primarily through the nature based solutions, public realm enhancement, green and blue infrastructure, increased tree planting etc.

Many of the measures in the CCAP require a landscape level response such as Regional Flood Plain management guidelines, recognition of green and blue infrastructure and corridors and this an important approach to take when responding to climate change.

In combination and cumulative effects: Cumulatively and in combination, several of the CCAP 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.

The majority of the Flood Resilient measures 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 can provide multi-functional benefits in the landscape.

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.

The resource management is also a critical theme as it promotes reduction and reuse of materials and resources.

Threaded throughout the CCAP 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.

4.2 MITIGATION MEASURES

Although most of the actions are identified as being consistent with the SEOs, a small number of actions mainly around Transport and Flood Resilience were identified as meriting additional mitigation measures. These are provided in Table 2 below:

TABLE 2 MITIGATION MEASURES

Overarching measure	An integrated approach to decision making in relation to these climate change actions is recommended.
New measure – for consistency with DLR and DCC	Consider the feasibility of preparation of an Integrated Coastal Zone Management Plan that addresses natural and cultural heritage and aligns with the Marine Spatial Planning Directive
New Measure – again for consistency with the three other DLAs	Work with other Dublin Local Authorities to update DLA urban drainage and flooding policies for current knowledge of flood risk and the latest best practice in drainage design promoting natural flood measures as a priority
Flood Resilience Action 8	Develop template to capture impacts, response and costs (including ecosystem services/natural capital costs for all major climate events
Preamble to Flood Defence actions	The following flood defence will incorporate nature based solutions and biodiversity enhancement measures where possible
Nature Based Solutions Action 4	Map access to green space in County to identify areas of need and integrate green infrastructure in access considerations.
Action 8	Identify sites for woodland planting that promotes an appropriate native species mix
Action 17	Prepare a heathland management plan for Howth with ecological input
Action 18	Prepare a fire management plan for heathland on Howth that includes environmental considerations.

5 MONITORING

It is proposed, in accordance with Article 10 of 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 CCAP 2019-2024.

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 draft of the Climate Change Action Plan was developed through FCC's Water and Environmental Services SPC who report to the full County Council. The Director of the Water Services and Environment Department will report on progress to the SPC annually and the SPC will monitor progress towards the set targets. Every five years there will be a full review and revision of the plan taking into account demographic, technical and other changes that have occurred and any new targets that have been changes that have occurred and any new targets that have been introduced.

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
Biodiversity Flora and Fauna	Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU and nationally designated sites and protected species.	Update the Biodiversity action plan with a clear programme of delivery of actions Develop a Green Infrastructure Strategy within the lifetime of the Development Plan	Number of programmes and actions in the Development Plan Period <i>Note this is an Action of the CCAP now, to be completed by 2021.</i>	Fingal Biodiversity Section



Population and human health 	Provide high quality residential, working and recreational environments with access to sustainable transport options	Increase the number of people living and working in Fingal compared to 2016 Census base findings	Number of people living and working in Fingal	EPA Air Quality Monitoring Fingal CC
	Protect Human Health	Undertake Local Area Plan for Lissenhall which outlines and specify that services will be put in place in advance of residential development Compliance with Air Quality Legislation Undertake a review of the Dublin Agglomeration Noise Action Plan of the areas within Fingal identified as being exposed to high levels of noise and develop a programme of implementation of the mitigation measures within the lifetime of the	n/a Number of breaches of Air Quality Number of measures implementation	

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
 Water	Protect and where necessary improve and maintain water quality and the management of watercourses and groundwater, in compliance with the requirements of the Water Framework Directive objectives and measures.	Development Plan		
		Implementation of the programme of measures in the ERBD River Basin Management Plan Compliance with the recommendations of the Fingal Groundwater Protection Scheme	% increase in waters achieving and maintaining at least good status Number of planning permissions granted in areas identified as vulnerable under the Groundwater Protection Scheme	EPA and DECLG National River Basin District 2017 Programme of Measures
 Air Quality and Climate	Minimise emissions of pollutants to air associated with transport. Minimise contribution to climate change by adopting adaptation and mitigation measures	10% increase in the number of people using sustainable transport modes (rail, bus, cycling, walking) against current 2011 Travel to Work Modes (linked to objective 3).	% increase in walking, cycling and public transport modes	National Travel Survey, Census and Fingal Transport Dept
		No new high vulnerable development applications, as defined by the OPW the Planning System and Flood Risk Guidelines (2009) within lands that fall within the 1% AEP and 0.1% AEP. All new buildings to have an A3 or higher BER	No of high vulnerable development applications permitted within lands in the 1% AEP and 0.1% AEP % of new residential buildings granted permission with A3 or higher BER	National Travel Survey, Census and Fingal Transport Dept
 Soil and Geology	Safeguard the soil resources within Fingal in recognition of the strong agricultural		% development within brownfield and infill compared to greenfield	Fingal CC

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
	and horticultural base.	Higher rate of brownfield and infill development as opposed to greenfield development		
Material Assets	Make best use of existing infrastructure and promote the sustainable development of new infrastructure to meet the needs of Fingal's population	Require all new residential planning permissions to be within 500m of bus stop and 1km of railway stations Phased development in line with wastewater capacity	% of planning permissions within 500m of bus stop and 1km of railway station Available capacity for treatment of phased development	Fingal CC
				
Cultural Heritage 	Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact as a result of development in Fingal.	Develop a code of practice for the management of architectural heritage in private ownership	n/a	FCC Planning and Water services
Landscape 	Protect and maintain the special qualities of the landscape character, including coastal character within Fingal	Review and prioritise a programme of the objectives and policies within the Special Amenity Area Orders of Liffey Valley and Howth Conduct a habitat characterisation study in the South Shore Rush Area as detailed in the Natura Impact Report of the Fingal CDP 2017-2023	Number of programmed objectives and policies achieved in Development plan period	Fingal planning dept

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
	<p><i>Interrelationships</i> <i>Maintain and improve the health of people, ecosystems and natural processes</i></p> <p><i>Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change</i></p>	<p><i>% or number of blue and green infrastructure measures included in approved planning applications within Fingal CC including SUDS, Integrated Wetlands, Hedgerows, Native tree planting scheme</i></p> <p><i>FCC supported community blue/green infrastructure measures</i></p>	<p><i>Review per grant application and # of FCC supported schemes such as integrated wetlands</i></p>	<p><i>Fingal CC</i></p>

5.2 CONCLUSION

This SEA Environmental Report demonstrates how environmental parameters have been addressed in the plan preparation process. Consultation has been undertaken for the Scoping of this Environmental Report and further opportunity to comment on the CCAP will be possible over the forthcoming weeks.

The SEA and Appropriate Assessment processes have been undertaken in line with the Planning and Development (Strategic Environmental Assessment) Regulations 2004 to 2011 (as amended). Subject to the full and proper implementation of the mitigation measures outlined in this SEA Environmental Report and the Proposed CCAP, it is considered that significant adverse impacts on the environment will be avoided.

FINGAL COUNTY COUNCIL

Strategic Environmental Assessment Environmental Report- Fingal County Council Climate Change Action Plan 2019-2024

Prepared under the Planning and Development (Strategic Environmental Assessment)
Regulations 2004. (S.I. 435/2004)

Ruth
February 2019

This report has been prepared by Minogue & Associates with all reasonable skill, care and diligence. Information report herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is prepared for Fingal County Council and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

Version	Prepared by	Reviewed
Draft 31.01.2019	R Minogue MCIEEM	
Draft 2		

CONTENTS

1	INTRODUCTION	6
1.1	Purpose of this SEA Environmental Report	6
1.2	Scale, nature and location of Fingal County CCAP	6
1.3	Strategic Environmental Assessment	8
1.3.1	Structure and Preparation of this Environmental Report.....	8
1.4	Report Preparation	9
2	Approach to Strategic Environmental Assessment.....	11
2.1	INTRODUCTION	11
2.2	STAGES IN THE SEA PROCESS	11
2.2.1	SCREENING.....	11
2.2.2	SCOPING.....	12
2.3	Baseline Data	17
2.4	APPROACH TO ASSESSMENT OF SIGNIFICANT ENVIRONMENTAL IMPACTS	17
2.5	MITIGATION	18
2.6	MONITORING	18
2.7	STRATEGIC FLOOD RISK ASSESSMENT	18
2.8	Data Gaps.....	18
3	Relationship to relevant plans and programmes.....	19
3.1	Introduction	19
3.2	INTERNATIONAL	19
3.2.2	National	21
3.2.3	REGIONAL AND COUNTY	22
3.4	Summary of Key Actions from the National Mitigation Plan and policies from the Draft Regional Economic and Spatial Strategies that are relevant to this CCAP	23
3.3	Key principles identified from review.....	28
4	Key Environmental Resources	32
4.1	Introduction	32
4.1.1	The Plan Area and Sphere of Influence	32
4.2	Population and Human Health	32
4.2.2	Human Health.....	35
4.2.3	Human Health and Noise.....	35
4.2.4	Human Health and Air Quality.....	36
4.2.5	Existing issues Population and human health.	37
4.3	Biodiversity, Flora and Fauna.....	38
4.3.1	Overview.....	38
4.3.2	Designated Sites	39
4.3.3	Dublin Bay Biosphere.....	40
4.3.4	Register of Protected Areas.....	40

4.3.5 Aquatic Biodiversity	40
4.3.7 Alien and Invasive Species	41
4.3.6 Existing Issues: Biodiversity, Flora and Fauna.....	41
4.4 Water Resources including Flood Risk	45
4.4.1 Water Framework Directive	45
4.4.2 Surface Waters	45
4.4.3 Groundwater:	45
4.4.5 Coastal Waters.....	47
4.4.4 Register of Protected Areas (RPA)	47
4.4.5 Flood Risk.....	47
4.4.6 Key issues: Water Resources	48
4.5 Soil and Geology	55
4.5.1 Geology.....	55
4.5.2 Soil	55
4.5.3 Existing issues: Geology and Soil	55
4.6 Cultural Heritage.....	60
4.6.1 Archaeology	60
4.6.2 Architectural Heritage	61
4.6.3 Existing Issues: Cultural Heritage.....	61
4.7 Landscape	66
4.8 Air quality and Climate	71
4.8.1 Air Quality.....	71
4.8.2 Climate Change and Greenhouse Gas Emissions.....	71
4.8.3 Key Issues: Air Quality and Climate	72
4.9 Material Assets	72
4.9.1 Transport	73
4.9.2 Water Services	74
4.9.3 Waste Management	75
4.9.4 Key Issues: Material Assets.....	75
4.10 Inter-relationships	78
4.10.1 Ecosystem Services	78
4.10.2 National Ecosystem and Ecosystem Services Mapping Pilot (NPWS).....	78
4.10.1 Environmental Sensitivity.	82
4.11 Evolution of the environmental baseline in the absence of the CCAP	85
4.12 Existing environmental issues in neighbouring areas.	85
5 Strategic Environmental Objectives.....	87
5.1 Introduction	87
6 Consideration of alternatives	89
6.1 Introduction	89
6.2 Alternatives Considered	89

6.3 Assessment of potential effects for each alternative scenario	94
6.5 Preferred Alternative	97
7 Assessment of Significant Environmental Effects	98
7.1 Introduction	98
7.2 Approach to Assessment	98
7.2.1 Population and Human Health-Significant effects.....	98
7.2.2 Biodiversity, Flora and Fauna- Significant Effects.....	99
7.2.3 Water - Significant Effects	100
7.2.4 Soil and Geology - Significant Effects.....	101
7.2.5 Air Quality and Climate	101
7.2.6 Cultural Assets - Significant Effects.....	102
7.2.7 Material Assets - Significant Impacts.....	102
7.2.8 Landscape - Significant Effects.....	103
7.3 In-combination and cumulative significant effects.....	104
7.3.1 Summary of Cumulative and In-combination effects identified.....	104
7.3.1 Potential cumulative effects from other plans and projects	106
8 Mitigation	109
8.1 Introduction	109
8.2 Environmental Protection Measures in the Fingal CDP 2017-2023.....	110
8.3 Recommended Mitigation Measures for the Fingal CCAP.....	120
9 Monitoring	121
9.1 Introduction	121
Annex A: Detailed Assessment of Actions in the Fingal Climate Change Action Plan 2019-2024	130
Energy Actions	131
Transport	140
Flood Resilience	150
Nature Based Solutions	156
Resource Management	164
Annex B: Review of Plans and Programmes	172
International Level	172
National Level	178
County level	185

1 INTRODUCTION

1.1 PURPOSE OF THIS SEA ENVIRONMENTAL REPORT

This Environmental Report has been prepared as part of the Strategic Environmental Assessment (SEA) of the Climate Change Action Plan 2019-2024 (CCAP) prepared by Codema, the Dublin Energy Agency and Fingal County Council.

It sets out how the SEA has been undertaken and presents the findings of the assessment of the actions on the CCAP together with its' reasonable alternatives.

The 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.

The Environmental Report is required to include information that may be reasonably required, taking into account the following:

- Current knowledge and methods of assessment;

- Content and level of detail in the draft CCAP;
- Stage of the proposed CCAP in the decision-making process and
- The extent to which certain matters are more appropriately assessed at different levels in the decision-making process in order to avoid duplication of environmental assessment.

It is important to note that many of the actions included in the CCAP for Fingal are identified as generating positive effects across a number of SEA parameters. The SEA Screening report included in the SEA Scoping Report of December 2018 supported this assessment. A small number of actions, primarily around transport proposals were identified through the screening for Appropriate Assessment as potentially giving rise to likely significant effects in the absence of mitigation, and this therefore triggered the requirement for a Stage II Appropriate Assessment and full Strategic Environmental Assessment.

1.2 SCALE, NATURE AND LOCATION OF FINGAL COUNTY CCAP

For the first time, Dublin's four local authorities have joined together to develop Climate Change Action Plans as a collaborative response to the impact that climate change is having, and will continue to have, on the Dublin Region and its citizens. While each plan is unique to its functional area, they are unified in their approach to climate change adaptation and mitigation, and their commitment to lead by example in tackling this global issue.

These CCAPs follow on from the publication of A Strategy for Climate Change Action Plans for the Dublin Local Authorities (DLAs), which was published in January 2017. The strategy used a structured approach that focused on seven key areas (Citizen Engagement, Planning, Energy, Transport, Water, Waste, and Ecosystems & Biodiversity), and set out how the DLAs would develop the four climate change action plans. The action plans will be unique to each local authority area but synchronised in their methodology.

This plan concentrates on the two approaches required to tackle climate change. The first, mitigation, consists of actions that will reduce current and future GHG emissions; examples of these include reductions in energy use, switching to renewable energy sources and carbon sinks. The second approach, adaptation, consists of actions that will reduce the impacts that are already happening now from our changing climate and those that are projected to happen in the future.

The actions in this draft CCAP for Fingal County Council will be continually monitored and updated by a dedicated climate action team working across all Council departments. They will be assisted by the newly established Dublin Metropolitan Climate Action Regional Office, which will ensure that the overall plan is fully updated every five years to reflect latest policy, technology and climate-related impacts. The new office will work with Codema, as technical support and research partner, to ensure that the plans continue to be informed by national and international best practice.

The actions in the CCAP are presented around a number of themes as follows:

- Energy and Buildings

- Transport
- Flood Resilience
- Nature Based Solutions
- Resource Management.

Collectively, these collectively address the four targets of this plan, which are:

- A 33% improvement in the Council's energy efficiency by 2020
- A 40% reduction in the Council's greenhouse gas emissions by 2030
- To make Dublin a climate resilient region, by reducing the impacts of future climate change -related events
- To actively engage and inform citizens on climate change.

As such, this CCAP encompasses the functional and administrative area of Fingal County.

1.3 STRATEGIC ENVIRONMENTAL ASSESSMENT
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.’

1.3.1 STRUCTURE AND PREPARATION OF THIS ENVIRONMENTAL REPORT
 Regulations contained in Schedule 2B of Statutory Instrument (S.I.) 436 of 2004(as amended) details the information to be contained in an Environmental Report. The following Table 1 lists the information required and details where this information is contained in this Environmental Report.

TABLE 1 INFORMATION REQUIRED TO BE CONTAINED IN AN ENVIRONMENTAL REPORT.

Schedule 2B of Statutory Instrument 436 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	Chapter Five: SEA Objectives provides this information

considerations have been taken into account during its preparation

(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors

Chapter Seven, Significant Effects on the Environment provides this information

(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

1.4 REPORT PREPARATION

The SEA Team worked with the Fingal County Council technical staff team and other specialists. The following consultants prepared this SEA ER:

- Ruth Minogue MCIEEM, AILI, (BSoc Sc) Social Anthropology, University

of Manchester 1996, MA (Econ) Environment and Development, University of Manchester 1998, Dip Field Ecology, University College Cork 2003, ongoing CPD including certificate in Health Impact Assessment (2012) and diploma in Planning and Environmental Law (2017);

- Pat Doherty MCIEEM, MSc in Applied Environmental Science (Ecology), University College Dublin, 2003; BSc (Honours) in Environmental Earth Science, University of Wales, Aberystwyth, 2000; ongoing CDP including Habitat Assessment (NVC) and flora and fauna identification through IEEM, and
- Dr Ronan Hennessey, PhD Earth and Ocean Sciences, Higher Diploma in Remote Sensing and Geographical Information Systems, BSc Earth Sciences.

2 APPROACH TO STRATEGIC ENVIRONMENTAL ASSESSMENT

2.1 INTRODUCTION

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 and
- SEA of Local Authority Land Use Plans - EPA Recommendations and Resources (Version May 2018).

2.2 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).

2.2.1 SCREENING

The SEA Regulations state that SEA is mandatory for certain plans while screening for SEA is required for other plans. A Screening assessment was undertaken and it determined the requirement to progress to full SEA. In conjunction with the SEA Screening, a screening under Article 6 (3) of the EU Habitats Directive has also been prepared and should be read in conjunction with the CCAP and this SEA ER.

2.2.2 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 consultees in December 2018 for comment. The table below summarises the main issues raised by consultees and the SEA response to same.

TABLE 2 SCOPING SUBMISSIONS-

Consultee	Key Issue Raised	SEA Response
Scientific Officer, SEA Section Office of Evidence and Assessment. Environmental Protection Agency, Regional Inspectorate, Inniscarra, County Cork		
	We welcome the preparation of the Plan, which sets out a clear set of actions to be taken by Fingal County Council, in collaboration with other key stakeholders, over the next five years. The inclusion of clear targets will facilitate monitoring and reporting on the Plan implementation, which should in turn help to drive delivery.	Noted
	We recognise the fundamental importance of ensuring that the National Transition Objective is underpinned by a clean, healthy and well-protected environment. Considering this, it is important to develop and implement the Plan within the context of a wider and more integrated approach to environmental protection. The SEA should play a key role in ensuring that this is achieved and should inform decision-making around assessment and selection of actions and measures.	Noted, the SEA and AA have helped to inform plan preparation and please see Chapter 8 Mitigation in particular
	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). 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, should be highlighted in the SEA Report and the Plan.	Noted, in particular certain actions in each theme already provide co-benefits and the SEA has provided additional mitigation to further enhance certain actions please see CCAP and Chapter 8 Mitigation of this SEA ER

<p>Relevant Plans and Programmes</p> <p>You should ensure that the Plan aligns with national commitments on climate change mitigation and adaptation. Actions and measures proposed should be consistent with the National Policy Position on Climate Action and Low Carbon Development, the National Mitigation Plan and the National Adaptation Framework, as well as considering any relevant sectoral and regional adaptation plans.</p> <p>We recommend including a flow diagram or/ schematic, illustrating where the Plan fits within the hierarchy of land-use, climate and related plans</p>	<p>Noted and agreed, in response to this comment the SEA ER included a table that highlights consistency with these plans and programmes and also provides a preliminary schematic to illustrate the hierarchy of plans and programmes. Please see Chapter 3.</p>
<p>It would be useful to explain the relevance of the various plans listed in section 2 of the SEA Scoping Report to the CCAP, for example by way of an additional column. Reference to the Draft Regional Spatial Economic Strategy, currently at consultation, should be included.</p>	<p>Noted and agreed. Chapter 3 has been amended to provide this and a more detailed overview of key relevant plans and programmes is provided in Annex B of this SEA ER.</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 report Ireland's Greenhouse Gas Emissions Projections for 2017-2035 (EPA, 2018) should be taken into account.</p> <p>The National Mitigation Plan (NMP) identifies 106 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 integrate and align with the relevant actions in the NMP, as appropriate.</p>	<p>Noted.</p> <p>With support from the Sustainable Energy Authority of Ireland (SEAI), Codema developed an energy and emissions baseline, which shows the current level of emissions and energy efficiency for both DCC's own operations and emissions for the whole of Dublin City . Consideration of significant effects in Chapter Seven of this SEA ER discusses this point.</p> <p>Noted, this SEA ER addresses this in Table 3 and shows where the Fingal County CCAP actions are consistent with the National Mitigation Plan. Please note that many of the actions in the National Mitigation Plan are identified at central government level rather than local authority.</p>
<p>Adaptation</p>	<p>Codema carried out an adaptation risk assessment on behalf of DCC,</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.</p> <p>The Plan should look to improve resilience of existing and planned critical infrastructure, systems and procedures to the effects and variability of climate change. Recent extreme weather events could be useful to assist in identifying areas where further work is needed to improve resilience, e.g. the resilience of critical water service infrastructure to flooding and drought.</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, Integrated Coastal Zone Management Plans etc. The Plan will also help inform local authority land use and transport planning within the county.</p> <p>Additional aspects to consider may include changes in native species and habitats and the spread of invasive species, pests and pathogens.</p>	<p>which identifies and assesses the current climate change risks facing Fingal. Research into people’s attitudes and awareness was used in order to inform the stakeholder engagement actions of the plan.</p> <p>A key principle and stage of the CCAP relates to adaptation and responses to same.</p> <p>Noted, this is highlighted in Chapter 4 Baseline as a key issue for biodiversity and human health</p>
<p>EPA State of the Environment Report 2016</p> <p>The EPA published our most recent State of the Environment Report in 2016 ‘Ireland’s Environment – An Assessment (EPA, 2016). The recommendations, key issues and challenges described within this report should be considered, as relevant and appropriate to the Plan area in preparing the Draft CCAP and associated SEA. This report can be consulted at: http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/</p>	<p>Noted and utilised in this SEA ER. Please see Chapter 3.</p>
<p>Air quality</p> <p>We welcome that the Plan will take into account the Draft National Clean Air Strategy (DCCA), due to be finalised in 2019. Recent EPA reports on air quality should also be considered, in preparing the Plan and SEA. This includes the Air Quality in Ireland 2017 Report (EPA, 2018) which sets out the most recent status in each of</p>	<p>Noted this is used in Chapter 4 Baseline Environment</p>

<p>the four air quality zones in Ireland.</p> <p>Data on levels of atmospheric pollutants from the EPA’s national ambient air quality monitoring network (http://www.epa.ie/air/quality/monitor/), should also be integrated as appropriate. The pollutants of most concern are traffic-related, including Particulate Matter and Nitrogen Dioxide</p>	
<p>Noise The Plan should take into consideration available noise action plans prepared within and adjacent to the Plan area. Noise action plans are designed to act as a means of managing environmental noise through land use planning, traffic management and control of noise sources. The third round of noise mapping is currently underway in Ireland and will be completed in 2018. http://noise.eionet.europa.eu/help.html.</p>	<p>Noted and included in Chapter Four.</p>
<p>Available Guidance & Resources Climate</p> <p>The EPA has published guidelines to support Local Authorities in developing local climate adaptation strategies (EPA, 2016). The DCCA have incorporated this EPA guidance into national level Guidelines, to also assist local authorities prepare adaptation strategies. (DCCA, 2018).</p> <p>The ‘Climate Ireland’ website provides information, support and advice to help local authorities, sectors and government departments to adapt to climate change and includes a Local Authority Adaptation Support Wizard. It can be consulted at http://www.climateireland.ie/#/</p> <p>Renewable Energy The recently published Interim Guidelines for Planning Authorities on Statutory Plans, Renewable Energy and Climate Change (DHPCLG, 2017) should be taken into account, where relevant.</p> <p>Water Quality Our WFD Application provides a single point of access to water quality and catchment data from the national WFD monitoring programme. The Application is</p>	<p>Noted</p>

<p>accessed through EDEN https://wfd.edenireland.ie/ and is available to public agencies. Publicly available data can be accessed via the Catchments.ie website</p>	
<p>SEA Our website contains SEA resources and guidance, including: - SEA process guidance and checklists - list of relevant spatial datasets - topic specific SEA guidance, such as consideration of alternatives in SEA. You can access these resources at: http://www.epa.ie/pubs/advice/ea/</p> <p>Best practice guidance on Integrated Biodiversity Impact Assessment is also available at: http://www.epa.ie/pubs/reports/research/biodiversity/strivereportno90.html</p>	<p>Noted and used where appropriate in this SEA.</p>
<p>SEA WebGIS Search and Reporting Tool. The EPA SEA WebGIS Search and Reporting Tool is a GIS based web application that allows users to explore, interrogate and produce an indicative report on key aspects of the environment in specific geographic areas. This may be used to inform the SEA screening and scoping stages for Plans and Programmes with reference in the first instance to the land use sector, though it is also applicable to other sector plans. It may be accessed via www.edenireland.ie</p>	<p>Considered at SEA Screening stage of this CCAP.</p>
<p>State of the Environment Report – Ireland’s Environment 2016 In preparing the Plan and SEA, the recommendations, key issues and challenges described within our State of the Environment Report Ireland’s Environment – An Assessment 2016 (EPA, 2016) should be considered, as relevant and appropriate to the Plan. Opportunities for selecting ‘win-win’ solutions when developing climate-related measures, to address multiple environmental challenges (air, water etc.) should be prioritised.</p>	<p>Noted, please see Chapter 3 for review of this and how the SEA and CCAP relates to the State of the Environment Report.</p> <p>Noted, and agreed, where possible the preparation of the CCAP and SEA have sought to prioritize “win-win” actions.</p>
<p>Terence Loane, Future Planning Unit, Louth County Council</p> <p>No comments to make at this time in relation to the SEA Scoping Report</p>	<p>Noted</p>

2.3 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 problems 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 Fingal County Development Plan 2017-2023, Irish Water, the EPA, Met Eireann and other sources as appropriate. Project level environmental assessments where available in relation to transport proposals and/or flood risk management proposals were also reviewed. 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.

2.4 APPROACH TO ASSESSMENT OF SIGNIFICANT ENVIRONMENTAL IMPACTS

The principal component of the SEA involves a broad environmental assessment of the objectives/actions of the CCAP. 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 aims and proposals contained in this Fingal CCAP 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.

The SEA legislation and guidelines highlight the importance of the integration between the preparation of the CCAP and the SEA and AA processes. The iterative nature of the SEA process is such that the CCAP is informed by environmental considerations throughout the preparation of the CCAP and development of actions as relevant. The Screening Statement in support of Appropriate Assessment Report and Natura Impact Report are separate documents to the Environmental Report both of which accompany this Fingal CCAP 2019-2024.

2.5 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 CCAP. 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 CCAPs implementation.

The CCAP has been prepared having regard to the environmental protection objectives contained within the Fingal County Development Plan 2017-2023. However, some unavoidable residual issues may remain and therefore mitigation measures are required. Chapter Eight details the mitigation measures necessary to prevent, reduce and, as fully as possible, offset any significant adverse

impacts on the environment of implementing the CCAP.

2.6 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 CCAP 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, aligned where possible with those of the SEA of the Fingal County Development Plan 2017-2023.

2.7 STRATEGIC FLOOD RISK ASSESSMENT

The Planning System and Flood Risk Management Guidelines (DoEHLG 2009) provide a methodology to incorporate flood risk identification and management into land use strategies. It also requires the alignment and integration of flood risk into the SEA process.

The Strategic Flood Risk Assessment of the Fingal CDP 2017-2023 has been used in this SEA ER as well as an assessment of any flood related actions and proposals. These findings have been integrated into the CCAP and this SEA ER (See Chapters Four and Seven in particular).

2.8 DATA GAPS

Data gaps are present in terms of human health and population at county level.

3 RELATIONSHIP TO RELEVANT PLANS AND PROGRAMMES

3.1 INTRODUCTION

Under the SEA Directive, the relationship between the CCAP and other relevant plans and programmes must be taken into account. A review of the relevant plans and programmes has been prepared as part of the SEA ER. The preparation of the CCAP 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 proposed CCAP will operate.

The Fingal County Development Plan 2017-2023(CDP) operates as the primary land use framework for the county and as such, key policies/objectives and environmental protective objectives and policies of the CDP will be applied during CCAP implementation stage.

A list of the key relevant international, national, regional and county policies included in the review are listed below in Sections 3.2 to 3.4. Please see Annex B for a summary of these plans and programmes and their relevance to the CCAP and SEA.

Section 3.5 of this Chapter provides a focused consistency check between Actions in the National Mitigation Plan and key policies of the Eastern Regional and Economic Spatial Strategies that are considered to be particularly relevant to this CCAP¹.

¹ This table was prepared on foot of the EPA Scoping submission which recommended aligning actions in the CCAP with those of the National Mitigation Plan. This opportunity was also used to check consistency with relevant policies/objectives

Finally, Section 3.6 identifies key principles that will inform the SEA process arising from this review.

The plans and programmes of particular relevance to this CCAP are highlighted in the review of plans and programmes which can be found in Annex B of this SEA ER².

3.2 INTERNATIONAL

- UN Convention of Biological Diversity, 1992
- The Convention on Wetlands of International Importance (The Ramsar Convention) 1971 and subsequent amendments
- EU Environmental Action Programme to 2020
- SEA Directive - Assessment of the effects of certain plans and programmes on the Environment, (2001/42/EC) 2001
- Environmental Impact Assessment Directive (85/337/EEC) (97/11/EC), 1985 and Environmental Impact Assessment Directive (2014/52/EC)
- EU Biodiversity Strategy to 2020
- EU Directive on the Conservation of Wild Birds, (2009/147/EC) 1979. Known as the Birds Directive
- EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, (92/43/EEC), 1992 known as the Habitats Directive
- European Communities (Birds and Natural Habitats) Regulations 2011
- EU Green Infrastructure Strategy 2013
- The Stockholm Convention 2001

of the Draft Eastern Regional Economic and Spatial Strategy

² Annex B was amended to reflect a recommendation by the EPA at Scoping Stage to provide a means to highlight relevance of plans to the CCAP.

- EU Soil Thematic Strategy
- Water Framework Directive (2000/60/EC) as amended
- Floods Directive (2007/60/EC)
- The Drinking Water Directive (DWD), (98/83/EC) 1998
- Groundwater Directive, (2006/118/EC) 2006
- EC Bathing Water Quality Directive, (2006/7/EC) 2006
- Paris (Climate Change) Agreement
- Kyoto Protocol
- The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive
- EU Directive on Waste, (2006/12/EC), 2006
- EU Directive on Waste (2008/98/EC), 2008
- EU Urban Waste Water Treatment Directive (91/271/EEC), 1991
- Directive 2009/28/EC on the promotion of the use of energy from renewable sources
- European Convention on the Protection of the Archaeological Heritage, 1992 (The Valletta Convention)
- Convention for the Protection of the Architectural Heritage of Europe, 1985 (Granada Convention)
- The European Landscape Convention 2000
- The Aarhus Convention
- Environmental Liability Directive 2004/35/EC

3.2.2 NATIONAL

- National Planning Framework 2018
- Water Framework Directive River Basin Management Plans 2018
- National Mitigation Plan
- National Adaptation Framework 2018
- Sectoral Climate Adaptation Plans 2018
- Local Authority Adaptation Strategy Development Guidelines, EPA 2016
- Our Sustainable Future A framework for sustainable development in Ireland (2012)
- The National Spatial Strategy 2002 -2020
- National Landscape Strategy (2015-2025)
- 3rd National Biodiversity Action Plan, 2017-2024
- The Wildlife Acts 1976 to 2012
- National Heritage Plan (2002)- to be replaced by Heritage Ireland 2030 (issues paper out now)
- All-Ireland Pollinator Plan 2015-2020
- European Union (Invasive Alien Species) (Freshwater Crayfish) Regulations 2018
- Irish Water's Capital Investment Programme
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) (2009)
- Geological Heritage Sites Designation (under the Wildlife Amendment Act 2000)
- Water Services Act (2007)
- Water Services (Amendment) Act (2012)
- Irish Water Services Strategic Plan SEA and AA (2015)
- Irish Water Capital Investment Programme (2017-2024) including forthcoming planning application for Ringsend WWTP upgrade.
- Waterways Ireland Heritage Plan 2014-2020
- The Planning System and Flood Risk Management Guidelines (and Technical Appendices) for Planning Authorities (DoEHLG, OPW), 2009
- National Climate Change Strategy (2007-2012)
- Review of Ireland's climate change policy and Climate Action and Low Carbon Bill 2013
- Smarter Travel, A Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020
- Spatial Planning and National Roads Guidelines
- National Transport Strategy for Greater Dublin Area 2016-2023³
- Design Manual for Urban Roads and Streets (DMURS)
- Electric Vehicle Grant Scheme and VRT Relief
- National Monuments Act 1930 with subsequent amendments
- Architectural Heritage Protection - Guidelines for Planning Authorities (2011)
- National Inventory of Architectural Heritage (NIAH)
- Draft Landscape and Landscape Assessment Guidelines, (2000)
- Planning and Development Act 2000 (as amended).
- Planning Policy Statement, 2015
- Green Low Carbon Agriculture Environment Scheme (GLAS)

- National Cycle Policy Framework 2009-2020
- National Transport Authority's Permeability Best Practice Guide
- Public Transport Act 2016

3.2.3 REGIONAL AND COUNTY

- A Strategy towards a Climate Change Action Plan for Dublin 2017
- Eastern and Midland Assembly (Draft) Regional Spatial and Economic Strategy (2018)
- Eastern-Midlands Regional Waste Management Plan 2015
- Greater Dublin Area Transport Strategy 2016-2035
- Fingal County Development Plan 2017-2023
- Fingal Economic and Community Plan 2016
- Fingal Biodiversity Action Plan 2018-2023
- Catchment-Based Flood Risk Management Plans (CFRMP)
- Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study 2011-2016
- Greater Dublin Strategic Drainage Study
- Fingal Tree Strategy (no date)

3.4 SUMMARY OF KEY ACTIONS FROM THE NATIONAL MITIGATION PLAN AND POLICIES FROM THE DRAFT REGIONAL ECONOMIC AND SPATIAL STRATEGIES THAT ARE RELEVANT TO THIS CCAP.

TABLE 3 CONSISTENCY WITH ACTIONS IN THE NATIONAL MITIGATION PLAN RELEVANT TO THIS CCAP.

	National Mitigation Plan 2017	Climate Change Action Plan 2019-2023
Action 9	Develop proposals to establish regional climate action offices to coordinate Local Authority response to climate action.	Established and has co-ordinated CCAP for each of the Dublin Local authorities
Action 10	Ensure climate considerations are fully addressed in new National Planning Framework.	Indirectly through the Regional Spatial and Economic Strategy once adopted and requirement for Variations to CDP to incorporate the RSES.
Action 51	Investment in infrastructure and behavioural change interventions to encourage and support a shift to sustainable modes of transport.	Actions in the Transport section identify a comprehensive range of actions to encourage and support modal shifts
Action 89	Continue to support climate and land based research at national and international levels	<p>The role of the Dublin Metropolitan CARO (which will oversee implementation of the CCAP) is to:</p> <ul style="list-style-type: none"> • Assist the local authorities within the region in preparing their own Climate Change Action Plan • Develop education and awareness initiatives for the public, schools, NGOs and other agencies engaged in driving the climate change agenda and contributing to the National Dialogue on Climate Action on a local and regional basis • Link with third-level institutions in developing a centre of excellence for specific risks – in the case of the Metropolitan Region this will be for urban climate effects • Liaise and interact with the Dublin energy agency Codema

TABLE 4 RELEVANT POLICY OBJECTIVES FROM THE DRAFT REGIONAL SPATIAL AND ECONOMIC STRATEGY EASTERN AND MIDLANDS REGION

Please note the Regional Spatial and Economic Strategy is currently in draft form so the Regional Policies Objectives listed below may be subject to change prior to adoption.

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region		
Low Carbon Economy RPO 6.20	Support enterprise development agencies and LEOs on the development of industries that create and employ green technologies and take measures to accelerate the transition towards a low carbon economy and circular economy.	Yes, actions (three in total) relating to Transport, Energy and Flood resilience references the Small Business Innovation Research (SBIR)
RPO 7.15:	Local Authorities shall take opportunities to enhance biodiversity and amenities and to ensure the protection of environmentally sensitive sites and habitats, including where flood risk management measures are planned.	Actions under Flood Resilience are consistent with this RPO These include identification of sites for integrated constructed wetlands and SUDs
RPO 7.17	Facilitate cross boundary co-ordination between Local Authorities and the relevant agencies in the Region to provide clear governance arrangements and coordination mechanisms to support the development of ecological networks and enhanced connectivity between protected sites whilst also addressing the need for management of alien invasive species and the conservation of native species.	Actions including Action 5 in Nature Based Solutions are consistent with this as follows: Restoration of St Ita’s Wetlands (note this is awaiting budget)
REGIONAL POLICY OBJECTIVES: Green Infrastructure RPO 7.21	Local authority Development Plan and Local Area Plans, shall identify, protect, enhance, provide and manage Green Infrastructure in an integrated and coherent manner and should also have regard to the required targets in relation to the conservation of European sites, other nature conservation sites,	Fingal County Development Plan 2017-2023 includes a large number of GI policy and objectives such as Objectives GI02; GI03; GI10, GI11; GI12; GI13; GI14; GI15; GI16; GI17; NH21; NH49; PM51; PM64; RF100; SS08; SS10; SS11 Actions in the Nature Based Solutions theme include a number of GI actions such as Action 3, for example:

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region

	ecological networks, and protected species.	Develop Green Infrastructure Strategy that incorporates climate change mitigation and adaptation to increase climate resilience
RPO 7.22	Support the further development of Green Infrastructure policies and coordinate the mapping of strategic Green Infrastructure in the Region.	See comment above
Greenways, Blueways and Peatways RPO 7.23:	Promote the development of a sustainable Strategic Greenway Network of national and regional routes, with a number of high capacity flagship routes that can be extended and /or linked with local Greenways and other cycling and walking infrastructure.	See Actions in Active Travel under Transport Theme
Climate Change RPO 7.28	Within 1 year of the adoption of the RSES, the EMRA shall seek with other stakeholders to carry out an assessment of transport emissions in the Region to identify GHG forecasting and to analyse the emissions impacts of development in the Region.	This can be supported through the baseline study of Greenhouse Gas Emissions for the local authority undertaken for 2016 by Codema with support from SEAI.
RPO 7.29	Within one year of the publication of the RSES, the Climate Action Regional Offices shall compile a greenhouse gas emissions inventory for the Region to allow for planning of strategic mitigation action through a Regional Decarbonisation Plan. The Climate Action Regional Offices shall track the success of the Plan through annual inventories completed each year. Annual reporting of the inventories and critical analysis of the proposed measures will be undertaken to track progress within the Region and to track progress with national targets on a regional basis.	This can be supported through the baseline study of Greenhouse Gas Emissions for the local authority undertaken for 2016 by Codema with support from SEAI. Monitoring regime include targets and indicators accompany each action in the CCAP and will allow for monitoring of actions.
RPO 7.31:	Local Authorities shall develop, adopt and implement local climate action strategies which shall assess local vulnerability to climate risks, quantify the emissions produced within their jurisdictions, and identify, cost and prioritise adaptation actions in accordance with	The CCAP is the draft action plan that will meet this objective.

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region

	the guiding principles of the National Adaptation Framework	
RPO 7.32:	Climate Action Regional Offices shall provide guidelines and support to the Local Authorities on the development, adoption and implementation of local climate action strategies (both mitigation and adaptation). These guidelines shall include the specific actions and obligations and timescales for same that must be undertaken by the Local Authorities to comply with national policy.	As above, the Draft Action Plan was also prepared having regard to A Strategy towards Climate Change Action Plans for the Dublin Local Authorities, published in 2017.
RPO 7.33:	EMRA supports the National Policy Statement on Bioeconomy (2018) and supports the exploration of opportunities in the circular resource-efficient economy including undertaking a bio-economy feasibility study for the Region to identify the area of potential growth in the Region to inform investment in line with the national transition objective to a low carbon climate resilient economy.	Action 26 in Energy: Support Small Business Innovation & Research (SBIR) programme
Building Standards RPO 7.38:	Local Authorities shall report annually on energy usage in all public buildings and will achieve a target of 33% improvement in energy efficiency in all buildings in line with the requirements of the National Energy Efficiency Action Plan (NEEAP).	Stated target of the CCAP is a 33% improvement in council’s energy efficiency by 2020. Baseline section of the CCAP provides a breakdown of this.
RPO 7.39:	Local Authorities shall include policies in statutory land use plans to promote high levels of energy conservation, energy efficiency and the use of renewable energy sources in existing buildings, including retro fitting of energy efficiency measures in the existing building stock and energy efficiency in traditional buildings. All new buildings within the Region will be required to achieve the Nearly ZeroEnergy Buildings (NZEB) standard in line with the	Actions in the Energy theme including Action 17: Insulation of all Council owned social housing stock; extended to include acquisitions and long term leasing where feasible

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region

Energy Performance of Buildings Directive (EPBD).

RPO 7.40:

Support and promote structural materials in the construction industry that have low to zero embodied energy & CO2 emissions.

Several actions in the Energy Theme

Decarbonising Transport**RPO 7.41**

Local Authorities shall include proposals in statutory land use plans to facilitate and encourage an increase in electric vehicle use, including measure for more recharging facilities and prioritisation of parking for EVs in central locations.

Several Actions in the Transport Theme address this eg: Action 6 for example.
Continued electrification of the Council's vehicle fleet as market technology develops

3.3 KEY PRINCIPLES IDENTIFIED FROM REVIEW.

Following the review of the relationship between the above plans, policies and programmes the following key principles have been identified and this have been considered through the SEA and helped to inform the CCAP development.

Table 5 Principles from plan, policy and programme review.

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> • Conserve and enhance biodiversity at all levels • Avoid and minimise effects on nationally and internationally rare and threatened species and habitats through sensitive design and consultation, recognising ecological connectivity where possible • Facilitate species and habitat adaption to climate change • Avoid and minimise habitat fragmentation and seek opportunities to improve habitat connectivity • Ensure careful consideration of non-native invasive and alien species issues 	<ul style="list-style-type: none"> Implementation of legislation Climate change Environment and health and well being Nature and wild places 	<ul style="list-style-type: none"> Nature Based Solutions Citizen Engagement and Awareness Flood Resilience Resource management
Population and Human Health	<ul style="list-style-type: none"> • Provide for sustainable communities with key services • Energy efficiency in buildings and model transport shift • A high quality environment to live, work 	<ul style="list-style-type: none"> Environment and health and well being Implementation of legislation Climate change Community engagement 	<ul style="list-style-type: none"> Energy Transport Nature Based Solutions Resource Management Citizen engagement

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
	<ul style="list-style-type: none"> and play in • Avoid pollution and environmental health impacts (noise and air quality) through mitigation and design • Awareness raising 	Sustainable economic activities	
Water	<ul style="list-style-type: none"> • Maintain and improve water quality • Avoid and minimise effects on natural processes, particularly natural flood management and catchment processes through sensitive design and consultation • Adapt and improve resilience to the effects of climate change • Minimise water consumption/ abstractions • Design SUDS to facilitate ecological improvement/ enhancement where possible 	<ul style="list-style-type: none"> Restore and protect water quality Implementation of legislation Climate change Environment and health and well being 	<ul style="list-style-type: none"> Nature Based Solutions Resource Management Citizen engagement and awareness
Soil and Geology	<ul style="list-style-type: none"> • Conserve soil resources where possible and avoid waste of soil resources • Maintain productive capacity and prevent erosion of soils • Ensure careful consideration of non-native invasive and alien species issues 	<ul style="list-style-type: none"> Climate change Environment and health and well being Sustainable economic activities 	<ul style="list-style-type: none"> Resource Management Nature Based Solutions Citizen engagement and awareness
Material Assets	<ul style="list-style-type: none"> • Avoid and minimise waste generation • Maximise re-use of material resources and use of recycled materials • Minimise energy consumption and encourage use of renewable energy 	<ul style="list-style-type: none"> Restore and protect water quality Implementation of legislation Climate change Environment and health and well 	<ul style="list-style-type: none"> Nature Based Solutions Resource Management Citizen engagement and awareness Flood Resilience

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
	<ul style="list-style-type: none"> Promote sustainable transport patterns and modes where possible. Plan and provide for sustainable water management and wastewater treatment Modal shifts and sustainable transport Awareness raising 	being Sustainable economic activities	Energy Transport
Air Quality and Climate	<ul style="list-style-type: none"> Adapt and improve resilience to the effects of climate change Encourage reduction in greenhouse gases through transport, energy, built development. Minimise adverse impacts associated with air and noise quality 	Climate change Implementation of legislation Environment and health and well being	Energy Transport Resource Management Nature based solutions Citizen Engagement
Cultural Heritage	<ul style="list-style-type: none"> Conserve, preserve and record architectural and archaeological heritage Avoid and minimise effects on historic environment features through sensitive design and consultation 	Environment and health and well being Sustainable economic activities	Nature based solutions Citizen engagement Transport
Landscape	<ul style="list-style-type: none"> Integrate green and blue infrastructure considerations Improve landscape connectivity to surrounding areas 	Environment and health and well being Nature and wild places	Nature based solutions Flood resilience Citizen Engagement Resource Management
Climate change and sustainability	<ul style="list-style-type: none"> Adapt and improve resilience to the effects of climate change Promote local/ sustainable sourcing of materials 	Environment and health and well being Sustainable economic activities Climate change Implementation of legislation	Nature based solutions Flood resilience Citizen Engagement Resource Management Energy

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
	Promote sustainable design and innovation to reduce material consumption		Transport
Inter-relationships	<ul style="list-style-type: none"> • Maintain and improve the health of people, ecosystems and natural processes • Adapt and improve resilience to climate change and extreme weather events • Actively seek to integrate opportunities for environmental enhancement 	Environment and health and well being Sustainable economic activities Climate change Implementation of legislation Nature and wild places Restore and protect water quality Community engagement	Nature based solutions Flood resilience Citizen Engagement Resource Management Energy Transport

4 KEY ENVIRONMENTAL RESOURCES

4.1 INTRODUCTION

This chapter describes the environmental baseline for the Fingal CCAP area. The baseline information presents the environmental context within which the CCAP will operate and the opportunities, constraints and targets placed on the plan in this regard. The environmental data is described in line with the legislative requirements of the SEA Directive and Regulations, as amended under the following environmental parameter headings:

- Population and Human Health
- Biodiversity, Flora and Fauna
- Soil and Geology
- Air and Climate
- Water
- Material assets
- Culture
- Landscape
- The inter-relationship between the above parameters will also be considered in this chapter.

4.1.1 THE PLAN AREA AND SPHERE OF INFLUENCE

The CCAP for Fingal County in the first instance identifies both general actions and more site specific actions. However, given that the four Dublin Local Authorities are preparing these CCAPs in tandem, there is also a regional aspect to the sphere of influence. This is particularly relevant where plan actions relate to features such as rivers and/or landscapes that can and do cross local authority

boundaries. Similarly mobile species may disperse over larger areas of the landscape and require consideration at a different scale. The potential for cumulative and in-combination effects (both positive and negative) are also a consideration in this SEA ER.

4.2 POPULATION AND HUMAN HEALTH

This section provides information on the current population and demographic trends in Fingal County and more broadly at Regional Level. 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.

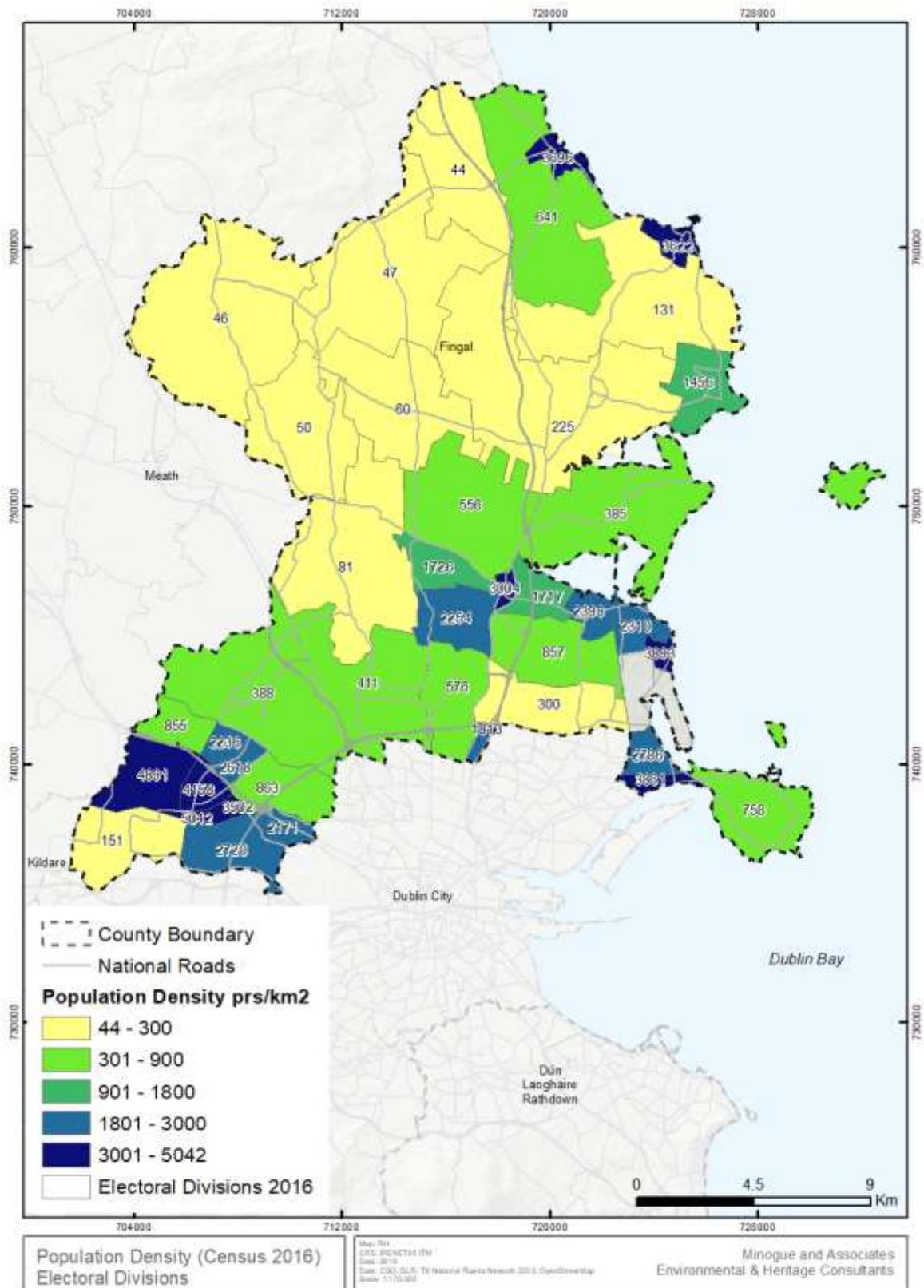
When compared with their surrounding regions, urban areas are considered to be particularly vulnerable to these climatic changes. This is due to: the high concentrations of population, infrastructure and economic activities located in these areas, the exacerbation of climate impacts by urban-scale phenomena and dependency on surrounding regions for service provision⁴.

Figure 1 below presents population density for the Fingal County based on the 2016 Census. As the figure shows, population density varies throughout the county, with implications in terms of provision of services, ecological connectivity and maximising sustainable

⁴ This paragraph is taken from the Urb Adapt Project Summary running till 2019 will use the Dublin Region as a case study that will allow for the integrated assessment and management of current and future climate vulnerabilities within the context of existing climate and non-climate pressures and spatial planning practices. <https://urbadapt.com/>

transport and landuse. In terms of broad trends however, the figure below shows greater population densities closer to Dublin city at Castleknock and west Dublin at Blanchardstown, along with a concentration of settlements along the coast such as Sutton, Malahide, Rush and Lusk. In terms of population change, the largest growth centres since 2006 have been Electoral Districts along the coast and at the edges of the county. A key feature of population change in Fingal has been the uneven distribution of growth, with some EDs experiencing strong population growth, such as Balbriggan Rural, Ballyboughil and Garristown, while other EDs have experienced stagnation or decline e.g. Blanchardstown Delwood, Blanchardstown Tyrrelstown and Portmarnock South. It must be recognised that the baseline house numbers/ population varies significantly between different EDs.

Figure 1 Population Density of Fingal County (Census 2016)



4.2.2 HUMAN HEALTH

Human health can be determined by social, environmental and economic factors, among others. Human health may be impacted upon in a variety of ways and by a number of environmental receptors such as water, biodiversity, climate, flooding, air and major accidents, etc. 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.

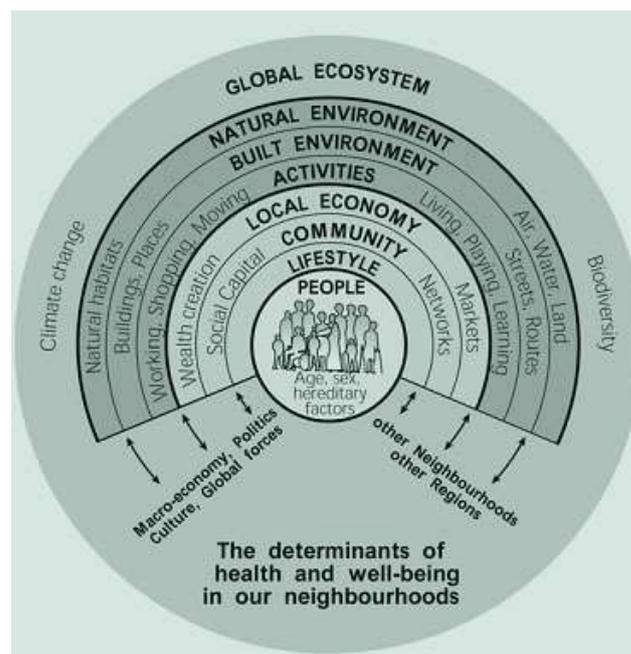
The Institute of Public Health states:

'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 CCAP actions such as, retrofitting of houses and potential exposures to air quality emissions.

Figure 2 below identifies key factors that contribute to human health. This is followed by a summary of the key environmental factors that can affect human health.

FIGURE 2 ENVIRONMENTAL DETERMINANTS OF HEALTH⁵



4.2.3 HUMAN HEALTH AND NOISE

Environmental noise is treated in a different way to noise nuisance. A nuisance noise is something that occurs from time to time and is not usually considered to be a feature of life in the local area. For example, a noisy dog or late night parties are short term occurrences. Even if they happen regularly, they are not caused by any long term activities and so they are thought of as nuisance noise.

Environmental noise is from long term or permanent sources, like major transport routes and factories. Noise from these sources has a different effect on people and is managed in a different way. The Environmental Noise Directive was written into Irish law in 2006, through the Environmental Noise Regulations (Statutory Instrument No. 140 of 2006). This law relates to the assessment and management of environmental noise. They provide for a common approach intended

⁵ The determinants of health and well-being (Barton & Grant 2006)

to avoid, prevent or reduce the harmful effects, including annoyance, due to exposure to environmental noise. These regulations do not apply to nuisance noise which can be dealt with under the Environmental Protection Agency Act.

Noise Action Plans are required under the Environmental Noise Directive (EU 2002/49/EC) transposed in to Irish law by SI 140 of 2006. Fingal County Council in conjunction with the other three Dublin local authorities have prepared a plan for 2013-2018 and establishes the measures that the councils intend to take to manage environmental noise exposure. The plan also contains an assessment of possible noise hotspots throughout the area. The Dublin Agglomeration Environmental Noise Action plan 2018-2023 was on public display until December 2018.

In the context of the CCAP, existing roads operate as the greatest noise generators. Thresholds for desirable low and undesirable high sound levels in the Noise Action Plan are as follows:

- Desirable Low Sound levels • < 50 dB(A) Lnight • < 55 dB(A) Lday
- Undesirable High Sound levels • > 55 dB(A) Lnight • > 70 dB(A) Lday

Given that Dublin Airport is also situated within Fingal, A specific Noise Action Plan has been also been prepared for Dublin Airport 2019-2023, and is out for consultation currently.

The Dublin Agglomeration Environmental Noise Action Plan 2013-2018 (and the Draft Dublin Agglomeration Environmental Noise Action Plan 2018-2023) sets out a number of potential mitigation measures to address noise issues that are under the local authorities remit.

4.2.4 HUMAN HEALTH AND AIR QUALITY

The Air Framework Directive 96/62/EC (CEC, 1996) details how ambient air quality should be monitored assessed and managed. This Directive requires that member states divide their territory into zones for the assessment and management of air quality. Fingal County has a number of air quality zones, with the southern part of the county classified as Dublin city, whilst towns such as Balbriggan are classified as large towns, and the northern and western parts of the county as Rural.

The Air Quality Index of health⁶ 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
- PM10 particle

The two key sectors that predominantly impact negatively on air quality are residential heating and transport⁷.

The Air Pollution Regulations (2012) were signed into law by the Minister for Environment, Community and Local Government on 31st August 2012. One of the key elements of the regulations has been the designation of new towns as smokeless zones and the expansion of the ban areas in towns that were previously covered under the old regulations. All of the four local authorities in Dublin have a ban on the sale, marketing, distribution and burning of specified fuel i.e. only smokeless fuel allowed

⁶ <http://www.epa.ie/air/quality/>

⁷ Air Quality in Ireland 2016 EPA

The EPA State of the Environment Report (2016) has further highlighted the role of environmental quality and health and in turn has highlighted the adoption of the newer more stringent World Health Organization guideline values for air quality. The Clean Air Policy Package (EC 2014) involves a move to tackling air emissions at source with potentially tighter air quality standards from 2020 onwards⁸.

4.2.5 EXISTING ISSUES POPULATION AND HUMAN HEALTH.

The key issues associated with the Eastern and Midland RSES⁹ and population/human health were used for this section, complemented by issues identified in the Fingal CDP 2017-2023, key relevant issues include:

- Addressing historic settlement patterns leading to sprawl and unbalanced regional development;
- Increased capacity/ infrastructural requirements for water and wastewater treatment to service population growth;
- Increased requirements for public transport services and cycle corridors to service population growth and commuter belts;
- Increasing car dependency and associated emissions to air;
- Changes in climate, especially increases in temperature, will impact the concentration of pollutants in the air, as temperatures increase, so too will the concentration of pollutants. This is also the case with the changing strength and frequency of high wind speeds due to climate

change, which may cause pollutant dispersion and could potentially affect a larger area and population.

The following broad range of issues has been identified in the SEA ER of the Fingal CDP 2017-2023 , which include localised as well as more strategic issues:

- Reducing urban sprawl and dispersed settlement patterns;
- Maintain agricultural production in the face of future growth and to maintain both cultural and natural resources in the face of development pressure and demand for recreation along coasts.

-

⁸ SEA ER of National Mitigation Plan 2017.

⁹ SEA Environmental Report for the draft Eastern and Midland RSES <https://emra.ie/draft-rses-public-consultation/>

4.3 BIODIVERSITY, FLORA AND FAUNA

In general terms biodiversity¹⁰ refers to:

- Different habitats such as woodlands, wetlands, grasslands and estuarine habitats and the range of flora and fauna species they support.
- Different species such as plants, mammals, birds, insects, fish, microbes, mosses and fungi, and their inter-relationships such as food chains and cohabitation.
- Genetic diversity within species which is vital for healthy populations of individual species to survive. Ecosystems diversity which are the relationships between different species, their habitats and their local, non-living environment (geology, hydrology and microclimate).
- Features of the landscape, which by virtue of their linear and continuous structure (such as hedgerows or streams) or their function as links (such as ponds or small woods) are essential for the migration, dispersal and genetic exchange of wild species.
- Flora and Fauna are the plant and animal life, respectively.

A wide range of economic and social benefits and services result from the protection of biodiversity, for example, it forms the basis of our landscapes, provides for food and clean water supplies, opportunities for waste disposal, nutrient recycling, flood storage and regulation, amenity and recreational opportunities through development of green infrastructure network.

It is increasingly recognised the nature based solutions can offer a further means to adapt and respond to climate change.

4.3.1 OVERVIEW

Within Fingal there is a diversity of habitats (woodlands, hedgerows, field boundaries, sand dunes, saltmarshes, rivers, streams and associated riparian zones, canals, marine habitats and wetlands) that are not subject to legislative protection although they are of high biodiversity and conservation value and contribute to the county's 'green infrastructure'.

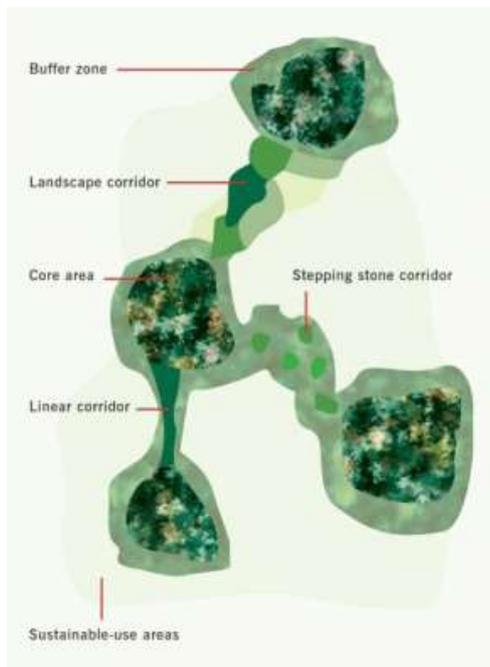
It is also recognised that there are other non designated receptors such as landscape features, which function as 'stepping stone' or which act as ecological corridors which are of great importance to wildlife.

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the Natura 2000 network of designated ecological sites are maintained and it recognises the need for the management of these areas through land use planning and development policies.

Green infrastructure strategies are recognised as an essential component in European, national and regional policies.

¹⁰ Text from draft SEA ER of Clare CDP 2017-2023

FIGURE 3 OVERVIEW OF LANDSCAPE MOSAIC WITH STEPPING STONES AND ECOLOGICAL CORRIDORS¹¹



4.3.2 DESIGNATED SITES

Within the County there are habitats of high biodiversity and conservation value and a number of designated sites associated within the county which are designated as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Natural Heritage Areas (NHAs).

Whilst Natural Heritage Areas (NHAs) and other designated sites do not form part of the Natura 2000 network they contribute to the network in a supporting role, often by providing stepping stones and ecological connectivity for mobile species in particular. Under the Wildlife Amendment Act (2000), Natural Heritage Areas are legally protected from damage from the date they are formally proposed for designation.

¹¹ source:
<http://www.sicirec.org/definitions/corridors>

SPECIAL AREAS OF CONSERVATION AND SPECIAL PROTECTION AREAS

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 due to their conservation value for habitats and species of importance in the European Union. SPAs have been selected for protection under the 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC) referred to as the Birds Directive due to their conservation value for birds of importance in the European Union. The directive was established to protect migratory species and species that are rare, vulnerable, in danger of extinction or otherwise require special attention. The Fingal coast is especially important for its bird life. For example, Rogerstown Estuary holds internationally important numbers of Brent geese and Lambay Island is internationally important for its breeding seabirds such as guillemots, razorbills and kittiwakes.

Figure 4 and Figure 5 shows the SACs and SPAs within 15km of the plan area. An appropriate assessment has also been carried out in tandem with this SEA and plan preparation and should be read for further information and assessment on these sites.

PROPOSED NATURAL HERITAGE AREAS (NHA)

These are designated under the Wildlife Act as of national importance for the habitats and/or species present. NHAs aim to conserve and protect nationally important plant and animal species, and their habitats. NHAs are also designated to conserve and protect nationally important landforms, geological or geomorphological features. Planning authorities are obliged by law to ensure that these sites are protected and

conserved. **Figure 6** shows the pNHAs present around the plan area.

RAMSAR SITES

The RAMSAR Convention of 1971 (signed by Ireland in 1985) is a voluntary treaty of which Ireland is a signatory. The RAMSAR committee for Ireland is currently compiling a national database on wetlands. In Fingal there are the following Ramsar sites:

Baldoyle Bay, Malahide Estuary, Rogerstown Estuary and North Bull Island in Dublin Bay. Additionally, Rogerstown Estuary and North Bull Island are also Wildfowl Sanctuaries.

NATIONAL NATURE RESERVES

North Bull Island and Baldoyle Estuary are both designated national nature reserves under the terms of the Wildlife Act.

IMPORTANT BIRD AREAS

The Important Bird Areas (IBA) Programme is an initiative of BirdLife International with the aim of identifying and protecting sites of importance for the conservation of birds. Over 12,000 sites have been identified internationally with 140 IBAs in Ireland, covering an area of approximately 4,309 km² or about 6% of the land area. Most IBAs in Ireland are coastal in nature – islands and cliffs are particularly important for breeding seabirds, with estuaries and wetlands important for wintering wildfowl. The IBAs in and around Fingal include: Howth Head, Ireland's Eye, Baldoyle Bay, Malahide/Broadmeadow Estuary, Lambay Island, Rogerstown Estuary, Skerries Islands, Rockabill, Dublin Bay, Nanny Estuary/shoreline and Boyne Estuary.

4.3.3 DUBLIN BAY BIOSPHERE

North Bull Island was recognised on the UNESCO World Network of Biosphere Reserves in 1981. North Bull Island is unique among biosphere reserves given

its close proximity to a capital city. There are two golf clubs on the island, the Royal Dublin Golf Club and St Anne's Golf Club; these are not part of the biosphere reserve extents itself but are integral to the site and have important links to the reserve. The Biosphere Zonation which stretches to the north and south of Dublin Bay encompasses land within the administrative area of Fingal.

The Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020 was published in 2017 and aims, firstly, to provide a coordinated framework for biodiversity conservation and research activities to be undertaken by DBBP and, secondly, to provide clarity regarding these planned activities to all stakeholders within DBB.

4.3.4 REGISTER OF PROTECTED AREAS

In response to the requirements of the Water Framework Directive a number of water bodies or parts of water bodies which must have extra controls on their quality by virtue of how their waters are used by people and by wildlife have been listed on Registers of Protected Areas (RPAs) (entries to the RPAs have been detailed further under Section 4.6.5).

4.3.5 AQUATIC BIODIVERSITY

Under Article 5 of the Shellfish Water Directive (2006/113/EC) Malahide Shellfish Area, has been designated as shellfish growing waters. A pollution-reduction programme was established by the minister for the Environment, Community and Local Government to protect these waters and improve water quality.

Inland Fisheries Ireland noted three waterbodies within the county that support brown and sea trout fisheries. These are the Rivers Delvin, Liffey and Tolka. The River Liffey also supports

Atlantic salmon (*Salmo salar*), an Annex II species listed under the Habitats Directive.

4.3.7 ALIEN AND INVASIVE SPECIES

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000. Under the European legislation, the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibit the introduction and dispersal of species listed in the Third Schedule (including Japanese Knotweed) whereby “any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [...] shall be guilty of an offence.”

Note some of the alien and invasive species are considered greater risk than others, and the potential for water corridors such as the Tolka to be vectors of the dispersal of these species is important; as well as accidental transfer or introduction arising from construction activities or recreational activities.

4.3.6 EXISTING ISSUES: BIODIVERSITY, FLORA AND FAUNA

Projected increases in temperature, wind speeds, cold snaps and rainfall will put an increased stress on biodiversity, by causing damage, habitat loss and increasing the prevalence of invasive species.

Flood plains and wetland areas are essential for flood control, pollution control, water quality and supply as well as act as vital carbon sinks, along with peatlands and woodlands, which could help address climate change.

Changes in precipitation levels, air and soil temperatures, water availability and sea level rise all have implications in terms of

effects on biodiversity. The effects will be cumulative, long-term and often complex. The uncertainty that surrounds climate change and what will occur also adds to the complexity and uncertainty of identifying impacts.

Other key issues relate to the following:

- The potential for climate change to increase spread of non-native species, habitat change and increases spread of pathogens
- Using nature based solutions to adapt to climate change
- Ensuring increased walking and cycling proposals minimise adverse effects to flora and fauna.

The SEA ER of the Fingal CDP 2017-2023 identified the following:

- Impact of predicted sea level rises due to climate change, increase in storm surges and high tides will increase extent, severity and recurrence of coastal flooding, leading to increased coastal erosion.
- Development in coastal areas must recognise the need for coastal protection and the role that coastal habitats such as salt marshes and sand dunes play in this.

The SEA ER of the Eastern and Midland RSES identifies further potential issues relating to this CCAP:

- Loss or disturbance of habitats and species from land use change and changes to land management; and
- in combination/cumulative effects without landuse plans and programmes such as forestry, fisheries etc.

Figure 4 Special Area of Conservation sites within 15km of the County

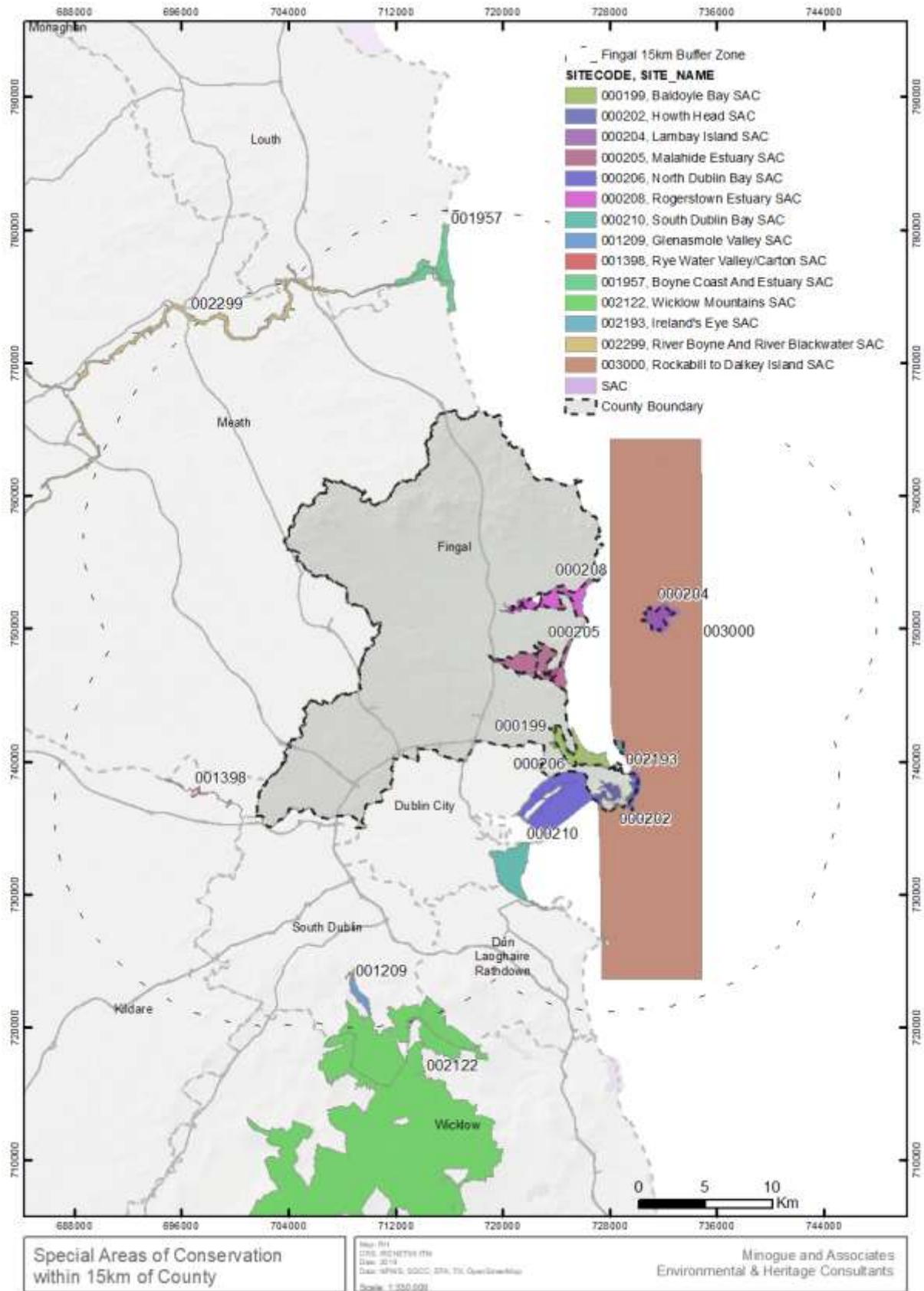


Figure 5 Special Protection Area sites within 15km of the County

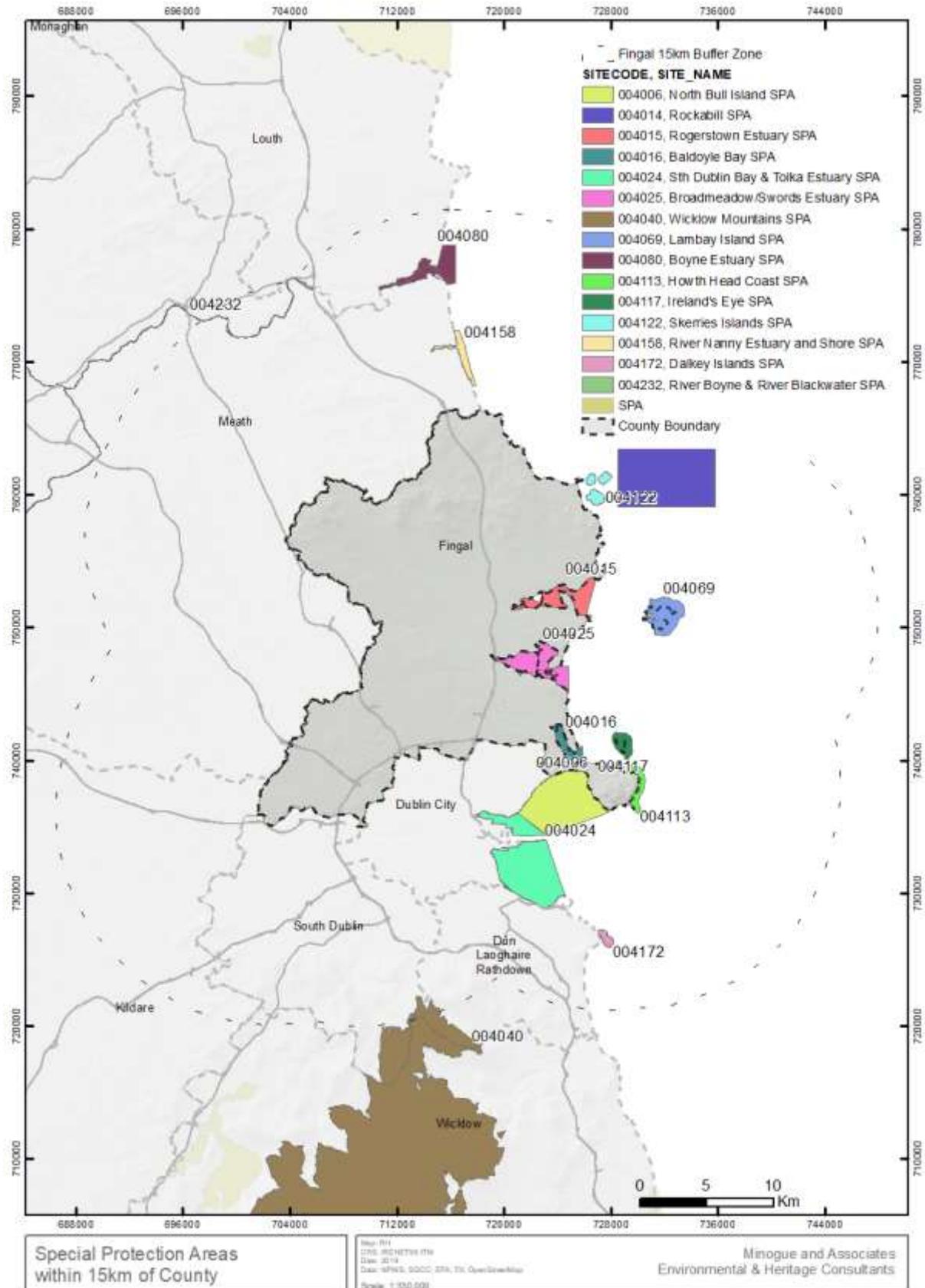
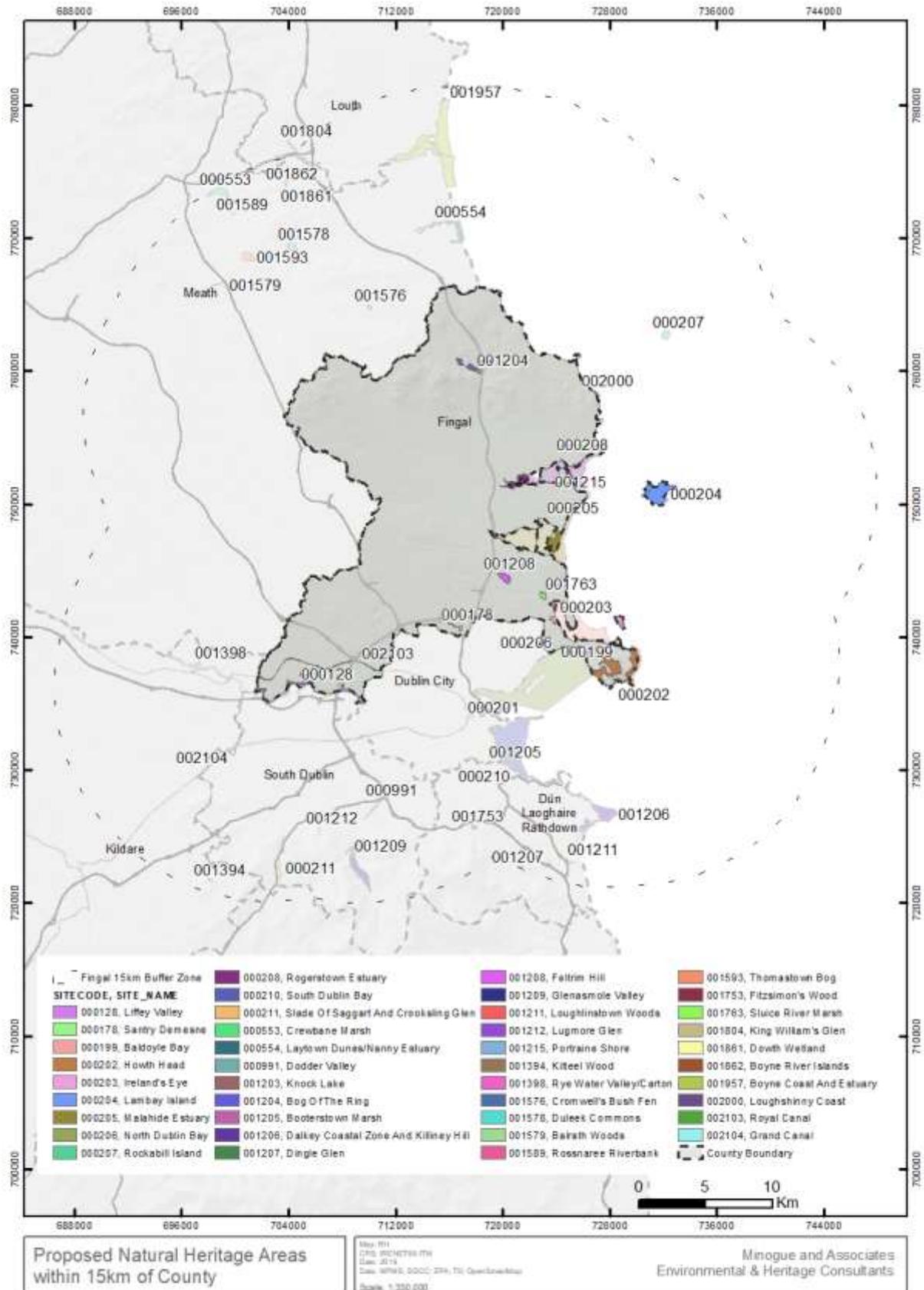


FIGURE 6 PROPOSED NATURAL HERITAGE AREAS



4.4 WATER RESOURCES¹² INCLUDING FLOOD RISK

Water resources and their quality have a clear interaction and impacts with other environmental parameters, therefore its protection and enhancement is of particular importance.

4.4.1 WATER FRAMEWORK DIRECTIVE

The Water Framework Directive (WFD) is a key initiative aimed at improving water quality throughout the EU. It applies to rivers, lakes, groundwater, estuarine and coastal waters. The Directive requires an integrated approach to managing water quality on a river basin basis; with the aim of maintaining and improving water quality. The WFD identifies River Basin Districts as the key management units with clearly defined water bodies forming the basis for assessment reporting and management. The first cycle of RBD management plans were from 2009 to 2015. For the second cycle the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts have been merged to form one national River Basin District.

The most recent data for the new plans being prepared is from the catchments.ie website. A catchment is an area where water is collected by the natural landscape and flows from source through river, lakes and groundwater to the sea. Two catchments drain the county, the predominant being the Liffey and Dublin Bay, and the northern catchment the Nanny-Delvin catchment. A summary of these is below:

Liffey and Dublin Bay: This catchment includes the area drained by the River Liffey and by all streams entering tidal water between Sea Mount and Sorrento Point, Co. Dublin, draining a total area of

1,616km². The largest urban centre in the catchment is Dublin City. The other main urban centres are Dun Laoghaire, Lucan, Clonee, Dunboyne, Leixlip, Maynooth, Kilcock, Celbridge, Newcastle, Rathcoole, Clane, Kill, Sallins, Johnstown, Naas, Newbridge, Athgarvan, Kilcullen and Blessington. The total population of the catchment is approximately 1,255,000. The Liffey catchment contains the largest population of any catchment in Ireland and is characterised by a sparsely populated, upland south eastern area underlain by granites and a densely populated, flat, low lying limestone area over the remainder of the catchment basin.

Nanny Delvin Catchment: This catchment includes the area drained by the Rivers Nanny and Delvin and by all streams entering tidal water between Mornington Point and Sea Mount, Co. Dublin, draining a total area of 711km². The largest urban centre in the catchment is Swords. The other main urban centres in this catchment are Donabate, Lusk, Skerries, Balbriggan, Stamullin, Laytown, Bettystown, Duleek, Ashbourne, Ratoath and Dunshaughlin. The total population of the catchment is approximately 159,230 with a population density of 224 people per km². This catchment is characterised by an undulating landscape, underlain for the most part by impure limestones and shales with metamorphic bedrock underlying the northern part of the catchment. There are no significant sand or gravel aquifers in the catchment.

4.4.2 SURFACE WATERS

Surface Waters. The main rivers within Fingal are the Mayne River, sections of the Tolka River, the Ward River, the Broadmeadow River and the Delvin River, and their associated tributaries, as shown in **Figure 7** along with their most recent available water quality status.

4.4.3 GROUNDWATER:

¹² From Catchments.ie

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.

The overall status of the Groundwater is good; the main risks are from urban derived pressures

4.4.5 COASTAL WATERS

Marine Spatial Planning (MSP) will be a key requirement and challenge in planning for climate change in Ireland as a coastal county, will be of particular relevance to the local authority.

Directive 2014/89/EU established a framework for MSP and details the main goals (Article 5) and minimum requirements (Article 6). The Marine Spatial Plan must be in place by March 2021.

The transitional water bodies adjacent to the draft Fingal DP which are currently monitored for water quality by the EPA are the Rogerstown Estuary and the Mayne Estuary. Both estuaries have been classified as eutrophic. The coastal water bodies around Fingal are comprised of Malahide Bay, the Northwestern Irish Sea, Irish Sea Dublin and Dublin Bay. Malahide Bay is classified as intermediate while the other coastal water bodies are classified as unpolluted.

Of the transitional water bodies, Rogerstown Estuary and the Broadmeadow Water are at poor status; the Mayne Estuary and waters around North Bull Island are at moderate status. Of the coastal water bodies, Malahide Bay is at moderate status; the Irish Sea Dublin and Dublin Bay are at good status; and the Northwestern Irish Sea is at high status. In terms of achieving the WFD objectives in 2015, the entire coastal region of Fingal has been classified as '(1a) at significant risk' of failing to achieve current WFD objectives, with the exception

of the area around the Rockabill Islands, which is classified as '(2b) strongly expected to achieve good status' under current WFD objectives

4.4.4 REGISTER OF PROTECTED AREAS (RPA)

Protected areas are areas that have been designated as needing special protection because of their particular importance for use as bathing waters, drinking water supply, growing and harvesting of shellfish, conserving sensitive habitats and species or because they are particularly affected by eutrophication due to excessive inputs of phosphorus and/or nitrogen.

In the draft Fingal DP area, a stretch of the River Liffey has been identified on the RPA for Drinking Water. The whole section of the River Liffey running along Fingal's southern boundary is listed as a Nutrient Sensitive River and the Inner Broadmeadow Estuary is also listed as a Nutrient Sensitive Area.

Recreational waters (bathing waters) are included in the RPA and contain all the areas listed in the Bathing Water Regulations (S.I. 155/1992). These include Sutton (Burrow Beach), Claremont Beach, Portmarnock, Malahide, Donabate, Portrane, Rush (South Beach), Loughshinny, Skerries and Balbriggan.

4.4.5 FLOOD RISK

The Planning System and Flood Risk Management, Guidelines for Planning Authorities, 2009, issued by the DoEHLG and undertaken in conjunction with the OPW, requires Planning Authorities to prepare a Strategic Flood Risk Assessment (SFRA). The primary purpose of the SFRA is to determine flood risk within a particular geographical area. It should be noted the SFRA is an ever evolving document, which is to be reviewed and updated on a regular basis in the light of emerging information, flood data and an improved understanding of flood risk.

A Strategic Flood Risk assessment was undertaken for the County Development Plan. Fingal is vulnerable to adverse

effects from changes in the occurrence of severe rainfall events, other adverse weather conditions and associated flooding of the county's rivers combined with changes in sea level. Local conditions within the county also increase the risk of flooding; these include bridges and culverts, which restrict high flows, debris which can cause blockages and land use changes.

COASTAL PROTECTION STRATEGY STUDY

The Irish Coastal Protection Strategy Study (ICPSS) was commissioned as a national study in 2003 with the aim of providing information to aid decision-making at a strategic level regarding the issues of coastal flooding and coastal erosion extents, and to inform planning and development in and around coastal areas. The study was completed in 2013 and contains strategic coastal erosion maps and flood hazard maps for the present scenario and looking forward to the future (to 2100).

The national coastline has been divided up into broad regions and covered under various work packages. The Fingal coastline was covered under Phase 3 of the strategy (Work Packages 2, 3 and 4A): North East Coast from Dalkey to Omeath. Primary areas of potential flood hazard were identified along this coastal stretch, including: Dublin City, Portmarnock to Bull Island, Portrane to Malahide, Drogheda to Laytown, Annagassan to Cruisetown, Dundalk and Carlingford to Greenore. In addition to the potential risks from flooding, coastal erosion is also an important consideration in a planning context and the ICPSS looked to assess the likely future position of the coastline by the

years 2030 and 2050. From the resulting modelled output and mapping generated,

nine primary areas of coastal erosion risk were identified: Portrane, Skerries, Balbriggan, Bettystown to Laytown, Clogher Head to Baltray, Dunany Point to Cruisetown, Salterstown to Dunany Point, Annagassan and Greenore. The study concluded that in general there was little potential risk from coastal erosion in larger urban areas due to the presence of manmade defences. A maximum erosion rate was derived for Portmarnock Point and equated to an annualised erosion rate of 0.48m per year, while the mean annual erosion rate for the whole north east coastline is estimated at less than 0.1m per year.

4.4.6 KEY ISSUES: WATER RESOURCES

Issues relating to water and climate change include coastal flooding and erosion, sea level rises and settlement, infrastructure and alteration of coastal habitats including estuaries.

- Avoiding the spread of alien and invasive species
- Opportunities to integrate blue infrastructure measures through flood risk management.
- Flood effects on a range of both habitats and species that rely on water quality as well as alterations to coastal and river hydrology

The SEA ER of the Fingal CDP also listed the following issues:

- Need to integrate SUDs into new developments particularly at a level that is appropriate to minimise any adverse deterioration in water quality in the surrounding environment.

FIGURE 7 RIVERS IN FINGAL COUNTY

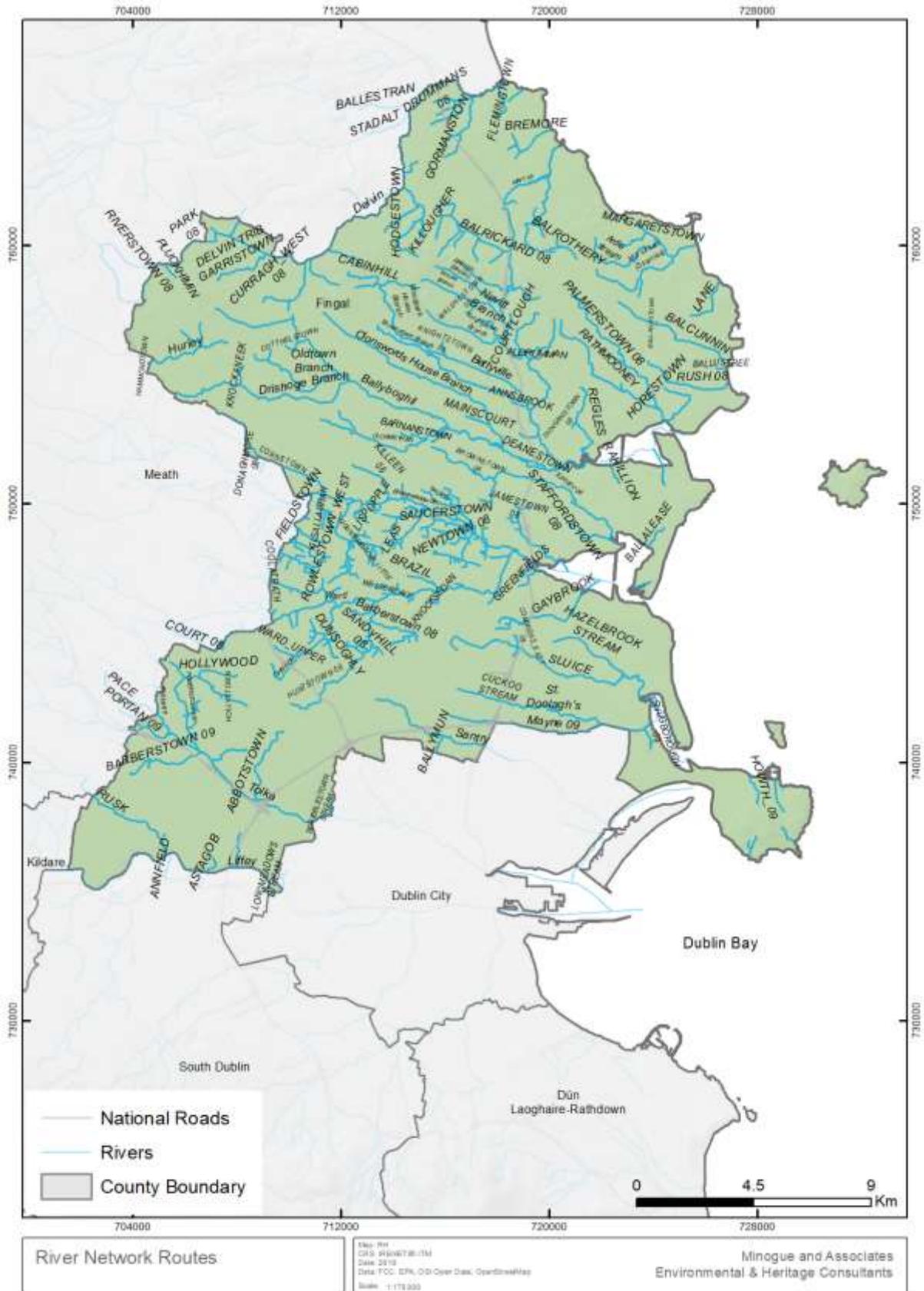


FIGURE 8 WATER FRAMEWORK DIRECTIVE SUBCATCHMENTS OF FINGAL COUNTY

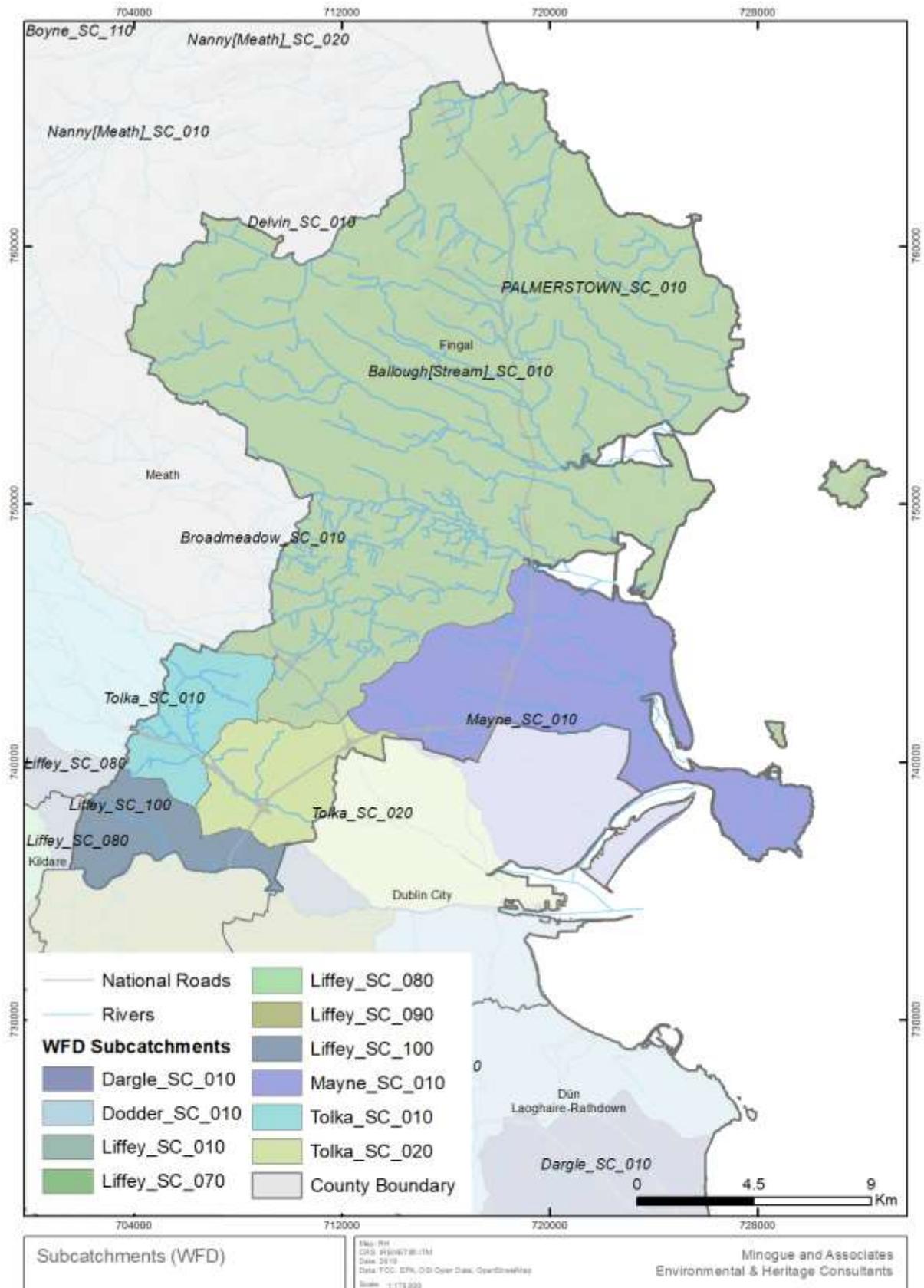


FIGURE 9 WATER QUALITY OF SURFACE WATER FINGAL COUNTY

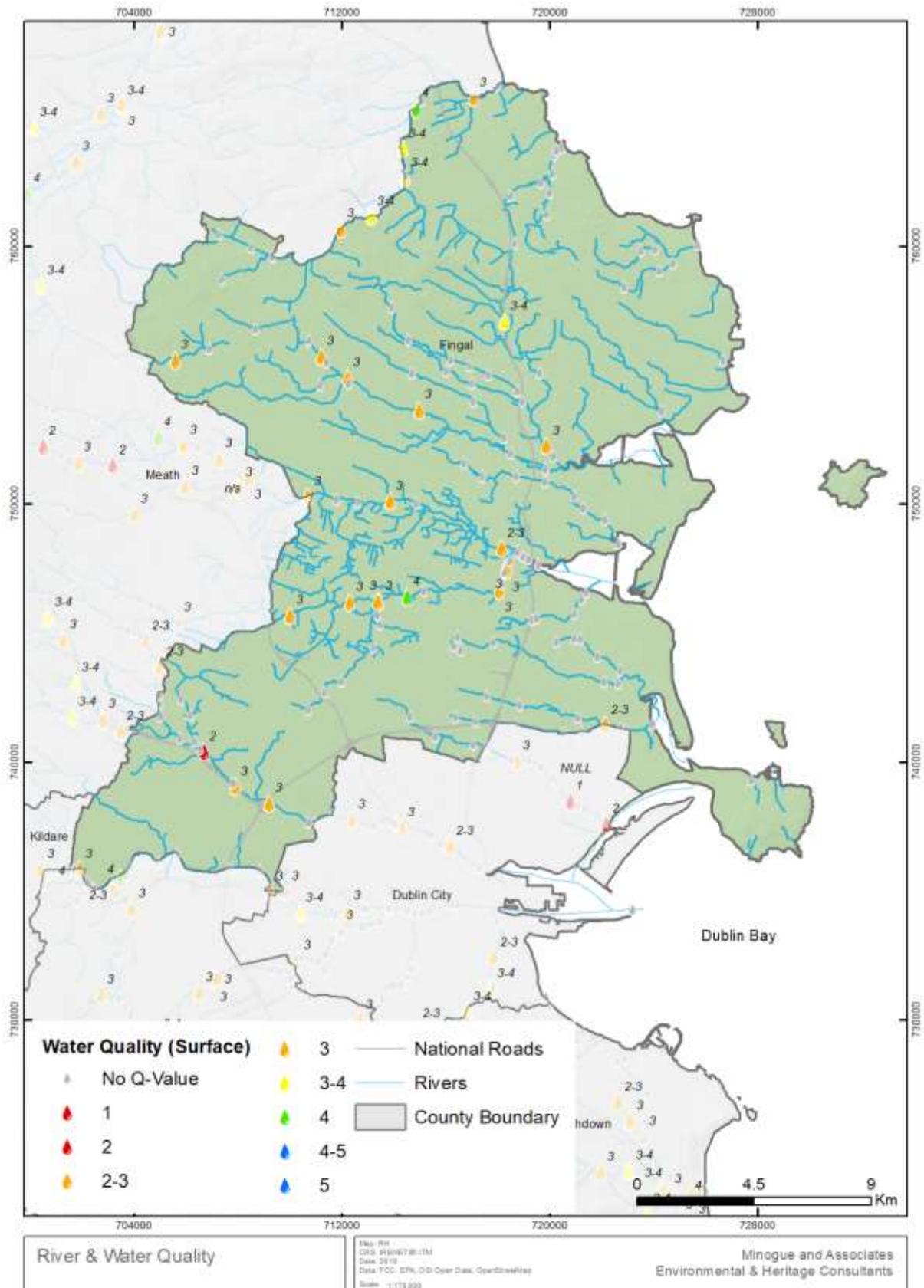
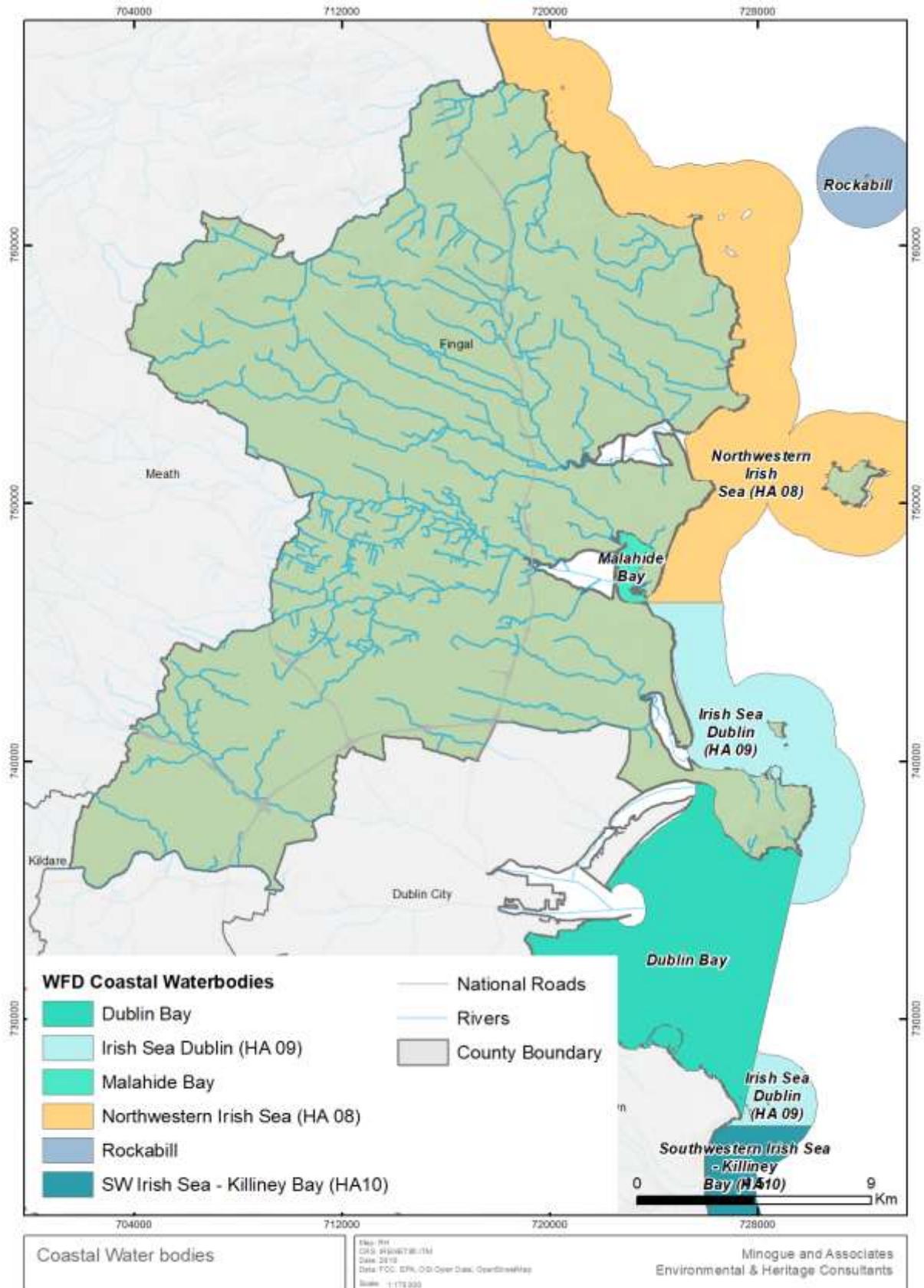


FIGURE 11 COASTAL WATERBODIES FINGAL COUNTY



4.5 SOIL AND GEOLOGY

4.5.1 GEOLOGY

Bedrock geology is the county comprising of limestone, see **Figure 12**. There are also number of Geological Heritage Sites in the County, see **Figure 13**.

The oldest bedrock in Fingal is Cambrian (lower Palaeozoic) in age, and comprised of hard quartzites, forming the outcrops at Howth head and Ireland's Eye. Ordovician age volcanics along the east coast are related to a time of volcanic activity, with Lambay Island representing the remnants of an extinct volcano.

Fingal is comprised of various bedded and unbedded limestone formations which were deposited during the early Carboniferous period, when the eastern part of Ireland underwent uplift and erosion. Subsequent subsidence over millions of years coupled with changing sea levels resulted in the deposit of shallow and then deeper marine sediments accumulating across much of the county.

Much of the bedrock, especially on lower ground is covered by a layer of Quaternary age sediments (2.6 million years ago to present) and much of this material is glacial till and alluvial in nature.

4.5.2 SOIL

Soil can be considered as a non-renewable natural resource because it develops over very long timescales. It is an extremely complex, variable and living medium and performs many vital functions including: food and other biomass production, storage, filtration and transformation of many substances including water, carbon, and nitrogen. Soil has a role as a habitat and gene pool, serves as a platform for human activities, landscape and heritage and acts as a provider of raw materials.

Such functions of soil are worthy of protection because of their socio-economic as well as environmental importance. Soils in any area are the result of the interaction of various factors, such as parent material, climate, vegetation and human action.

There is no overarching soil legislation in place currently, however the 7th Environment Action Programme (EAP) recognises the challenge of soil degradation and provides by 2020 that land be managed sustainably with soil adequately protected.

The dominant soils types across much of Fingal, are characterised by fine loamy drifts with limestones and siliceous stones. Clayey soils occur towards the north of Fingal. Urban/made ground is interspersed throughout the county, particularly along the coast and in the south of the county, reflecting settlement patterns. The coastal areas are by their nature characterised by the presence of rock outcroppings, beaches, sand dunes and tidal/marshy areas. Soils in the river valleys are comprised of riverine alluviums with marine alluviums deposited near the coast.

It is important to both recognise and promote this role in terms of the carbon storage capacity of soil, potential biodiversity and water benefits (subject to agricultural practice) and food security. **Figure 14** presents the county soil map.

4.5.3 EXISTING ISSUES: GEOLOGY AND SOIL

- Maintaining and enhancing soil function and its carbon storage role where possible.
- Addressing extent of soil sealing, increased surface run off and poor permeability of lands in the county

- Retention and creation of areas of greenfield in terms of open space, green infrastructure, permeability and biodiversity considerations.
- Promoting soil conservation and food security in areas of agricultural production in the county.

The SEA ER of the Fingal CDP provides the following points:

Further, greenfield development involves the building upon and therefore sealing off of soil, which in itself presents an environmental pressure. The perception of Fingal as having a large 'land bank' has led and will lead to increasing pressure on agricultural land, a vital resource

within its own right and one that could become increasingly important in seeking to mitigate against climate change by increased local food production. The north of Fingal in particular is home to excellent quality soils and this region produces 47% of national vegetable output and 37% of protected fruits, vegetables and nursery plants (i.e. those grown under cover e.g. in greenhouses). The current challenges are the management of future growth while maintaining agricultural production, and reducing urban sprawl to preserve high quality soils for agriculture and food production.

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.

FIGURE 13 GEOLOGICAL HERITAGE SITES IN THE COUNTY

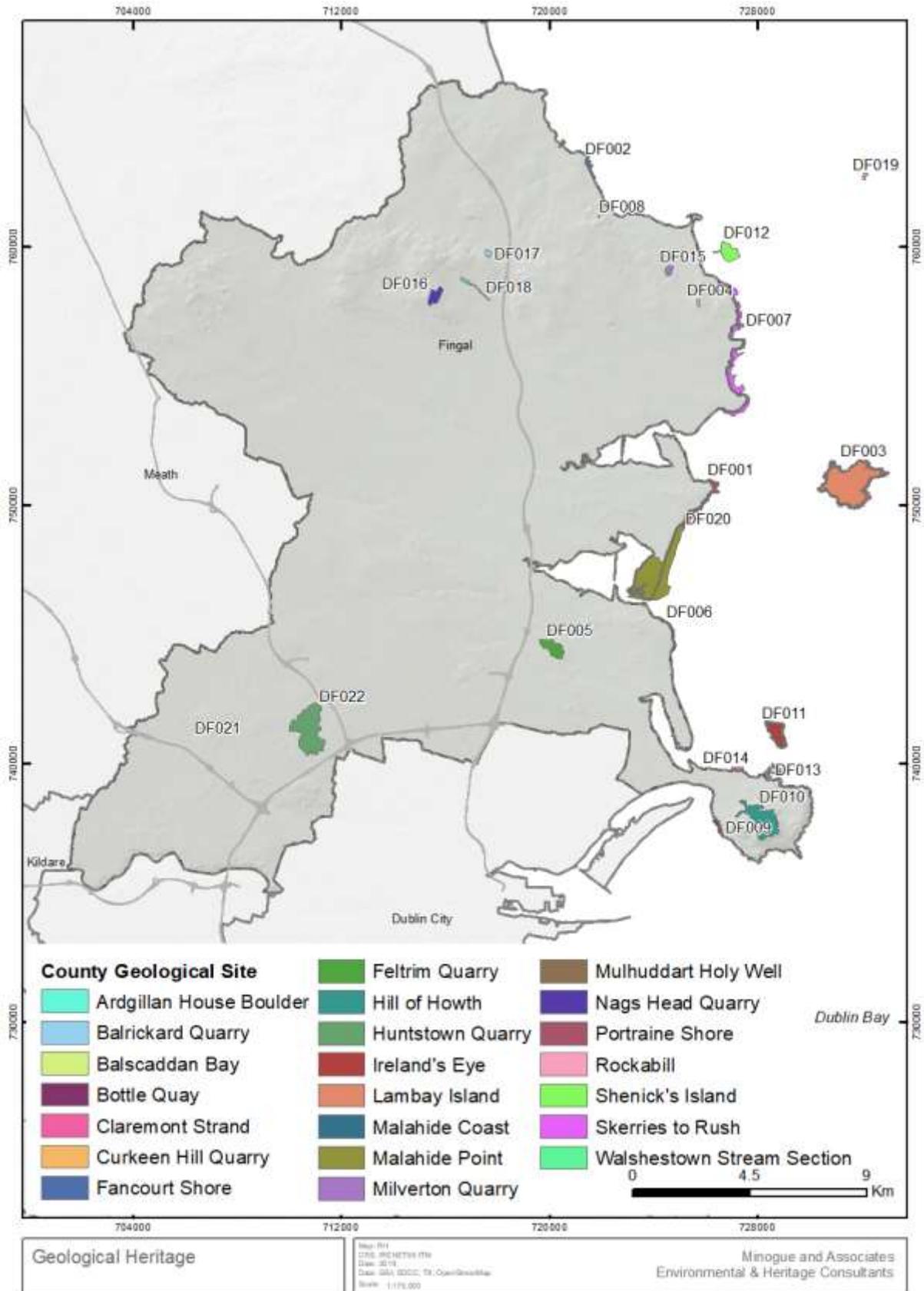
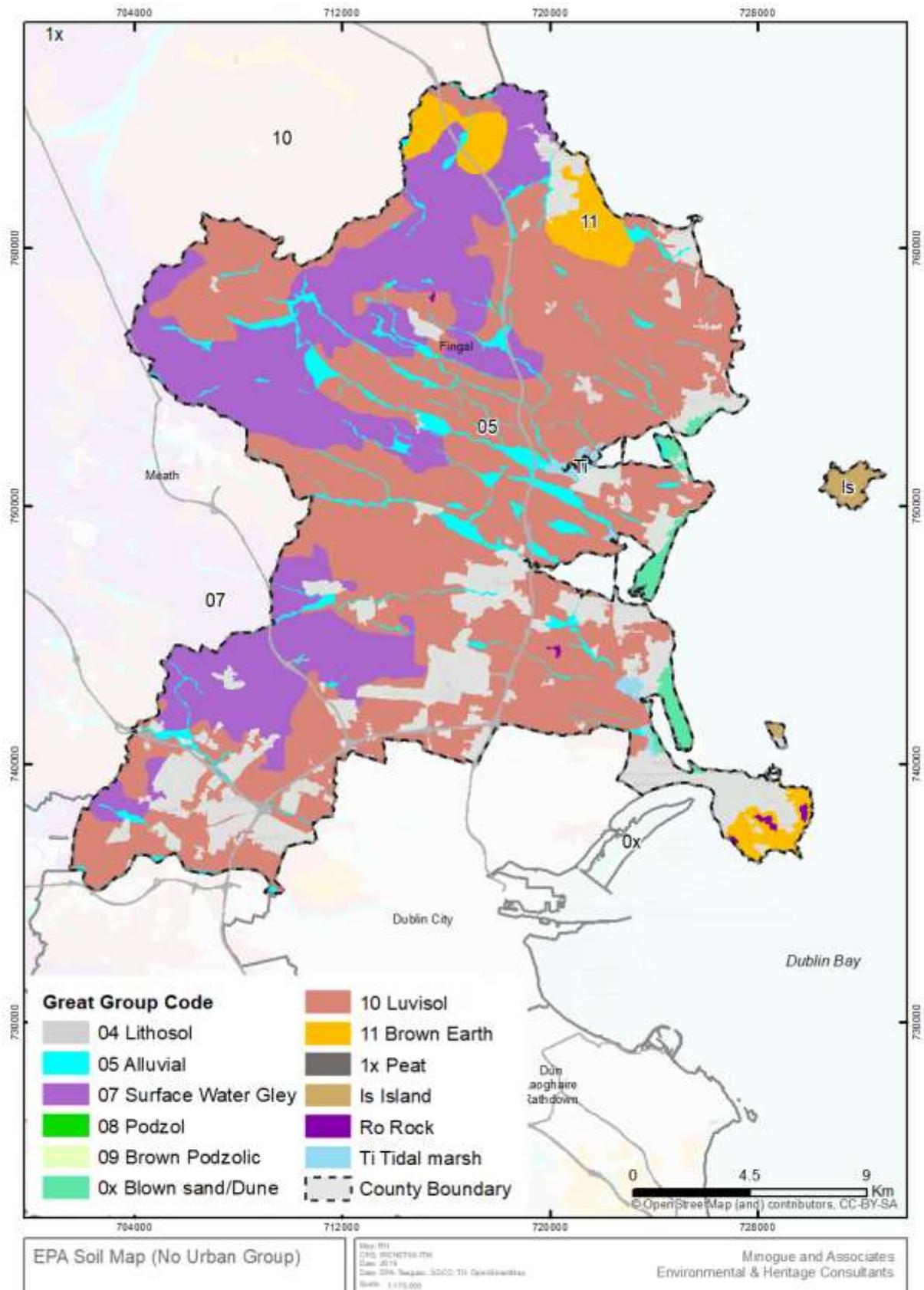


FIGURE 14 SOIL MAP OF THE COUNTY



4.6 CULTURAL HERITAGE

Heritage, by definition, means inherited properties, inherited characteristics and anything transmitted by past ages and ancestors. It covers everything, from objects and buildings to the environment. Cultural heritage includes physical buildings, structures and objects, complete or in part, which have been left on the landscape by previous and indeed current generations. It contains a number of actions to include communicating the story of the County's heritage, caring for and managing that heritage, and increasing the level of community involvement in heritage.

4.6.1 ARCHAEOLOGY

Archaeological heritage is defined as including structures, places, caves, sites, features or other objects, whether on land, underwater or in inter-tidal zones. All archaeological structures, constructions, groups of buildings, development sites, all recorded monuments as well as their contexts, and moveable objects, situated both on land and underwater are part of the

Therefore the archaeological heritage of the area is not confined to the archaeological sites within the Record of Monuments and Places. It also includes any archaeological sites that may not have been recorded yet, as well as archaeology beneath the ground surface, or underwater as well as the context of any such site discovered.

Fingal has a rich archaeological and architectural heritage ranging from historic farmhouses and buildings, cottages and Martello towers to demesne houses and their designated landscapes.

Archaeological remains, in the form of field monuments and artefacts, point to

occupation on the coast of north county Dublin since prehistoric times. Coastal landscapes are considered to have an intrinsically significant archaeological potential unless proved otherwise by archaeological investigation. As with rivers, the coast has always been a focus for human activity, with the sea providing a source of food and raw materials as well as a means of travel and communication and a place to build communities. Overall, there are currently 1,070 known archaeological sites and monuments in Fingal. The wealth of archaeological sites ranges from cairns and passage graves to medieval churches and castles. The towns of Swords, Balrothery and Lusk are of particular archaeological significance with very important medieval structures surviving intact above ground and the potential of archaeological finds below ground. These towns have zones of archaeological potential delineated by the National Monuments Section of the Department of Environment, Heritage and Local Government (DEHLG) around their cores to protect their significant archaeological heritage. There are a number of industrial archaeological sites in Fingal, such as Skerries Windmill complex, remains of a limekiln in Malahide Castle Demesne and the copper mines north of Loughshinny. The presence of a passage tomb, cists and a midden on a small promontory north of Rush village bears out the archaeological potential of this stretch of coastline and it is likely that further evidence of human activity survives along the coast and its environs.

SHIPWRECKS

Section 3 of the National Monuments (Amendment) Act 1987 makes specific provisions for the protection of shipwrecks and underwater archaeological objects. Fingal's rivers and tidal estuaries may contain such objects

and any development within these areas should take into consideration the potential for archaeological discoveries.

A number of these shipwrecks are present in the coastal waters around Fingal; named shipwrecks include: Bydand, County of Lancaster, Flying Dart, HMD Deliverer, Marlay, MFV Benaiah, Queen Victoria, RMS Taylor and the SS Polwell.

4.6.2 ARCHITECTURAL HERITAGE

Part IV of the Planning and Development Act 2000 (as amended) defines the term “architectural heritage” as structures and buildings together with their settings and attendant grounds, fixtures and fittings, groups of structures and buildings and sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, and “where a structure is protected, the protection includes the structure, its interiors and the land within its curtilage (including their interiors) and all fixtures and features which form part of the interior or exterior of all these structures”.

Fingal County has a diverse building stock ranging from farmsteads, small cottages and large country houses to the architecture of a capital city, including an international airport, large shopping centres and modern office blocks. Most people identify the large estates of Luttrellstown, Newbridge, Ardgillan and Malahide as being of significant architectural merit, but more modest and functional structures also form part of the architectural heritage of the County. This includes lighthouses; the 19th century railway stations; the Martello towers; holy wells; milestones; waterpumps and individual thatched buildings. Many of these structures are listed on the National Inventory of Architectural Heritage contained within the Fingal DP.

An Architectural Conservation Area (ACA) is a place, area, group of structures or townscape that is of special, architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest or value, or contributes to the appreciation of protected structures.

In addition to the Record of Protected Structures, structures of architectural heritage merit, although not put forward for inclusion in the Record of Protected Structures (RPS) may be of local value and may continue to contribute to the identity of a particular area of the city.

Figure 15 shows the archaeological recorded sites in the County and **Figures 16 and 17** shows the Record of Protected Structures and ACAs and Conservation Areas.

4.6.3 EXISTING ISSUES: CULTURAL HERITAGE

- Potential for additional archaeological resources
- Adapting older buildings to become more energy efficient or enhance their energy efficiency
- Potential climate change effects on built heritage associated with more extreme climate events.
- Given the spatial concentration of many built heritage features associated with the coastline of Fingal County the potential effects of sea rises, and surges could increase effects on these features and their settings.
- Protected structures close to flood risk areas
- Increased storm activity has implications for those coastal sites prone to erosion;

- Coastal defence construction pressures such as construction of sea walls, gabions, rock armour revetments and groynes.

These influences may result in damage to archaeological features in the coastal zone (e.g. middens)

and intertidal (e.g. fish ponds) and subtidal areas (e.g. shipwrecks).

FIGURE 15 SITES AND MONUMENTS FINGAL COUNTY

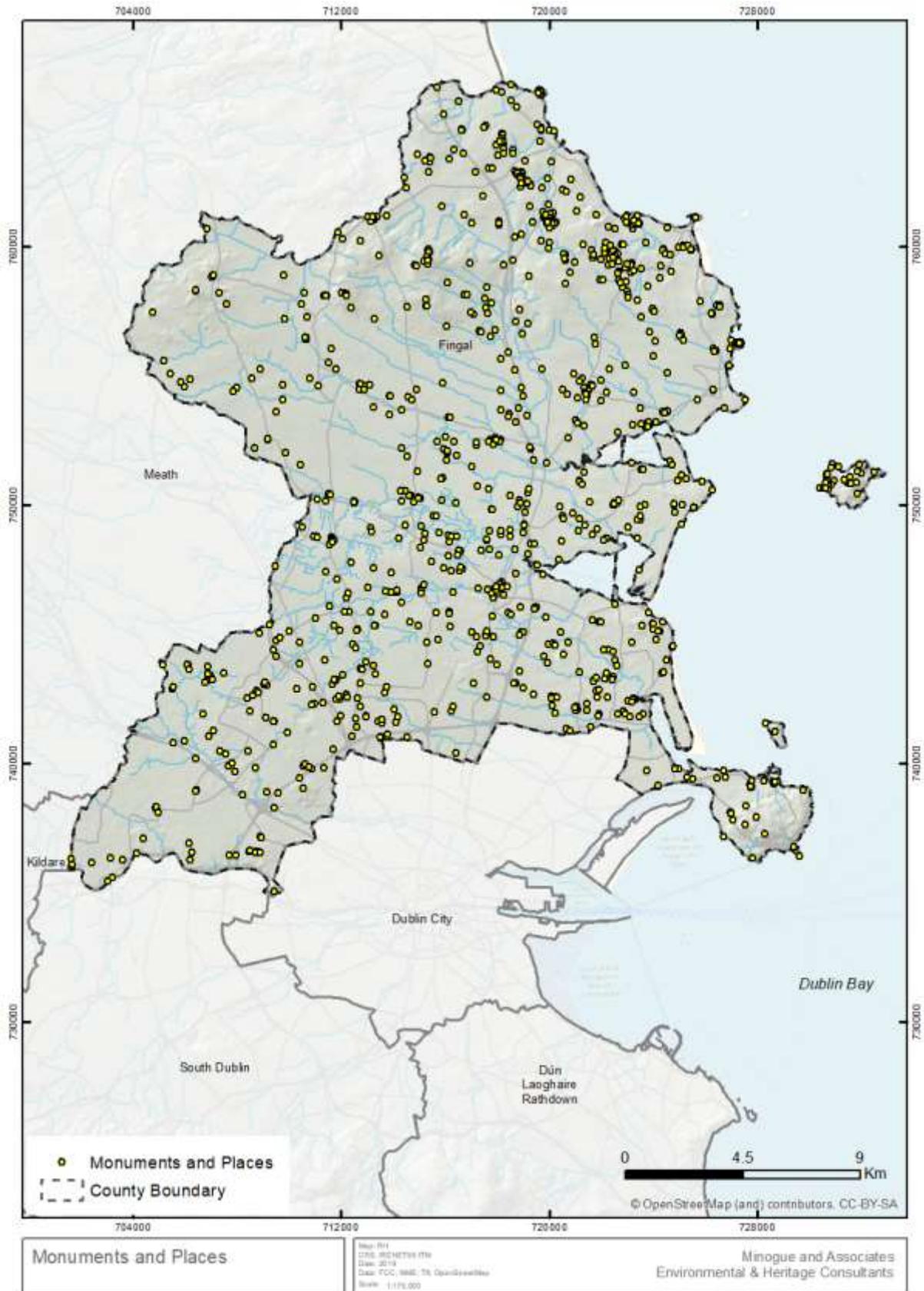


FIGURE 16 RECORD OF PROTECTED STRUCTURES FINGAL COUNTY

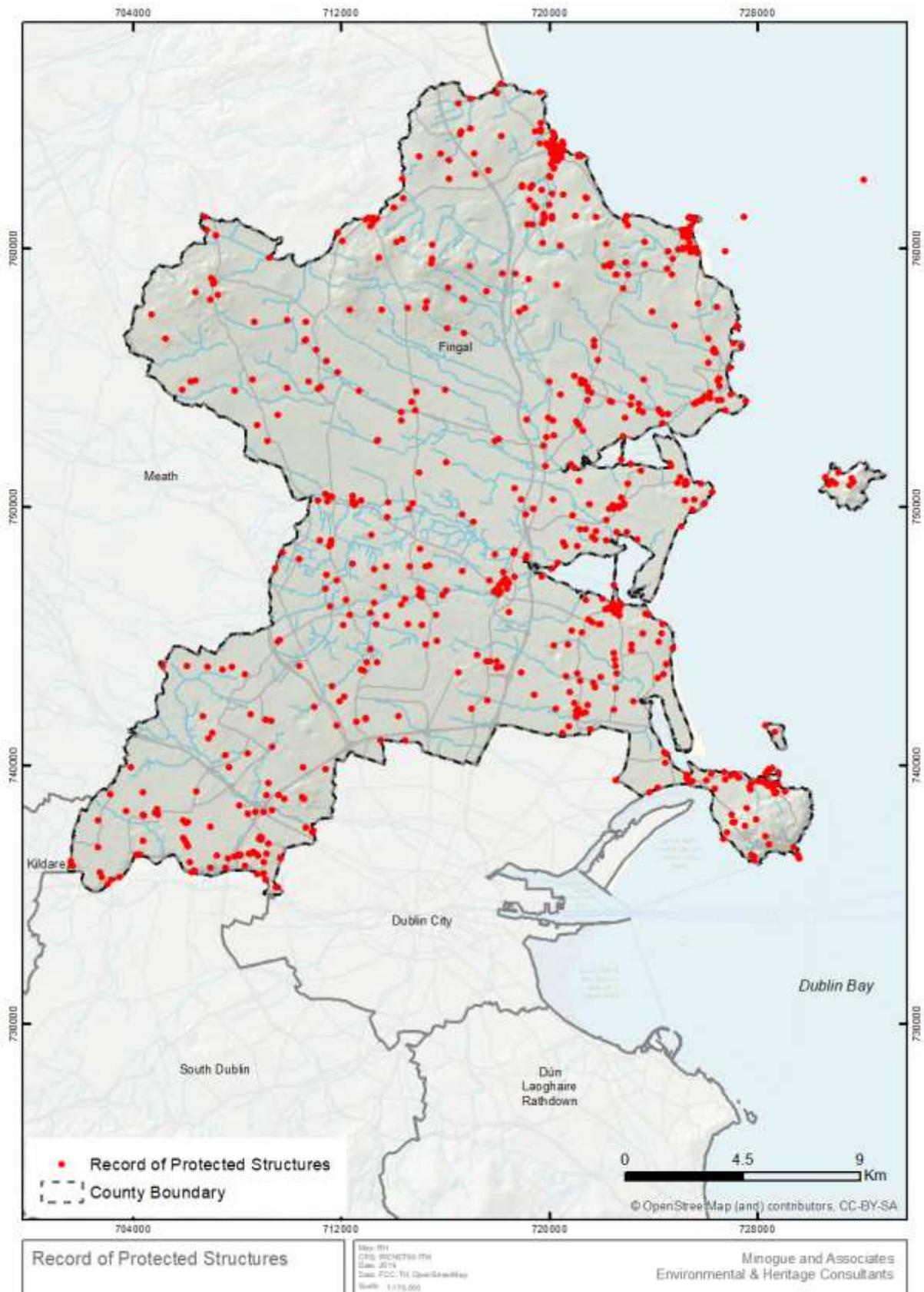
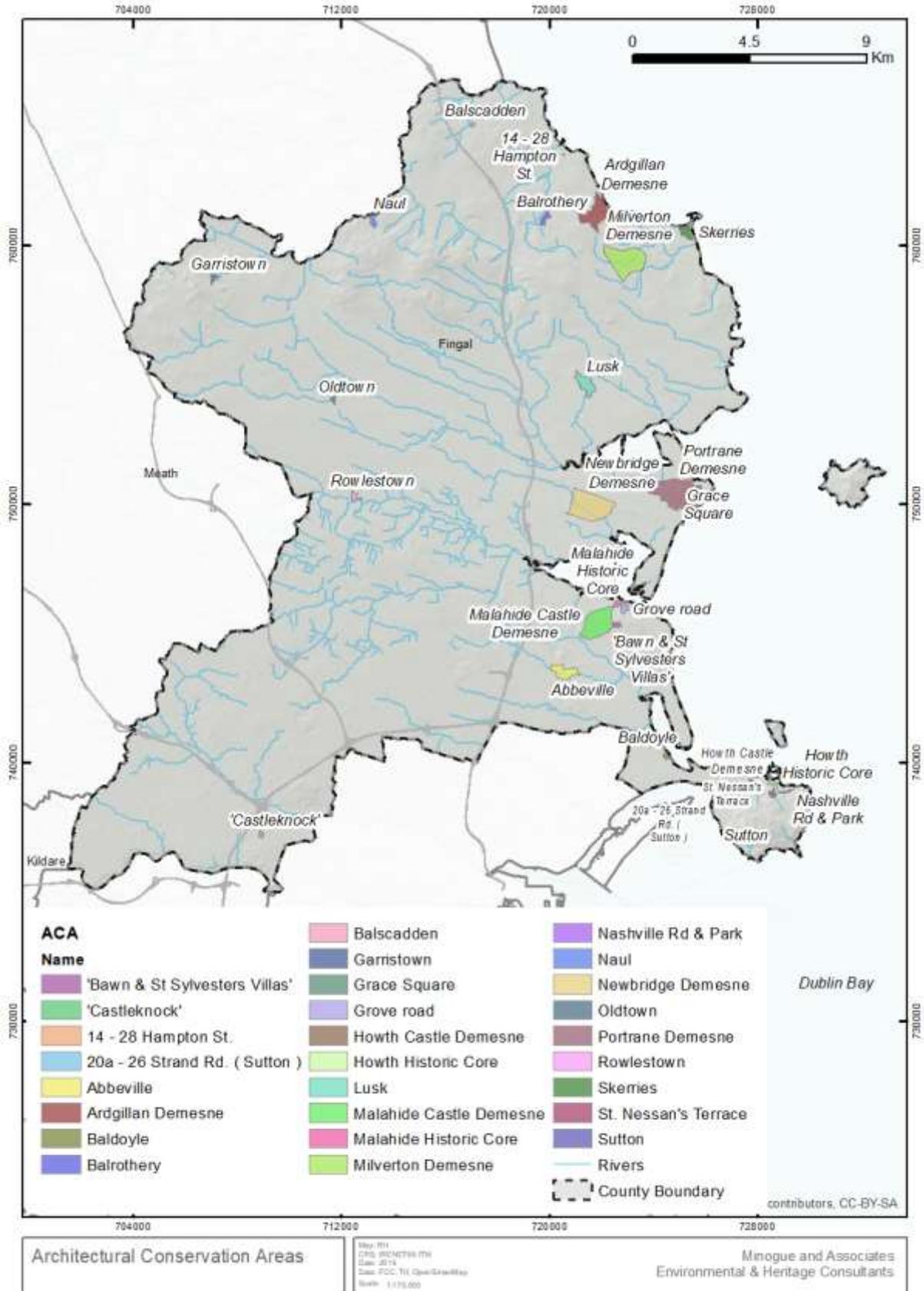


FIGURE 17 CONSERVATION AREAS IN FINGAL COUNTY



4.7 LANDSCAPE

Ireland is a signatory to the European Landscape Convention, which aims to promote landscape protection, management and planning and to organise European cooperation on landscape issue.

Ireland ratified the Convention in 2002 and it came into effect in 2004. Ireland, as a party to the treaty, is required to undertake general measures to recognise landscapes in law, establish landscape policies with public participation and to integrate landscape into its existing policies, such as regional and town planning. National Landscape Strategy for Ireland 2015-2025 was recently published, in line with Ireland's obligations under the European Landscape Convention.

The key objectives of this Strategy are the recognition of landscape in law and the provision of a policy framework to put measures in place for the management and protection of landscape, the production of a national landscape character assessment through data gathering and an evidence based description of character assessment, raising awareness and public consultation. An implementation programme will take place over the strategy period. Arising from the Strategy is the production of guidelines, and once these guidelines are published it is intended that the Landscape Character Areas will be reviewed.

Fingal has a rich and varied landscape ranging from tranquil villages in rolling country landscape, picturesque seaside villages and rugged coastline to vibrant urban developments and historic towns.

Fingal has been changing quite rapidly as a result of high levels of development during the economic boom and rising

population. The challenge that is faced is to manage the landscapes so that change is positive in its effects, so that the landscapes that are valued are protected and those that have been degraded are enhanced. The LCA for Fingal currently divides the county into 7 Landscape Character Areas and are shown in **Figure 18**. These are:

- f Coastal Character Area – the landscape feature that dominates the entire eastern edge of the county, with beaches, headland hills and cliffs;
- f Estuary Character Area – the intertidal sand and mudflats, and saltmarshes at Rogerstown, Swords/Malahide and Baldoyle;
- f River Valleys/Canal Character Area – the Tolka and the Liffey Valleys together with the Royal Canal Corridor constitute this Character Area
- f Airport and Swords Character Area – increasing industrial activity in this area is beginning to encroach on agricultural land;
- f High Lying Agricultural Character Area – an area of upland rising to 176 metres at Hillfort Mound, to the southeast of Naul village. These hills provide views of the Mourne Mountains to the north, the coastline to the east and the Wicklow Mountains in the south;
- f Low Lying Agricultural Character Area – large open areas of pasture, arable and grassland that are uninterrupted by large settlements; and
- f Rolling Hills with Tree Belts Character Area – the valleys of the River Ward and River Broadmeadow and their surrounding farm and woodland

HIGH AMENITY ZONES AND SENSITIVE LANDSCAPES

A High Amenity Zoning has been applied to areas of the county of high landscape value. These are areas that consist of landscapes of special value or sensitivity in which inappropriate development would contribute to a significant diminution of landscape amenity in the county. High amenity landscapes include the coastal zone, river valley areas (Liffey, Delvin, Ward and Tolka) and the Naul Hills area.

There are a number of islands in Fingal, namely Lambay Island, Ireland's Eye, Shenick's Island, Colt Island, St. Patrick's Island and Rockabill Island. Lambay Island is the only inhabited island. All of the islands are zoned as High Amenity Areas and they are all designated nature conservation sites of national or international importance.

The areas adjacent to the High Amenity areas are also sensitive landscapes as development in these areas may affect directly or indirectly the quality of the High Amenity areas. These have some of the qualities of the High Amenity Zone but to a lesser degree. They are support areas to the High Amenity Areas in which development is difficult to integrate. In

some cases they have been identified because inappropriate development in these areas may have a detrimental effect on the landscape quality of the High Amenity Areas, and thus the County as a whole.

4.7.1 Existing Issues: Landscape

Landscape measures represent a key opportunity to adapt and respond to climate change impact through the following

- Blue and green infrastructure planning and delivery
- Allowing for landscape scale response to increased water levels and flood risk
- Planning for ecological connectivity
- In terms of climate change and landscape issues, potential issues including alteration of landscapes associated with changing vegetation, for example changing forestry practices, increased surface water and drying out of wetter, acidic soils.

FIGURE 18 LANDSCAPE CHARACTER AREAS FINGAL COUNTY

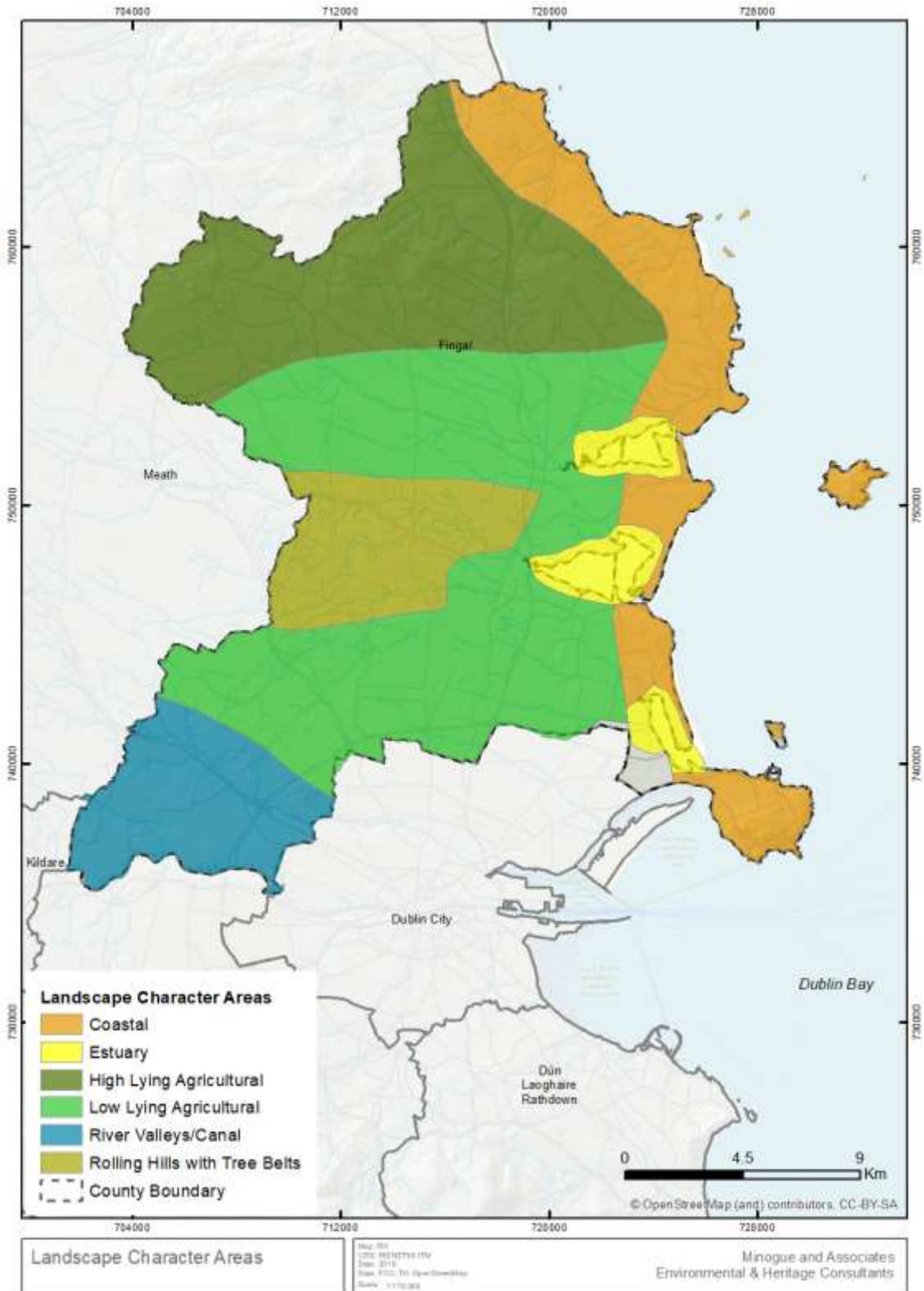
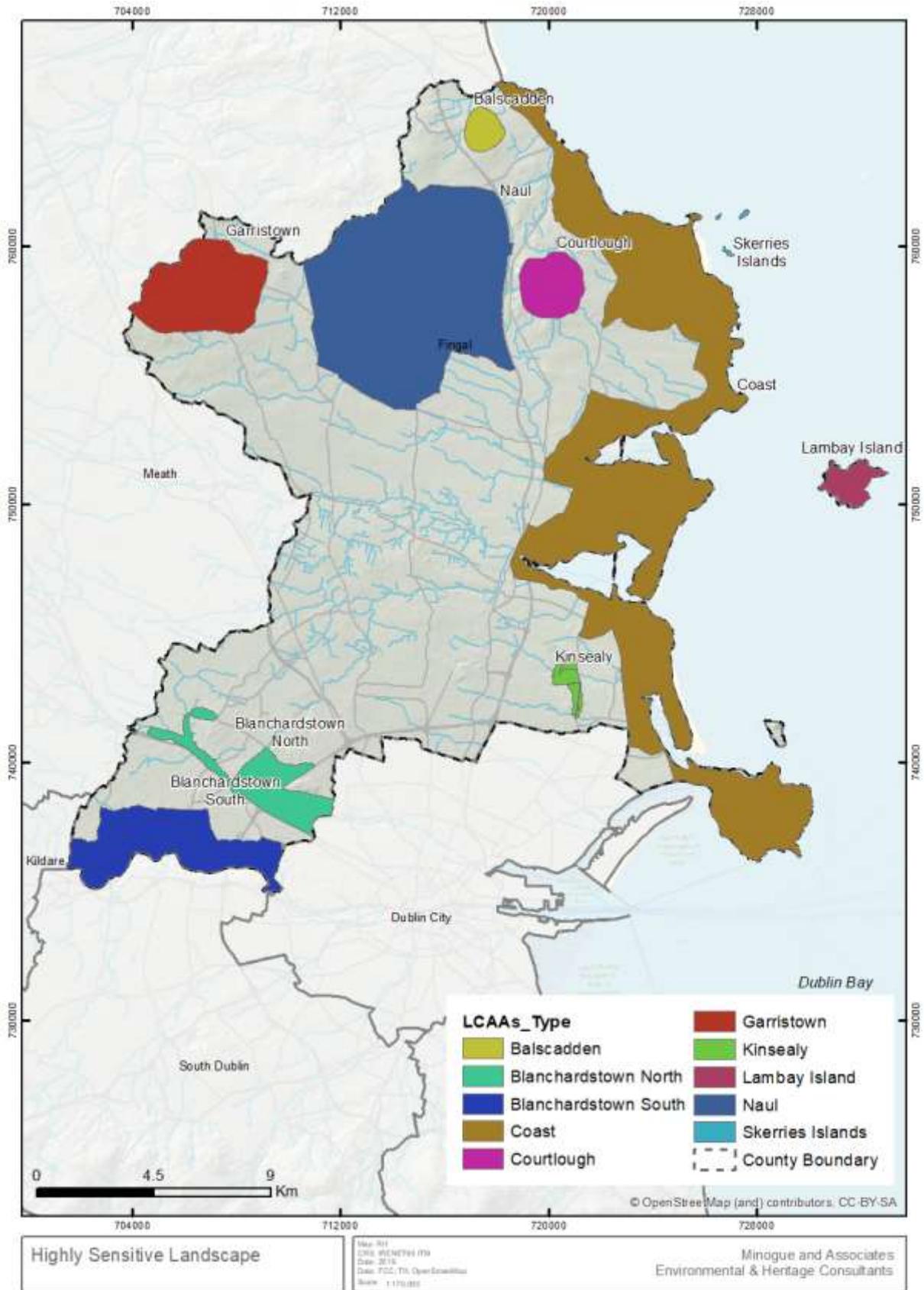


FIGURE 19 AREAS OF LANDSCAPE SENSITIVITY



4.8 AIR QUALITY AND CLIMATE

4.8.1 AIR QUALITY

The Air Quality Index for health (EPA) provides air quality information with health advice for both the general public and people sensitive to air pollution. The index is displayed on a colour-coded map, updated hourly. The index is based on information from monitoring instruments at representative locations in each region.

Further information on Air Quality and Human Health is provided in Section 4.2.4.

4.8.2 CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS

Adaption and responding to climate change is a key objective the CCAP and the following baseline is taken from the Fingal CCAP. The adaptation baseline has identified that the effects of climate change are already impacting Fingal at a significant rate and are very likely to increase in their frequency and intensity.

The number of days with heavy rainfall has increased and the amount of extreme flooding events has also risen in the last 10 years. Fingal has also experienced extreme temperatures, as witnessed recently in 2018, with Met Éireann issuing its first ever Status Red warning for snow in February, followed by one of the hottest summers on record during June and July.

All these extreme weather events clearly highlight the need to reduce the impacts that climate change is having on the environment, the economy and the citizens of Dublin.

FINGAL CC LOCAL AUTHORITY EMISSIONS

Fingal County Council (FCC) is responsible for the energy use and emissions from its buildings and facilities, its public lighting, and also from its vehicle fleet. The information from the Sustainable Energy Authority of Ireland's (SEAI's) Monitoring

and Reporting (M&R) database shows that FCC consumed a total of 56.5 gigawatt hours (GWh) of primary energy in 2017. The energy database also shows that FCC improved its energy performance by 30.3% between the baseline year (which is an average of between 2006 - 2008) and 2017, which represented a cumulative absolute saving of 12 GWh of primary energy during the same period. This highlights a gap-to-target of 2.7%, meaning that FCC must improve its energy performance by a further 2.7% between now and 2020, in order to meet its 33% energy reduction target.

The Council's public lighting was the highest energy consumer, accounting for 51% of the Council's overall primary energy consumption. Buildings and facilities were the second highest energy consumer, accounting for 38% of the total energy consumption, while the municipal fleet accounted for 11% of the total energy use.

As a signatory to the Covenant of Mayors for Climate and Energy, FCC is committed to reducing its own emissions by 40% by 2030, compared to the baseline year, which is an average of between 2006-2008.

Public lighting was the highest contributor, accounting for 51% of the total emissions. This was followed by buildings and facilities, and the municipal fleet, each contributing 37% and 12% to the Council's emissions, respectively.

In 2017, 77% of the Council's emissions came from electricity; this was mainly due to the large amount of electricity used in public lighting and in the Council's buildings and facilities. Natural gas contributed 11% to emissions, the majority of which was used for space heating in Council buildings and facilities. Diesel, which made up the majority of the

energy used for the vehicle fleet, contributed 12% to the total emissions.

TOTAL FINGAL COUNTY EMISSIONS

The most recently-available information for total emissions in the entire Fingal area is based on Census 2016 data. Therefore, using this data, Codema was able to calculate that the total emissions for the Fingal area amounted to 1,976,230 tonnes of CO₂ equivalent in 2016. The sectors that produced the most emissions were the transport, residential and commercial sectors, accounting for 44%, 26% and 25% of the total emissions, respectively. Fingal County Council's emissions amounted to only 1% of the total County emissions, with social housing contributing another 1%. This highlights the need for collaboration and action from all stakeholders to tackle the remaining 98% of emissions from public and private sector sources in the County.

4.8.3 KEY ISSUES: AIR QUALITY AND CLIMATE

- Best practice methods for energy efficiency, energy conservation and water conservation, e.g., district heating network, combined heat and power systems, energy efficiency
- Continued regard to the Sustainable Energy Action Plan.
- Feasibility of renewable energy sources throughout the city.
- Further reductions in CO₂ emissions required
- Rising sea levels. Pluvial (rainfall) and coastal flood risk from changing land-use patterns and climate change.
- Importance of city vegetation/ landscape to act as a carbon sink.
- Pressure from transport-related emissions.
- Greater co-ordination with the other planning authorities in the Greater Dublin Region to respond

to these shared regional issues set out

- Planning for and adapting to climate change.

The risks associated with sea level rise in Fingal are:

Coastal deposition and damage to existing defences from increased wave heights at the coastline. This will greatly affect coastal habitats, with estuaries and wetlands particularly vulnerable

- Changes in coastal morphology, changes in sea level with an increase in intensity of coastal storms tend to exacerbate coastal erosion and deposition risk
- Risks to wastewater infrastructure, sea level rise can result in overflows from combined drainage systems being unable to function, resulting in increased flood risk on land. Also as wastewater treatment plants and sewage pumping stations are often located close to the coast, these facilities are at particular risk
- Damage to critical infrastructure and housing from coastal flooding and sea level rise. This results in economic and social risks to the County, especially since housing and major infrastructure are along the coast
- Increased wave heights and high tides, producing damage further inland and upstream
 - Increased wave heights and high tides producing damage further inland and upstream
 - Destruction and alterations of coastal and marine ecosystems, habitats and species

4.9 MATERIAL ASSETS

The EPA SEA Process Draft Checklist (2008) defines material assets as the critical infrastructure essential for the

functioning of society such as: electricity generation and distribution, water supply, wastewater treatment, transportation, etc. An overview is provided below.

4.9.1 TRANSPORT

The presence of Dublin International Airport in Fingal is a notable material asset; it is the 'gateway' into Dublin and Ireland as well as outward to the rest of the European Union and the wider world. It provides a dynamic presence within Fingal. As Ireland is an island nation, the provision of the appropriate facilities and infrastructure to enable efficient air access is critically important.

Dublin Airport is the primary gateway to the country – the airport accommodated just over 20 million passengers in 2013 and handles up to 600 aircraft movements per day. The airport is also an important cargo node and plays a major role in the economy of the county, as well as in that of the island of Ireland as a whole and is the largest generator of economic activity in Fingal.

The key transport route within Fingal is the M1 motorway which runs in a north/south direction from Drogheda to Dublin. The M50 runs through the **Figure 20** shows bus provision in the county.

southern part of Fingal. The Northern Commuter mainline railway also runs in a north/south direction through the eastern part of the county and forms an important link from Dublin City centre through Fingal and into Belfast in Northern Ireland.

In addition to air and road transport, Fingal has 5 harbours and 2 marinas. Howth is the main fishing harbour which caters to larger trawlers and has a marina. The other harbours at Balbriggan, Skerries, Rush and Loughshinny cater to smaller inshore fisheries used by a relatively low number of fishermen and are managed by the council.

In June 2015 the NTA and Dublin City Council published their joint Dublin City Transport Study which sets out proposals to enhance movement within and across the city and to facilitate a modal shift to greater use of public transport, cycling and walking..

The National Transport Authority (NTA) has commissioned a cycle network plan which comprises the Urban Greater Dublin Area Cycle Network Plan: <https://www.nationaltransport.ie/>

4.9.2 WATER SERVICES

The treatment of wastewater is governed by the Urban Waste Water Treatment Directive (91/271/EEC) (amended by Directive 98/15/EEC) transposed into Irish law by the Urban Waste Water Treatment Regulations 2001 (SI 254 of 2001) and the Urban Waste Water Treatment (Amendment) Regulations 2004 (SI 440 of 2004). The Directive aims to protect the environment from the adverse effects of the wastewater discharges by ensuring that wastewater is appropriately treated before it is discharged to the environment. The treatment of wastewater is relevant to the Water Framework Directive which requires all public bodies to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted and bring polluted water bodies up to good status by 2027.

WASTEWATER

The wastewater strategy for the Greater Dublin Region is set out in the Greater Dublin Strategic Drainage Study (GDSDS). As agents for Irish Water, the Council currently operates wastewater treatment plants at Swords (60,000 population equivalent (PE) capacity) and Malahide (21,000 PE capacity) in addition to a Design, Build and Operate Plant serving Balbriggan (70,000 PE capacity). A plant at Portrane also serves this community as well as Donabate, Rush and Lusk and has a capacity of 65,000 PE. A number of smaller plants treat wastewater in the rural towns and villages.

Wastewater from the GDA including Blanchardstown/Castleknock, south Fingal/Dublin Airport and the north/Sutton/Baldoyle and Portmarnock areas is piped to the Ringsend Wastewater Treatment

The Greater Dublin Drainage Scheme will represent a significant wastewater infrastructure development for the Greater Dublin Regional area which will allow for an underground orbital sewer and two pumping stations, a new wastewater treatment plant at Clonsilla (in Dublin City) and an outfall pipe located 6km out to sea from Baldoyle Bay. This project is subject to technical studies with a view to submitting a planning application accompanied by an Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) in 2018.

WATER

Water Services are currently provided in the GDA on a regional basis. Fingal operates a water treatment plant at Leixlip that produces a maximum treatment capacity of 215 million litres of drinking water per day from the River Liffey; this plant supplies approximately 30% of the drinking requirements for the Dublin Region including north Dublin City and county, parts of South Dublin and Kildare. A ground water treatment plant at Bog of The Ring produces 3.2 million litres per day for the Balbriggan/Skerries area. This plant extracts groundwater from wells and supplements the water supply of the northern part of the county; the GSI has delineated an inner and outer source protection zone for this water supply, Treated water is distributed throughout Fingal using a combination of pumped mains, gravity mains and reservoirs. There are major and minor reservoirs spread throughout the county to give backup storage and satisfy the peaks and troughs of daily demand.

It is anticipated that Dublin will need a on projection of growth in the Greater Dublin Area. Irish Water is currently planning the development of a new major water source for the East and Midlands which will include supplying projected demand in

the GDA water supply area. Irish Water is also currently implementing a major water conservation programme in order to maximise the availability of treated water from current sources.

4.9.3 WASTE MANAGEMENT

The Regional Waste Management Plan 2015-2024 for the Eastern-Midlands Region encompasses the local authorities: Dublin City, Dún Laoghaire- Rathdown, Fingal, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow. The regional plan provides the framework for waste management for the next six years and sets out a range of policies and actions in order to meet the specified mandatory and performance targets.

The Waste Framework Directive(WFD) has incorporated previous separate directives that addressed waste oils and hazardous waste. Principles in relation to waste prevention, recycling, waste processing and the polluter pays principle are included within this Directive.

In 2014 the EC adopted a communication promoting the Circular Economy. The circular economy considers waste as a resource which in turn can be recirculated into systems that focus on maintaining, repairing, reusing, refurbishing and recycling materials.

Denmark, Sweden, Japan, Scotland and the Netherlands¹³ are currently the most advanced countries in terms of embedding the circular economy into their waste management system. Key elements of the communication include:

- Increase recycling and preparing for municipal waste to 70% by 2030

¹³ <http://circulatenews.org/2015/04/an-introduction-to-circular-economy-in-scandinavia-sweden-and-denmark-leading-the-race-to-circularity/>

- Increase recycling and preparing for reuse of packaging waste to 80% by 2030
- An aspiration to eliminate landfill by 2030
- Member states to be responsible for ensuring the separate collection of biowaste by 2025.
- Reduction of food waste by at least 30% by 2025.

Fingal will be committing a certain amount of waste to the thermal treatment plant in Ringsend within Dublin City Councils administrative area, the construction and use of which forms a part of the waste management strategy for the Greater Dublin Area.

4.9.4 KEY ISSUES: MATERIAL ASSETS

Extreme weather events pose significant risks to critical assets such as electricity infrastructure. Projected increases in temperature, wind speeds, cold snaps and rainfall will also put a stress on the built environment, particularly on critical infrastructure (such as electricity and communication networks) and residential developments (with the most vulnerable populations being particularly at risk).

Increases in wind speeds, cold snaps and rainfall will put a stress on transport networks, which may lead to disruption of transport services during extreme events

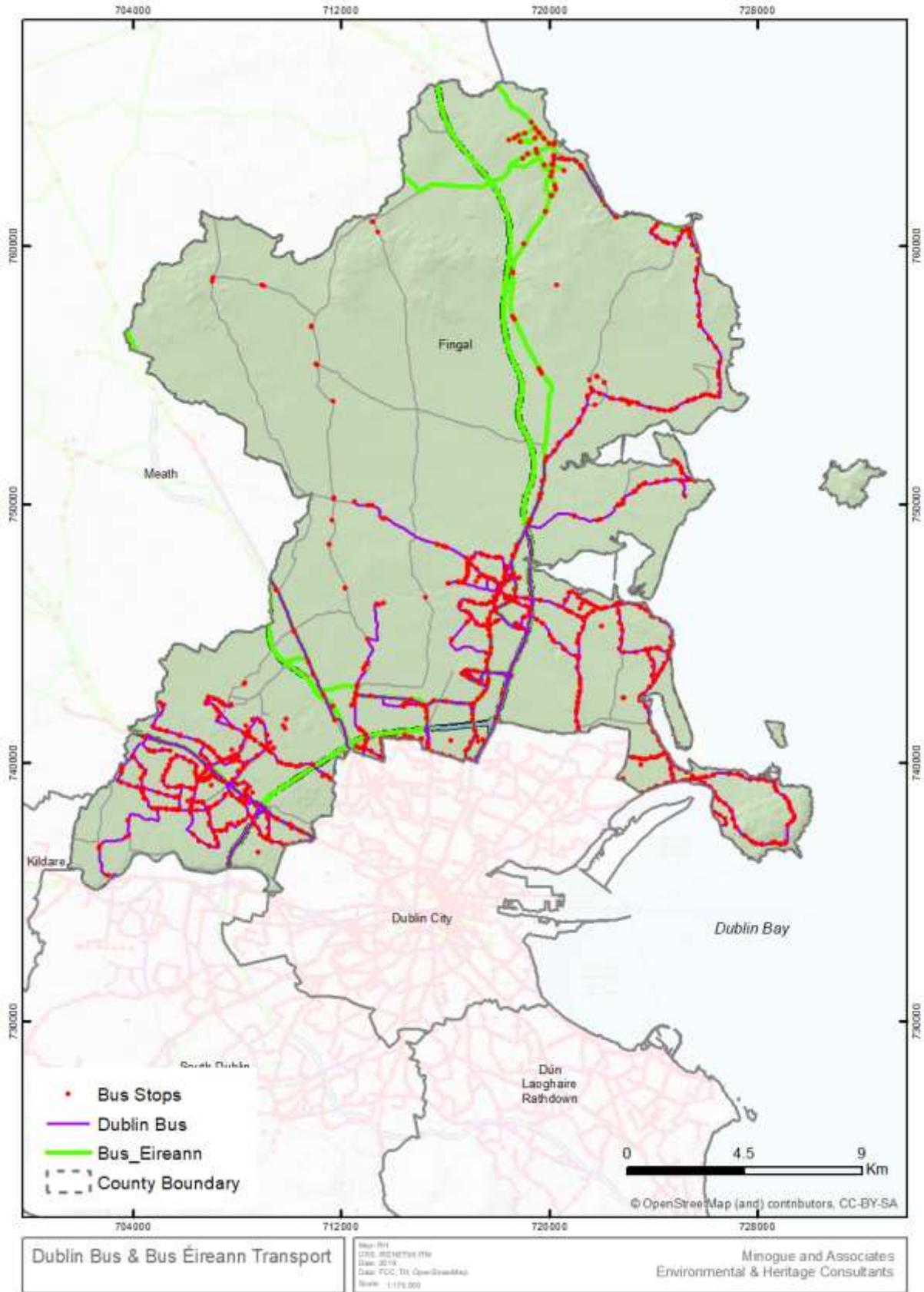
Flooding also puts groundwater supplies at risk, as these can be contaminated due to the high infiltration of flood water.

Key issues to consider for material assets include:

- Encouraging sustainable use of resources

- Reducing reliance on private transport
- Workable alternatives to private transport and future public transport services and modal shift
- Projected increases in temperature, heat waves and droughts may increase the risk of fires in landfill sites and can also increase the prevalence of vermin and odour.
- Energy – both energy efficiency in buildings and transport and alternative, renewable sources of energy.

FIGURE 20 CURRENT BUS PROVISION FINGAL

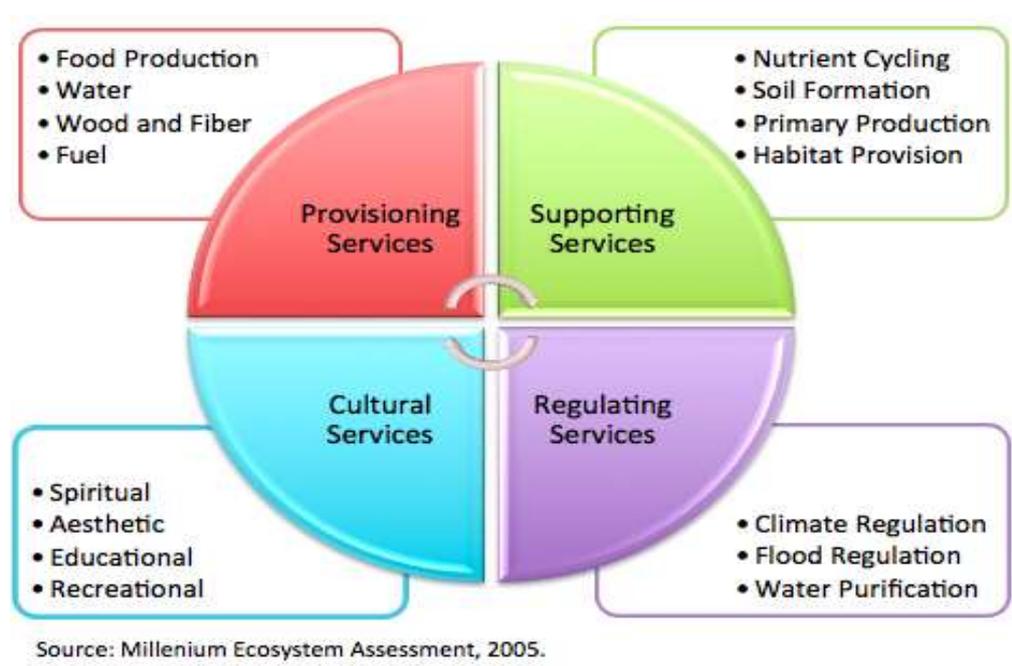


4.10 INTER-RELATIONSHIPS

4.10.1 ECOSYSTEM SERVICES

Awareness about the roles and functions of ecosystems has increased in recent years and it can be a useful means to highlight their importance and value services to society. The Economics of Ecosystem Services and Biodiversity (TEEB) study defines ecosystem services as: *'the benefits people receive from ecosystems'*. Humans are ultimately dependant on the natural environment and ecosystem services highlight how these systems provide and interact to create the essential components for human well- being. Four key services are identified for ecosystems and are shown in the following **Figure 21**.

FIGURE 21 ECOSYSTEM SERVICES.



4.10.2 NATIONAL ECOSYSTEM AND ECOSYSTEM SERVICES MAPPING PILOT (NPWS)

The National Parks and Wildlife Service (NPWS) commissioned a short project for a National Ecosystem and Ecosystem Services mapping pilot for a suite of prioritised services based on available data. The project completed in 2016.

In addition to highlighting the importance and values of biodiversity and ecosystems, the project set out to initiate discussion on how ecosystem services assessments can be integrated into multi-sectoral decision making processes in Ireland. The deliverables also contribute to meeting a number of Ireland's national, EU and UN obligations. The project utilised available information and built upon existing approaches and tools including the MAES conceptual framework and the JNCC Spatial Framework approach and CICES (Common International Classification of Ecosystem Services) as well as initiatives and activities in Ireland. The following maps show an initial assessment from this project highlighting the ecosystems services provided in the 4 Dublin Local Authorities. These are briefly discussed below in the context of the relevant CCAP.

FIGURE 22 ECOSYSTEM SERVICES –WATER REGULATION OF FLOWS

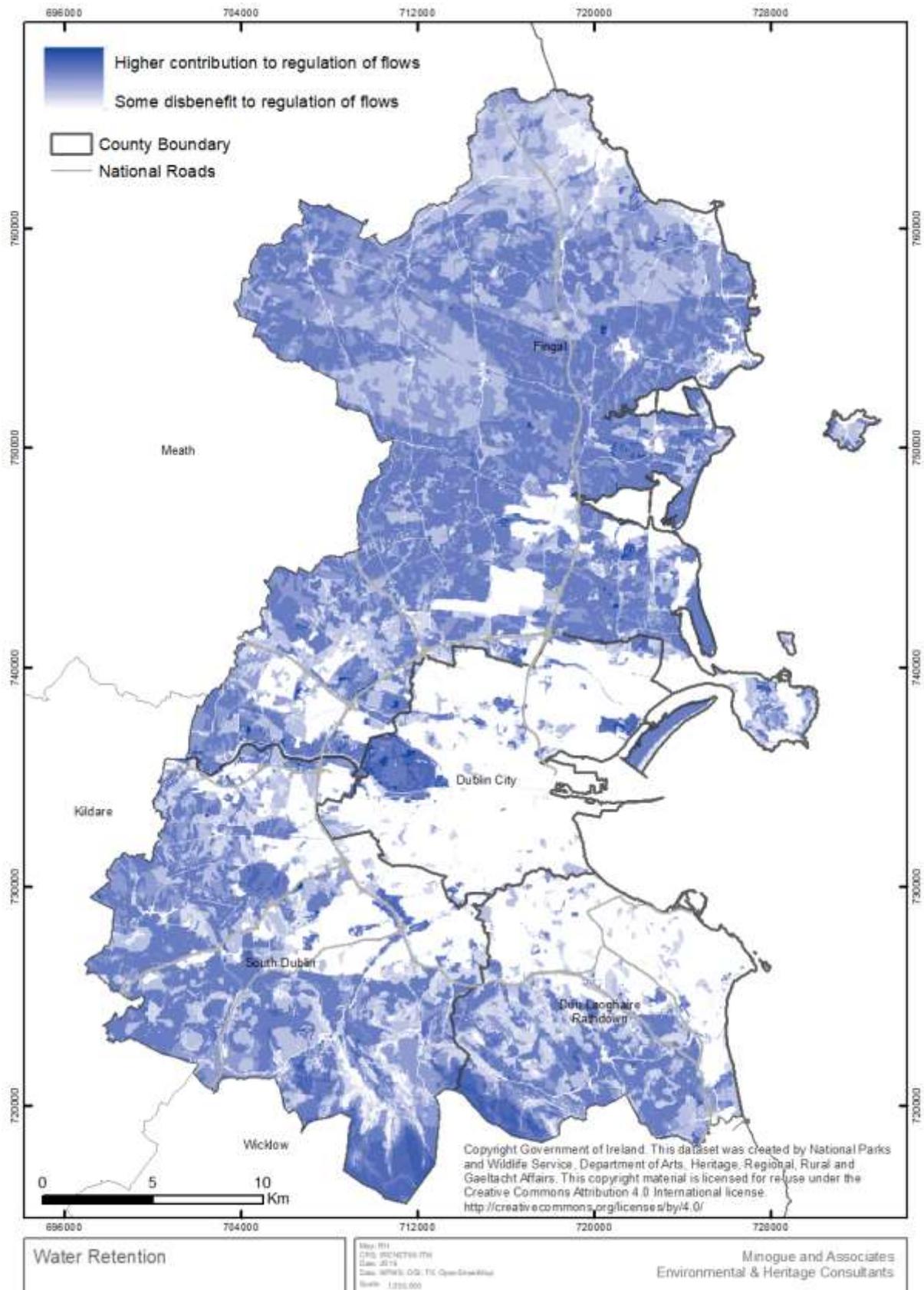


FIGURE 23 ECOSYSTEM SERVICES –WATER FILTRATION

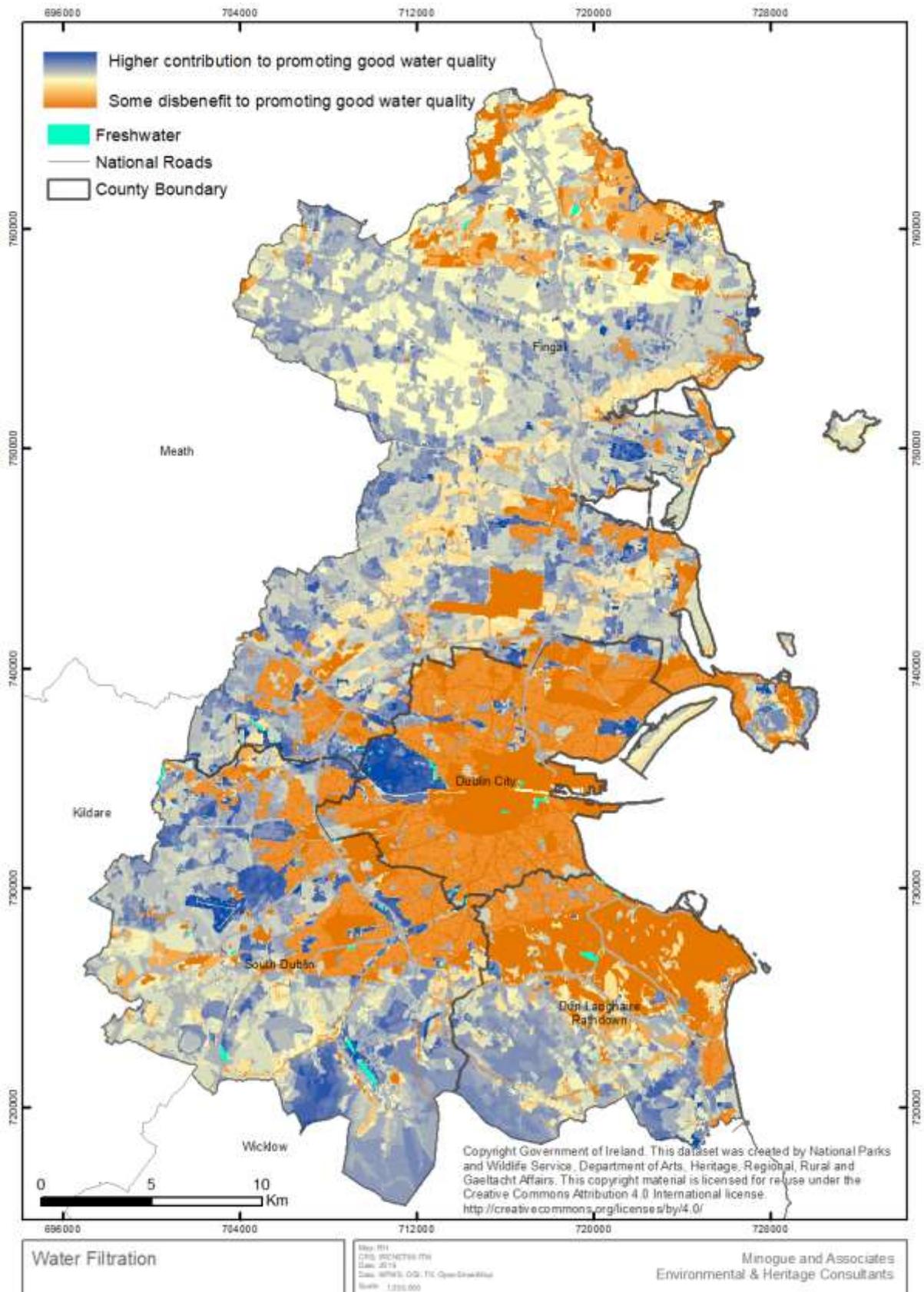
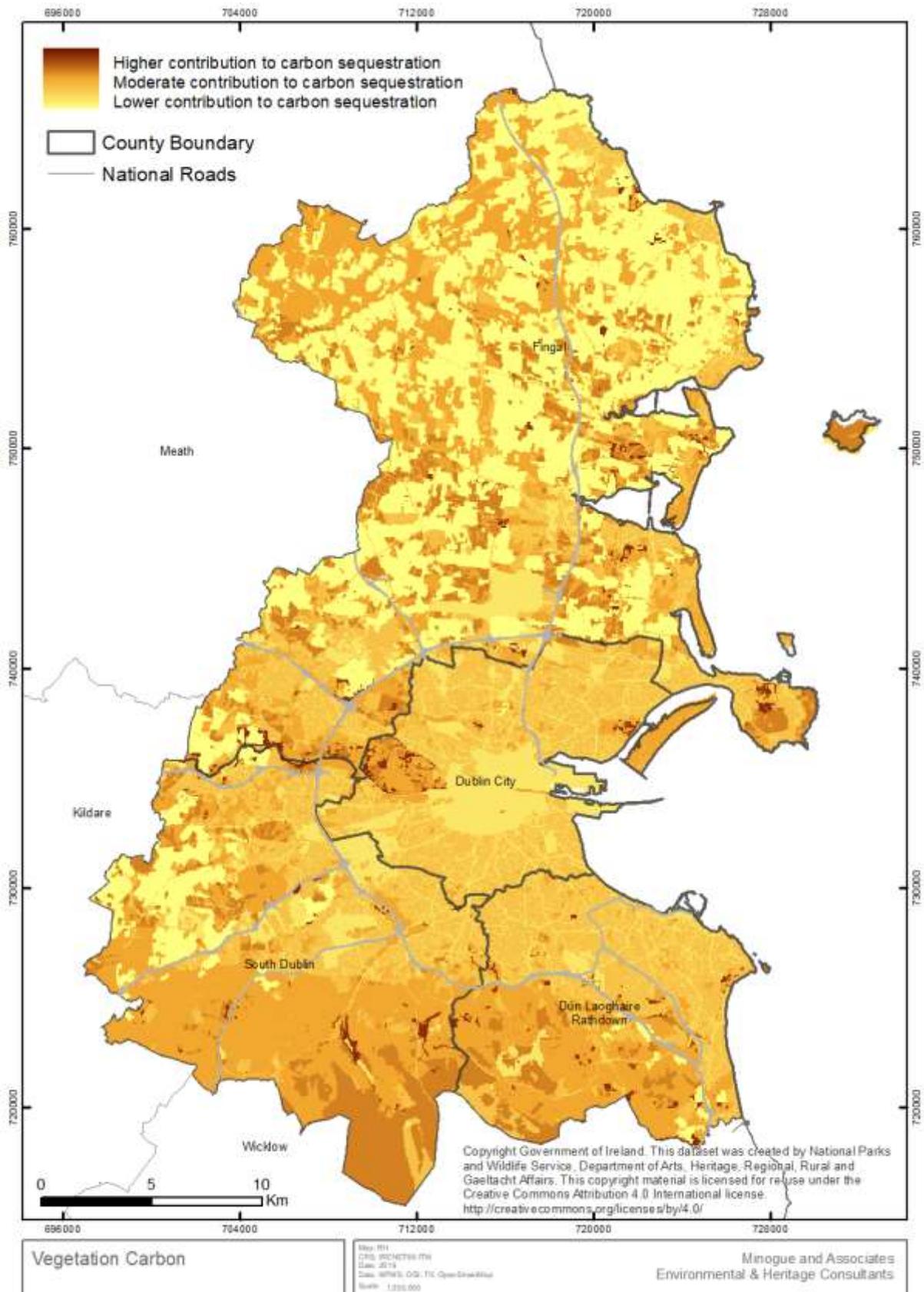


FIGURE 24 ECOSYSTEM SERVICES- CARBON SEQUESTRATION



In the context of Fingal County, the above assessment demonstrates the importance of the surrounding areas in terms of water storage, filtration and carbon sequestration. The agricultural areas and in particular coastal areas around Lusk including Rogerstown Estuary fulfil an important role in a variety of ecosystem services.

4.10.1 ENVIRONMENTAL SENSITIVITY.

In accordance with the SEA Directive, the interrelationship between the environmental parameters above must be taken into account. Although all such parameters may be considered interrelated and may impact on each other at some level environmental

The Figure below shows the overall environmental sensitivity for the plan area and sphere of influence, and follows the same approach (i.e.: ranking of environmental parameters) as that used in the Fingal CDP 2017-2023 SEA process.

In order to show consistency between the four local authorities in terms of overall environmental sensitivity, the following parameters were utilised:

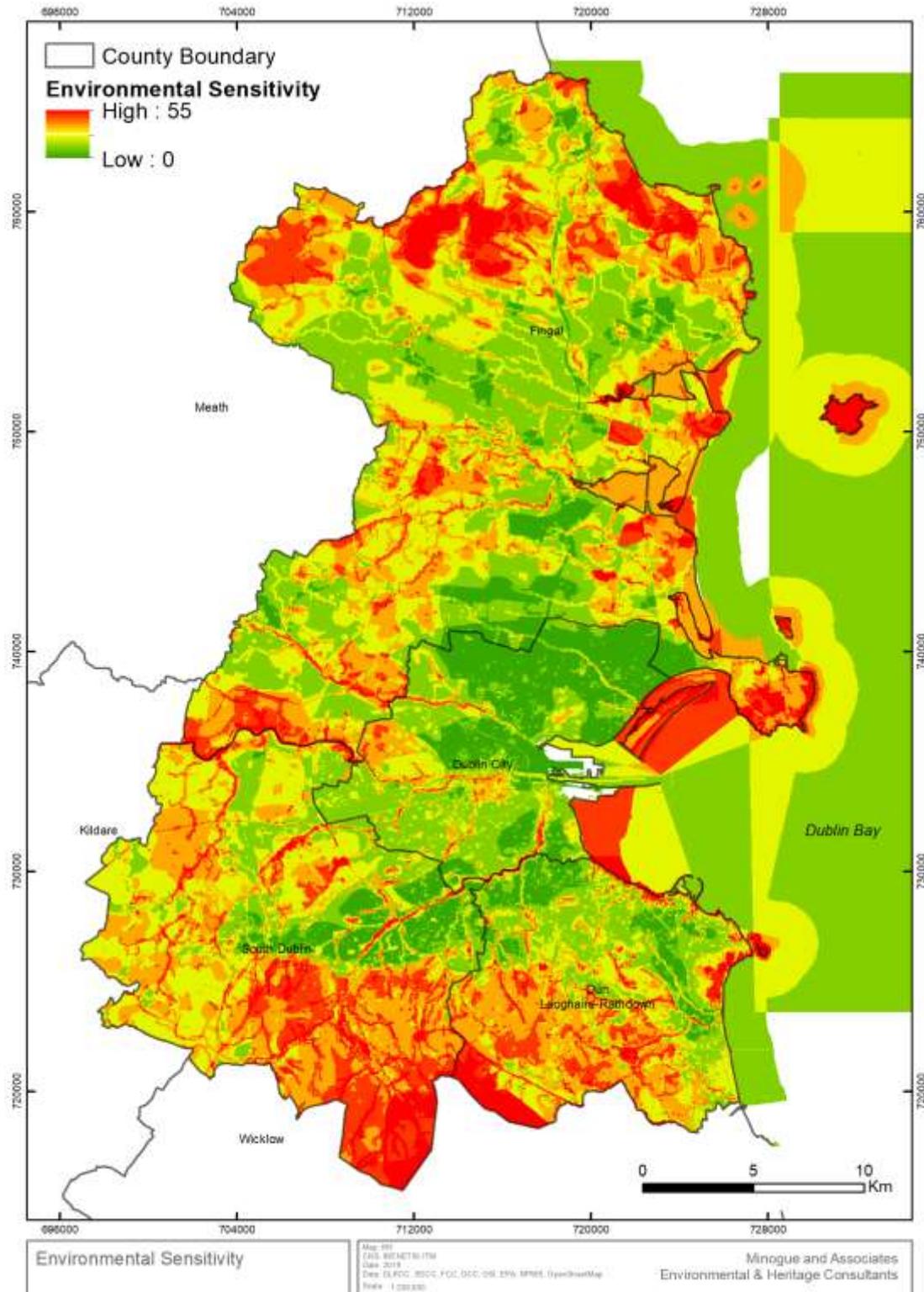
Every Parameter value = 5 (except Groundwater Vulnerability)

All Dublin Local Authorities	<ul style="list-style-type: none"> • SAC, SPA, NHA, pNHA • NIAH, SMR • ACA (SDCC; FCC; DLR) / Arch zone (DCC) • Rivers / Lakes • Nutrient Sensitive Waters • Corine – pasture/non-irrigated/peat/natural grassland categories • Ancient Woodland Survey (NPWS) • RPA drinking water rivers • RPA drinking SWB • RPA bathing SWB • Sites and Monuments • GW Vulnerability 		
Fingal County Council	Highly Sensitive Landscapes Nature Development Areas	South Dublin CC	<ul style="list-style-type: none"> • SDCC- Green Areas (Urban Atlas) - • SDCC - AREAS_OF_ARCHEOLOGICAL_POTENTIAL • SDCC – Views • SDCC – Hedgerows • SDCC- Parks • SDCC – Trees in Dodder Valley
FCC, SDCC, DLR	Record Protected Structure	DLR	<ul style="list-style-type: none"> • Conservation Area; Ecological Networks, Coastal Habitats

By mapping key environmental layers (GIS) to produce an environmental sensitivities map, it provides a visual impression which can assist in identifying which areas within the Plan area experience the highest concentration of environmental sensitivities and consequently the areas potentially most vulnerable to potential environmental impacts from development.

This can be a useful guide when considering the strategic options in relation to the plan during the early stages in the plan making process, and identifying areas that are of greater or lesser vulnerability. **Figure 25** shows the environmental sensitivity map for the four Dublin Local Authorities.

FIGURE 25 Environmental sensitivity mapping of the four Dublin Local Authorities



4.11 EVOLUTION OF THE ENVIRONMENTAL BASELINE IN THE ABSENCE OF THE CCAP

The SEA legislation requires that consideration is given to the likely evolution of the current baseline where implementation of the CCAP 2019-2024 does not take place. In the absence of the CCAP the environment would evolve under the requirements of the Fingal CDP 2017-2023.

Overall, this Climate Change Action Plan will be monitored and updated on an annual basis, with a review and revision every five years. Whilst the Fingal CDP 2017-2023 will remain the primary landuse framework for the county, in the absence of the CCAP, 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 county.

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 wetlands provision in public parks would be omitted.

At county 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 county actions relating to public transport, walking and cycling may be less effective in the absence of this action plan.

4.12 EXISTING ENVIRONMENTAL ISSUES IN NEIGHBOURING AREAS.

Whilst the CCAP is prepared for Fingal CC, the regional approach for the four DLAs is a key element of the four CCAPs; Therefore a summary of key environmental issues identified for Climate Change in the SEA ER of neighbouring local authority areas is presented below in Table 4. It is accepted that many of the climate change issues are cross cutting and give rise to a variety of effects and issues on SEA parameters, in particular, biodiversity, flora and fauna, water resources, soil, landscape, material assets and population and human health.

TABLE 6 KEY CLIMATE CHANGE ISSUES IDENTIFIED IN SEA ER OF NEIGHBOURING LOCAL AUTHORITY COUNTY DEVELOPMENT PLANS

SEA Topic	Existing Environmental Issues Dublin City Council
Dublin City Development Plan 2016-2022	<p>Best practice methods for energy efficiency, energy conservation and water conservation, e.g., district heating network, combined heat and power systems, energy efficiency</p> <p>Continued regard to the Sustainable Energy Action Plan.</p> <p>Feasibility of renewable energy sources throughout the city.</p> <p>Further reductions in CO2 emissions required</p> <p>Rising sea levels. → Pluvial (rainfall) and coastal flood risk from changing land-use patterns and climate change.</p> <p>Importance of city vegetation/ landscape to act as a carbon sink.</p> <p>Pressure from transport-related emissions.</p> <p>Greater co-ordination with the other planning authorities in the Greater Dublin Region to respond to these shared regional issues set out</p>
Louth County	Not accessible on the web. SEA Statement only

**Development
Plan 2015-
2021**

**South Dublin
County
Development
Plan 2016-
2022**

The two single greatest issues facing South Dublin in relation to climate change relate to increased amounts of greenhouse gas emissions from transport movements, and the danger posed by flooding events, which will occur as a result of the former. Solutions require reductions in unsustainable transport movements, and the amelioration of potential flooding events.

The manner in which transport movements can be reduced is tied into the provision of high quality public transport between key locations in South Dublin and into Dublin City.

At the neighbourhood level, the design and incorporation of walkable and cycle friendly urban developments is to be accommodated. The preservation, or creation of walking links along the most direct routes within existing urban areas, specifically to shop, workplaces, schools and public transport links, must be given high priority, otherwise trips by car will continue to grow.

Reducing car movement at the neighbourhood level through increasing ease of pedestrian movement must be the foundation stone for an overall decrease in emissions.

The potential for increased flooding in the County, particularly in proximity to the Dodder River. Accommodation of retention areas for flood waters must be considered at this stage, prior to the onset of major flooding events. In addition to maintaining green spaces and existing flood plains free from development, the requirements of the Dodder River CDFRAMS (and the Liffey CFRAMS) must be taken into account.

**Kildare County
Development
Plan 2017 -
2023**

Legislative objectives governing air and climatic factors in County Kildare were not identified as being conflicted with.

**Meath County
Development
Plan 2013-
2019**

Land use changes can and will have far reaching implications for climate change that could include sweeping changes to commuter patterns with the building of more one-offhouses in rural areas (also influenced by government policy such as the Guidelines for Sustainable Rural Housing) and the resultant increase in GHGs, SO₂, NO_x, VOC and other pollutant emissions.

5 STRATEGIC ENVIRONMENTAL OBJECTIVES

5.1 INTRODUCTION

The purpose of the SEA Objectives is to ensure that the assessment process is transparent and robust and that the CCAP considers and addresses potential environmental effects. SEA Objectives have been set for each of the ten environmental topics identified at the Scoping Stage of the SEA process.

These objectives are derived from the principles identified through the plan, policy and programme review and align where possible with the SEOs developed for the Dublin City Development Plan 2016-2022. Where they differ from the CDP 2016-2022 objectives, the text is shown in **italic bold font**. The results of this are summarised in a table, called an evaluation matrix (See Chapter Seven and Annex A of this SEA ER).

TABLE 7 STRATEGIC ENVIRONMENTAL OBJECTIVES

SEA Topic	Environmental Protection Objective
Biodiversity Flora and Fauna	Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU and nationally designated sites and protected species.
	
Population and human health	Provide high quality residential, working and recreational environments with access to sustainable transport options
	Protect Human Health
Water	Protect and where necessary improve and maintain water quality and the management of watercourses and groundwater, in compliance with the requirements of the Water Framework Directive objectives and measures.
	
Air Quality and Climate	Minimise emissions of pollutants to air associated with transport.
	Minimise contribution to climate change by adopting adaptation and mitigation measures
Soil and Geology	Safeguard the soil resources within Fingal in recognition of the strong agricultural and horticultural base.
	
Material Assets	Make best use of existing infrastructure and promote the sustainable development of new infrastructure to meet the needs of Fingal's population



Cultural Heritage

Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact as a result of development in Fingal.



Landscape

Protect and maintain the special qualities of the landscape character, including coastal character within Fingal



Interrelationships

Maintain and improve the health of people, ecosystems and natural processes

Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change

6 CONSIDERATION OF ALTERNATIVES

6.1 INTRODUCTION

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative development scenarios, in this case the Dublin City CCAP 2019-2024. These alternative development scenarios should meet the following considerations:

- Take into account the geographical scope, hierarchy and objectives of the plan –be realistic
- Be based on socio-economic and environmental evidence – be reasonable
- Be capable of being delivered within the plan timeframe and resources –be implementable
- Be technically and institutionally feasible – be viable

In developing, refining and assessing the alternatives for the draft CCAP, the toolkit included in Developing and Assessing Alternatives in Strategic Environmental Assessment Good Practice Guidance (EPA 2015) was utilised.

In addition to the above, the CCAP will function within the policy hierarchy established by national, regional and county strategic plans, as well as relevant legislation.

This chapter presents the approach to considering and assessing the alternatives for the CCAP. Section 6.2 presents the alternative scenarios. Section 6.3 presents the evaluation of the alternatives for potential environmental effects. This in turn informed the selection of a preferred alternative for the CCAP which is presented in Section 6.4.

6.2 ALTERNATIVES CONSIDERED

In a *Strategy Towards Climate Change Actions Plans for Dublin 2017*, seven focus areas were identified as having the greatest potential to help the Dublin LAs move towards a zero-carbon society and adapt to the effects of climate change. These focus areas were as follows:

- Water, Waste, Planning, Transport, Energy, Ecosystems and Biodiversity and Citizen Engagement.

The focus areas can have predominately either mitigation or adaptation solutions, or both. For example, the Energy focus area mainly concerns mitigation (ie. reducing the use of fossil fuels and their associated CO₂ emissions), while Water largely focuses on adapting to changes that are occurring or will occur in the near future due to climate change. Meanwhile, the Citizen & Stakeholder Engagement focus area concerns both mitigation and adaptation.

The aim of the CCAP is to work with the other Dublin local authorities in a co-ordinated manner to achieve the actions identified as being capable of implementing over a Five Year Period whilst also contributing to both mitigation and adapting to climate change. In

considering Alternative Scenarios for the CCAP, the following questions were used to help frame the Consideration of Alternatives¹⁴:

WHY?

Can the objectives be met without a new plan/programme?

- Is the alternative viable? Is it a reasonable/realistic alternative?
- Are there other relevant considerations (e.g. AA, WFD, FRA)?

What?

How should the alternative be implemented (e.g. using which technology/method)?

- Can environmental best practice be applied to meet the need?
- Can environmentally less damaging methods be applied?

Where?

Where is the alternative intended to go?

What is its extent?

Can alternative locations be identified for the identified technologies/methods/zonings?

Are these less environmentally sensitive?

When?

What are the details of the timeframe for implementation/ which are the critical details here is the alternative intended to go? What is its extent? •Can alternative locations be identified for the identified technologies/methods/zonings? •Are these less environmentally sensitive?

Therefore the Alternatives considered are as follows:

¹⁴ Adapted from Figure 4.3 Developing and Assessing Alternatives in the Strategic Environmental Assessment Process (EPA, 2015).

TABLE 8 ALTERNATIVES CONSIDERED

	Why Can the objectives be met without a new plan/programme? •Is the alternative viable? Is it a reasonable/realistic alternative? •Are there other relevant considerations (e.g. AA, WFD, FRA)?	What What? How should the alternative be implemented (e.g. using which technology/method)? •Can environmental best practice be applied to meet the need? •Can environmentally less damaging methods be applied?	Where Where? Where is the alternative intended to go? What is its extent? Can alternative locations be identified for the identified technologies/methods/zonings? Are these less environmentally sensitive?	When When? What are the details of the timeframe for implementation/ which are the critical details here is the alternative intended to go? What is its extent? •Can alternative locations be identified for the identified technologies/methods/zonings? •Are these less environmentally sensitive?
Alternative 1: Do-Nothing (rely CDP policies and objectives to address and adapt to climate change)	This alternative could see the do nothing scenario be continued by using the existing CDP policies and landuse zonings to continue to adapt and plan for effects on climate change.	Through using climate change policies in the CDP and providing the landuse framework for responding to climate change. Landuse activities relevant could include renewable energy, transport and flood risk management	This would include the city of Dublin	This would cover the timeframe of the current CDP upto 2022
Alternative 2: Prioritise largest greenhouse gas emission sectors – Energy and	This would require the preparation of an action plan that would concentrate on energy and transport for Fingal as a means to address and respond to climate	It would prioritise measures that would reduce energy emissions, promote renewable energy and sustainable transport projects	This would include the city of Dublin	This would likely reflect the timeframe of the CDP given its landuse implications.

	Why Can the objectives be met without a new plan/programme? •Is the alternative viable? Is it a reasonable/realistic alternative? •Are there other relevant considerations (e.g. AA, WFD, FRA)?	What What? How should the alternative be implemented (e.g. using which technology/method)? •Can environmental best practice be applied to meet the need? •Can environmentally less damaging methods be applied?	Where Where? Where is the alternative intended to go? What is its extent? Can alternative locations be identified for the identified technologies/methods/zonings? Are these less environmentally sensitive?	When When? What are the details of the timeframe for implementation/ which are the critical details here is the alternative intended to go? What is its extent? •Can alternative locations be identified for the identified technologies/methods/zonings? •Are these less environmentally sensitive?
Transport	change			
Alternative 3: Approach the priority areas in a balanced manner to provide for both responses to climate change impacts (adaptation) and reduce greenhouse gas missions mitigation).	This is the existing CCAP. It would consider a mixture of adaptation and mitigation measures for the climate change action plan and would include citizen engagement and awareness raising throughout. It would be underpinned by a baseline assessment of greenhouse gas emissions and sectoral use in the county	This would include a suite of measures that would aim to bring co-benefits where possible and rely on nature based solutions where possible	This would be tailored to Dublin City but prepared as part of a broader regional approach to climate change	This would extend to 2024 and include a detailed monitoring regime to allow for annual reporting and monitoring of actions.

<p>Why Can the objectives be met without a new plan/programme? •Is the alternative viable? Is it a reasonable/realistic alternative? •Are there other relevant considerations (e.g. AA, WFD, FRA)?</p>	<p>What What? How should the alternative be implemented (e.g. using which technology/method)? •Can environmental best practice be applied to meet the need? •Can environmentally less damaging methods be applied?</p>	<p>Where Where? Where is the alternative intended to go? What is its extent? Can alternative locations be identified for the identified technologies/methods/zonings? Are these less environmentally sensitive?</p>	<p>When When? What are the details of the timeframe for implementation/ which are the critical details here is the alternative intended to go? What is its extent? •Can alternative locations be identified for the identified technologies/methods/zonings? •Are these less environmentally sensitive?</p>
--	---	--	---

6.3 ASSESSMENT OF POTENTIAL EFFECTS FOR EACH ALTERNATIVE SCENARIO

This section presents the assessment of potential environmental effects for each Alternative Scenario. This is undertaken by assessing each alternative against the SEOs presented in Chapter 5 of this SEA ER. It is informed by the environmental baselines as well as the policy review.

The assessment of Alternatives is categorised as follows, as many of the alternatives share similar objectives, to highlight where an alternative may generate particular positive or negative effects, a + or – is shown. :

Positive	
Neutral	
Uncertain	
Negative	

TABLE 9 ASSESSMENT OF ALTERNATIVES

Strategic Environmental Objectives	Alternative 1:Do Nothing Scenario	Alternative 2.Prioritise Energy and Transport	Alternative 3 Prioritise all main sectors and include for awareness raising
Biodiversity			
Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU and nationally designated sites and protected species.	Uncertain to negative	Uncertain/ negative	Positive++
Population and Human Health			
Provide high quality residential, working and recreational environments with access to sustainable transport options	Positive	Uncertain	Positive++
Protect Human Health			
Water			
Protect and where necessary improve and maintain water quality and the management of watercourses and groundwater, in compliance with the requirements of the Water Framework Directive objectives and measures.	Positive	Positive	Positive++
Comment: Whilst all alternatives show consistency with these Water SEOs, Alternative 3 has allowed for full integration of strategic flood risk assessment and promotes nature based solutions as another means to respond to climate change thereby increasing the overall environmental performance of the option. .			
Soil and Geology and Landscape			
Safeguard the soil resources within Fingal in recognition of the strong agricultural and horticultural base.	Positive	Neutral	Positive++
Material Assets			
Make best use of existing infrastructure and promote the sustainable development of new	Positive	Positive	Positive

Strategic Environmental Objectives	Alternative 1:Do Nothing Scenario	Alternative 2.Prioritise Energy and Transport	Alternative 3 Prioritise all main sectors and include for awareness raising
infrastructure to meet the needs of Fingal's population			
Climate and Air Quality			
Minimise contribution to climate change by adopting adaptation and mitigation measures	Positive	Positive	Positive++
	Uncertain	Neutral	Positive ++
Cultural Heritage			
Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact as a result of development in Fingal.	Positive	Uncertain	Positive
Landscape			
Protect and maintain the special qualities of the landscape character, including coastal character within Fingal	Neutral	uncertain	Positive++
<i>Interrelationships</i> <i>Maintain and improve the health of people, ecosystems and natural processes</i> <i>Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change</i>	Uncertain	Uncertain	Positive ++

6.5 PREFERRED ALTERNATIVE

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 gains, than may be achieved through Alternatives 2 and 1. In addition, the multil 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 CCAP option is also positive for a number of SEOs.

7 ASSESSMENT OF SIGNIFICANT ENVIRONMENTAL EFFECTS

7.1 INTRODUCTION

The purpose of this section of the Environmental Report is to predict and evaluate as far as possible the environmental effects of the CCAP 2019-2024.

SEA is an iterative process and the CCAP has taken consideration of environmental issues raised during the SEA process to date. These issues have been incorporated into the CCAP and the principal purpose of this chapter is to discuss the evaluation of these. The discussion of likely impacts is grouped around each of the following environmental parameters as described in Chapter Four.

- Population & Human Health
- Biodiversity, Flora & Fauna
- Water Resources including flooding
- Soil & Geology
- Climatic Factors and Climate change
- Cultural Assets
- Material Assets
- Landscape
- In-combination and cumulative effects.

7.2 APPROACH TO ASSESSMENT

Having established the environmental baseline and the key environmental sensitivities for the Plan area in Chapter 4, and the Strategic Environmental

Objectives in Chapter 5, an assessment for any potential environmental effects from implementing the CCAP can be undertaken.

An assessment of cumulative and in-combination effects is also presented in the concluding section of this chapter.

7.2.1 POPULATION AND HUMAN HEALTH-SIGNIFICANT EFFECTS

Land use planning impacts on the everyday lives of people and can either hinder or help promote healthy sustainable environments and communities. For example the provision of safe walking routes and cycle-ways, parks, playgrounds, safe routes to school, public transport facilities, etc. result in direct and indirect health benefits and allow for healthier transportation choices to be made by communities above private motor car.

Many of the actions identified in the CCAP give rise to long 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.

Reflecting the opportunity for co-benefits of the CCAP, measures around energy efficiency and district heating opportunities can help address fuel poverty in relation to vulnerable individuals as well as the chance to reuse energy from within the local area, for example *Energy: Action 22: Study potential for viable district heating projects within Fingal.*

Other actions such as *Action 15 Insulation of all council owned social housing stock; extended to include acquisitions and long term leasing where feasible* provide positive, long term effects both in relation to resource management (by reusing

existing buildings and greenhouse gas savings through avoiding new build particularly of concrete sourced products), but it also helps to address fuel poverty particularly in housing stock that may require upgrading to achieve greater energy efficiency, reducing fuel bills and overall enhancing the comfort of these dwellings.

Reflecting key objectives in the Fingal CDP 2017-2023, the CCAP will support and encourage a modal shift in transport by expanding the walking and cycling network, encouraging and promoting greater engagement and awareness raising in relation to walking and cycling and promoting behavioural change; for example see the following *Transport Actions 15 Pedestrian and traffic calming programme, Action 18 Re-organisation of allocation of space to pedestrians in the public realm and Action 13 Advance Provision of cycle network* in addition to public realm and planning measures.

All the measures included in the Nature Based Solutions and a large number of the Flood Resilient measures are identified as generating long term positive effects on this SEO.

The measures particularly in Nature Based Solutions provide for multiple positive effects via tree planting, identification of sites for woodland, SUDs, and wetlands, which can provide a range of ecosystem services including water purification, carbon storage, and assist in absorption of emissions associated with transport such as Particulate matter and providing noise buffers, these create positive effects on population and human health (see for example *Action 5 Protect and conserve floodplains, wetlands and coastal areas subject to flooding through available policy instruments and 7 Review and Implement Tree Strategy*).

By implementing measures around flood management and where measures such as wetlands and flood attenuation ponds are created, these respond to potential flood risk events and therefore give rise to positive effects on these SEOs.

Mitigation measures are recommended in relation to preparation of a Coastal Zone Management plan to include consideration of cultural heritage which provides consistency with both population and cultural heritage SEOs.

7.2.2 BIODIVERSITY, FLORA AND FAUNA-SIGNIFICANT EFFECTS

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.

Identifying sites for woodland (Action 8) and collection of data to inform preparation of a list of habitats and species in Fingal vulnerable to climate change (Action 11) and monitoring of same (Action 12), as well as Action 2 Regional working group on nature based solutions are examples of actions that are long term positive and consistent with these SEOs.

A number of these Transport Actions are recommended for mitigation either due to the potential in the absence of mitigation on conservation management objectives of European Sites (Actions 23 development and expansion of public transport services); however it is considered the existing environmental protection measures in the Fingal CDP 2017-2023 should address these potential effects appropriately. Furthermore, the Eastern and Midland RSES (draft) SEA ER states the following for regional transport projects

Modifications to existing road and rail routes, and the building of any new routes, have potential to impact negatively on biodiversity. Any potential impacts of ongoing or proposed road or rail projects should be considered. Key projects include proposed road projects in the Region and an aspiration for the future twin tracking of the rail line both north and south from Dublin with the DART extension involving electrification of part of it. As the rail line runs adjacent to, and in some cases through, European sites, such projects will require appropriate assessment. In addition to loss of annexed habitat there is potential for bird collisions with overhead cables for the DART where it crosses estuaries such as at Malahide and Rogerstown

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.

Indirect and cumulative positive impacts are identified for biodiversity in relation to actions around Resource Management such as reductions in waste through awareness raising and water access points..

Nature based solutions identified as particularly positive include *Action 3 Develop Green Infrastructure Strategy for that incorporates climate change mitigation and adaptation to climate resilience*. Citizen engagement actions include *Action 16 Support the use of allotments as a way communities can grow their own food, and lower food miles and food waste*.

7.2.3 WATER - SIGNIFICANT EFFECTS

Potential effects on water resources (and frequently biodiversity) in the absence of mitigation include:

- 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.

The Fingal CDP 2017-2023 already includes a range of provisions and measures to address and minimise the above effects, including measures around green infrastructure, flood risk management and development control.

The CCAP however further enhances and strengthens these through the flood resilience actions and nature based solutions in particular. Actions including 20 and 21 around SUDs, rain gardens and

community support are all positive in relation to water and reduction in soil run off, plus facilitating water attenuation and filtration. Again this provides for longer, positive effects associated with linear habitat creation and ecological connectivity.

Measures around wetlands and floodplains such as *Action 5 Protect and conserve floodplains, wetlands and coastal areas subject to flooding through available policy instruments and restoration of St Ita's wetlands* (Action 18) in the Flood Resilience theme are particularly positive, creating long term direct positive effects on water resources, as well as soil and biodiversity, landscape and population.

An additional mitigation measures is recommended for Flood Defence actions is recommended as an overarching measures for flood defence actions -again to promote nature based solutions.

7.2.4 SOIL AND GEOLOGY - SIGNIFICANT EFFECTS

Soil quality and function may be enhanced through particular measures associated with flood resilience, nature based solutions and resource management in particular.

A number of the measures relating to flood resilience including recognition of flood plains and production of Regional Flood Plain Management Guidelines (Action 5) indirectly benefit soil and geology SEOs.

Action 4 is recommended for additional mitigation to increase co –benefits around green infrastructure (Map access to green space). Actions relating to enhancing food security (Action 9), climate change and agriculture (Action 6) and community gardens/orchards (Action 16) are all identified as consistent with and

enhancing Soil and Geology SEOs, as well as biodiversity, water and landscape.

7.2.5 AIR QUALITY AND CLIMATE

Overall the CCAP will contribute positively to climate change adaptation through the following:

- Blue and green infrastructure giving rise to increased surface water storage and potential carbon sequestration
- Focus on energy efficiency and innovation as seen through the actions identified in the Energy Theme, examples include Action 16 and 15.
- A number of actions relate to mapping and baseline evidence gathering which will underpin both future actions and forward planning. Examples include Action 10 in Flood Resilience, Action 11 in Nature Based Solutions and Action 4 in Energy relating to outputs of the Fingal Spatial Energy Demand analysis informing the next Fingal CDP.

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 CCAP and beyond.

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.

The CCAP includes targets relating to 40% reduction in the councils' Greenhouse Gas Emissions by 2030 (primarily through lighting and energy measures), a 33%

improvement in the councils energy efficiency by 2020. However the CCAP also acknowledges that the council's outputs are relatively minor given the wider sectoral emissions in the county and this is why many of measures relate to the council leading on climate action, promoting behavioural change, facilitating sustainable transport options, promoting increased energy efficiency and supporting nature based solutions and citizen engagement.

The preparation of a new baseline of emissions and the annual monitoring reporting of the CCAP is a critical feature that should allow review of progress on a regular basis.

7.2.6 CULTURAL ASSETS - SIGNIFICANT EFFECTS
Archaeology and Built heritage features are present throughout the plan area, and in particular those archaeological or built heritage features associated with the coastline may be particularly vulnerable to climate change effects.

The concentration of built heritage features and historic settlements on the coastline 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:

Overlooking cultural resources can result in

- 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 capital¹⁵.

Therefore it is recommended a new mitigation measure be included to in the first instance prepare an Integrated Coastal Zone Management Plan to facilitate consistency with the other coastal DLA, and then to consider both cultural as well as natural resource sin this planning.

The CCAP does not directly identify cultural heritage however through public realm improvements, green infrastructure measures and nature based solutions, effects on cultural heritage features may be minimised over the CCAP.

7.2.7 MATERIAL ASSETS - SIGNIFICANT IMPACTS

Many of the measures in Energy, Transport and Flood Resilience in particular provide for mitigation and adaptation with a view to minimising adverse effects of climate change on material assets, and also responding and facilitating behavioural and modal change in energy use and transport. Examples of these include the following:

- Energy: *Action 1: Create an Energy Masterplan for the Dublin Region,*
- Transport: *Action 12 Build out Fingals' cycle network Develop and extend cycle network; Action s 22 and 23 relating to park and ride and expansion of public transport.*
- Flood Resilience: whilst most of the measures here mitigate and adapt to climate change, with accompanying positive effects on material assets SEOs, *Actions 8*

¹⁵ 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](#)

Develop template to capture impacts, response and costs for all major climate events are recommended for mitigation to allow for the inclusion of 'environmental externalities' in any costing exercise, as well as promotion of natural flood measures as a priority in any updated guidelines or policies.

- Actions under Resource Management are also identified as generating positive, long terms effects particularly around the circular economy, reuse and awareness raising around food waste and recycling.

7.2.8 LANDSCAPE - SIGNIFICANT EFFECTS

Long term positive effects are identified for the CCAP and landscape primarily through the nature based solutions, public realm enhancement, green and blue infrastructure, increased tree planting etc.

Many of the measures in the CCAP 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.

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.

An increase in open space, green infrastructure, public realm and permeability would all create long term positive effects for the Landscape SEOs.

7.3 IN-COMBINATION AND CUMULATIVE SIGNIFICANT 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 CCAP.

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”¹⁶ 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.

¹⁶ (EPA SEA Process Checklist (2011)).

7.3.1 SUMMARY OF CUMULATIVE AND IN-COMBINATION EFFECTS IDENTIFIED

Cumulatively and in combination, several of the CCAP 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.

The majority of the Flood Resilient measures 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 can provide multi functional benefits in the landscape.

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.

The resource management is also a critical theme as it promotes reduction and reuse and measures around illegal dumping and leaf composting all interact to generate positive effects.

Threaded throughout the CCAP 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 SEA ER of the Fingal CDP 2017-2023 provided a cumulative assessment of national level plans and programmes as they relate to the CDP. These are presented overleaf and are updated to reflect any recent important plans/programmes/projects.

7.3.1 POTENTIAL CUMULATIVE EFFECTS FROM OTHER PLANS AND PROJECTS

Table 10 Potential cumulative and in combination effects

Plan	Comment	Cumulative effects
Climate Change Action Plans 2019-2024 for other Dublin Local Authorities	During the formulation of the CCAPs for the Dublin Region, a suite of common thematic actions have been prepared for each of the local authority areas The individual action plan for each Local Authority has undergone Habitats Directive Assessment and Strategic Environmental Assessment. It has been found that by implementing the mitigation policies and objectives of the relevant CDP as identified in the NIR and SEA ER, effects to the environment and European Sites are not likely to occur	Adverse cumulative effects not identified
National Planning Framework	The purpose of the NPF is to provide a focal point for spatial plans throughout the planning hierarchy. It will provide a framework for the new Regional Spatial and Economic Strategies (RSEs) by the three Regional Assemblies and the associated enhancement of the economic development focus of local authorities as per the Local Government Reform Act 2014. The NPF will co-ordinate the strategic planning of urban and rural areas in a regional development context to secure overall proper planning and development as well as co-ordination of the RSEs's and city/ county development plans in addition to local economic and community plans and local area plans and other local development.	The SEA And NIR of the NPF and Draft RSES are now available.
Regional Spatial & Economic Strategy (Draft)	The RSES is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. At this strategic level it provides a framework for investment to better manage spatial planning and economic development throughout the Region	The SEA Scoping Report is available for the draft Strategy. No in combination effects are identified
Water Services Strategic Plan	Ireland's first integrated national plan for the delivery of water services, the Water Services Strategic Plan (WSSP) addresses six key themes and was adopted in 2015. It was subject to full SEA and AA and concluded that Overall, the assessment has identified that the implementation of the draft WSSP is likely to	No in-combination impacts were predicted as a result of implementation of the Plans

	<p>have positive effects on the majority of the SEOs that have been used in the assessment to help characterise the environmental effects of the WSSP and no significant negative effects were identified.</p>	
Neighbouring County Development Plans	<p>These plans were subject to full SEA and AA and concluded that subject to full adherence and implementation of measures likely significant effects were not identified.</p>	<p>No in-combination impacts were predicted as a result of implementation of the Plans</p>
River Basin District Management Plans.	<p>The National River Basin District Management Plan is now published (2018). The second cycle River Basin Management Plan aims to build on the progress made during the first cycle with a greater emphasis on ensuring the evidence base is available and the administration supports are fully in place to support key measures. The approach to the plan development involves characterisation of Ireland’s water bodies in order to develop a tailored programme of measures to allow for the protection of good status or the restoration of good status for all water bodies. The outcomes are then monitored in order to feed into further characterisation and measures setting as the cycle moves forward. The plan was subject to SEA and Appropriate Assessment.</p>	<p>No in-combination impacts are predicted as a result of implementation of the Plans</p>
CFRAMS Study	<p>The Eastern CFRAM study has been commissioned in order to meet the requirements of the Floods Directive, as well as to deliver on core components of the 2004 National Flood Policy, in the Eastern district.</p>	<p>No in-combination impacts are predicted as a result of implementation of the Plans.</p>

<p>Greater Dublin Drainage</p>	<p>Irish Water made a planning application for strategic infrastructure development to An Bord Pleanála for the Greater Dublin Drainage Project in June 2018. The GDD project proposes a new regional wastewater treatment facility to be located in the townland of Clonshaugh in north county Dublin, an underground orbital sewer from Blanchardstown to Clonshaugh, a new pumping station at Abbotsown, a partial diversion of the north fringe sewer, and an outfall pipeline to return the treated water to the Irish Sea. The project also includes a regional sludge treatment centre at the new GDD facility and an associated biosolids storage facility at Newtown near Kilshane Cross.</p>	<p>Chapter 23 of the EIAR was reviewed with a focus on the cumulative impacts, No in-combination impacts are predicted as a result of implementation of the Project</p>
<p>The Greater Dublin Transport Strategy 2016-2035</p>	<p>The Transport Strategy for the Greater Dublin Area, 2016-2035 has been prepared and published by the National Transport Authority. It sets out how transport will be developed across the region, covering Dublin, Meath, Wicklow and Kildare, over the period of the strategy and has been approved by the Minister for Transport, Tourism and Sport in accordance with the relevant legislation. Luas, heavy rail and orbital bus routes are of particular relevance to the elements of this Strategy and the CCAP.</p>	<p>Positive effects in relation to the prioritisation of public transport modes above private transport.</p>

8 MITIGATION

8.1 INTRODUCTION

Section (g) of Schedule 2(B) of the SEA Regulations (Annex 1(g) of the SEA Directive) requires the Environmental Report to describe the measures envisaged to prevent, reduce and/or offset as fully as possible any significant adverse effects on the environment from implementation of the CCAP 2019-2024.. 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 preparation of the CCAP has facilitated the integration of environmental considerations into the plan. In addition, potential positive effects of implementing the CCAP have been and will be maximised and potential adverse effects have been and will be avoided, reduced or offset.

Many impacts will be more adequately identified and mitigated at masterplan, 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. Proposals for development which are deemed contrary to the environmental objectives contained in the Fingal CDP 2017-2023 will not normally be permitted, and if permitted, will be developed with specific mitigation measures.

The following sections present the principal environmental protection measures already included in the Fingal CDP 2017-2023 that will apply; please note this is not an exhaustive list.

8.2 ENVIRONMENTAL PROTECTION MEASURES IN THE FINGAL CDP 2017-2023.

The CCAP has been prepared having regard to the policies and objectives outlined within the Fingal CDP 2017-2023. The particular environmental protection measures for the Fingal CDP are as follows:

TABLE 11 ENVIRONMENTAL PROTECTION MEASURES IN FINGAL CDP 2017-2023

Policies /Objectives	
	WATER QUALITY
DW01	Liaise with and work in conjunction with Irish Water during the lifetime of the Plan to develop and identify an additional sustainable water source serving the Eastern and Midlands Region and the existing population of Fingal while also facilitating the sustainable development of the County, in accordance with the requirements of the Settlement Strategy and associated Core Strategy
DW02	Liaise with Irish Water to ensure that an adequate supply of drinking water for domestic, commercial, industrial and other uses is available for the sustainable development of the County.
DW03	Protect both ground and surface water resources and work with Irish Water to develop and implement Water Safety Plans to protect sources of public water supply and their contributing
DW04	Support the development of a new sustainable Water Source for the Greater Dublin Area.
DW05	Provide guidance and advice regarding the protection of water supply to private wells with the overall responsibility remaining with the householder.
DW06	Promote the sustainable use of water and water conservation in existing and new development within the County and encourage demand management measures among all water users.
WT01	Liaise with and work in conjunction with Irish Water during the lifetime of the plan for the provision, extension and upgrading of waste water collection and treatment systems in all towns and villages of the County to serve existing populations and facilitate sustainable development of the County, in accordance with the requirements of the Settlement Strategy and associated Core Strategy.
WT02	Liaise with Irish Water to ensure the provision of wastewater treatment systems in order to ensure compliance with existing licences, EU Water Framework Directive, River Basin Management Plans, the Urban Waste Water Directive and the

	EU Habitats Directive.
WT03	Facilitate the provision of appropriately sized and located waste water treatment plants and networks including a new Regional Wastewater Treatment Plant and the implementation of other recommendations of the Greater Dublin Strategic Drainage Study, in conjunction with relevant stakeholders and services providers, to facilitate development in the County and Region and to protect the water quality of Fingal's coastal and inland waters through the provision of adequate treatment of wastewater.
WT04	Investigate the potential for the provision of temporary wastewater treatment facilities for new developments where a permanent solution has been identified and agreed with Irish Water but not yet implemented and where the provision of such a facility is environmentally sustainable, meets the requirements of the Habitats Directive, and is in accordance with the recommendations of the EPA and where adequate provision has been made for its
WT05	Seek the best available technology in all waste water treatment plants proposed for the County
WT06	Facilitate development in unserviced areas only where it is demonstrated to the satisfaction of the Planning Authority that the proposed waste water treatment system is in accordance with the relevant EPA Codes of Practice.
WT07	Require all new developments to provide separate foul and surface water drainage systems and to incorporate sustainable urban drainage systems
WT08	Prohibit the discharge of additional surface water to combined (foul and surface water) sewers in order to maximise the capacity of existing collection systems.
WT09	Promote the appropriate development and use of Integrated Constructed Wetlands within the County.
WT10	Protect natural resources which are a basis for growth and competitive advantage in the tourism, food and aquaculture sectors
WT11	Establish a buffer zone around all wastewater treatment plants suitable to the size and operation of each plant. The buffer zone should not be less than 100m from the odour producing units.
WT12	Establish an appropriate buffer zone around all pumping stations suitable to the size and operation of each station. The buffer zone should be a minimum 35 metres – 50 metres from the noise/odour producing part of the pumping station to avoid nuisance from odour and
WQ01	Strive to achieve 'good status' in all waterbodies in compliance with the Water Framework Directive, the Eastern River Basin District Management Plan 2009-2015 and the associated Programme of Measures (first cycle) and to cooperate with the development and implementation of the second cycle national River Basin Management Plan 2017-2021.

WQ02	Protect and develop, in a sustainable manner, the existing groundwater sources and aquifers in the County and control development in a manner consistent with the proper management of these resources in conformity with the Eastern River Basin Management Plan 2009-2015 and the second cycle national River Basin Management Plan 2017-2021 and any subsequent plan and the Groundwater Protection Scheme
WQ03	Implement the recommendations of the Groundwater Protection Scheme. Objective
WQ04	Protect existing riverine wetland and coastal habitats and where possible create new habitats to maintain naturally functioning ecosystems whilst ensuring they do not impact negatively on the conservation objectives of any European Sites.
WQ05	Establish riparian corridors free from new development along all significant watercourses and streams in the County. Ensure a 10 to 15-metre-wide riparian buffer strip measured from the top of the bank either side of all watercourses, except in respect of the Liffey, Tolka, Pinkeen, Mayne, Sluice, Ward, Broadmeadow, Corduff, Matt and Delvin where a 30m wide riparian buffer strip from top of bank to either side of all watercourses outside urban centres is required as a minimum.
WQ06	Minimise the impact on surface water of discharges from septic tanks, proprietary effluent treatment systems and percolation areas by ensuring that they are located and constructed in accordance with the recommendations and guidelines of the EPA and Fingal County Council.

FLOOD MANAGEMENT

WT05	Seek the best available technology in all waste water treatment plants proposed for the County. 4
WT06	Facilitate development in unserviced areas only where it is demonstrated to the satisfaction of the Planning Authority that the proposed waste water treatment system is in accordance with the relevant EPA Codes of Practice
WT07	Require all new developments to provide separate foul and surface water drainage systems and to incorporate sustainable urban drainage systems.
WT08	Prohibit the discharge of additional surface water to combined (foul and surface water) sewers in order to maximise the capacity of existing collection systems.
WT09	Promote the appropriate development and use of Integrated Constructed Wetlands within the County
WT10	Protect natural resources which are a basis for growth and competitive advantage in the tourism, food and aquaculture sectors

WT11	Establish a buffer zone around all wastewater treatment plants suitable to the size and operation of each plant. The buffer zone should not be less than 100m from the odour producing units.
	Establish an appropriate buffer zone around all pumping stations suitable to the size and operation of each station. The buffer zone should be a minimum 35 metres – 50 metres from the noise/odour producing part of the pumping station to avoid nuisance from odour and
SW07	contd. Blakescross; Lanestown/Turvey; Lissenhall, Swords; Balheary, Swords; Village/Marina Area, Malahide; Streamstown, Malahide; Balgriffin; Damastown, Macetown and Clonee, Blanchardstown; Mulhuddart, Blanchardstown; Portrane; Sutton; and Howth, demonstrating compliance with the aforementioned Guidelines or any updated version of these guidelines, paying particular attention to residual flood risks and any proposed site-specific flood management measures.
SW08	Implement the recommendations of the Fingal East Meath Flood Risk Assessment and Management Study (FEMFRAMS
SW09	Assess and implement the recommendations of the Eastern CFRAMS when complete
SW10	Require the provision of regional stormwater control facilities for all Local Area Plan lands and Strategic Development Zones with a view to also incorporating these control facilities in currently developed catchments prone to flooding.
SW11S	Ensure that where flood protection or alleviation works take place that the natural and cultural heritage of rivers, streams and watercourses are protected and enhanced to the greatest extent possible
SW12	Require an environmental assessment of all proposed flood protection or alleviation works
SW13	Provide for the schemes listed in Table SW01: TABLE SW01: SURFACE WATER SCHEMES 1. Implementation of Fingal East Meath Flood Risk Assessment and Management Study (FEM-FRAMS), Measures – Flood Mitigation 2. Implementation of CFRAMS: Eastern CFRAMS Measures 3. Early Flood Warning System 4. Donabate Surface Water System 5. Garristown Surface Water System

CLIMATE CHANGE

CC01	Comply with the recommendations of the GSDSDS Climate Change Policy with regard to the provision and management of drainage services in the County and recognise that climate mitigation and adaption measures are evolving and comply with new national measures as presented in National Plans and Frameworks.
CC02	Implement the specific recommendations of Table CC1 of the GSDSDS Regional Policy Volume 5 Climate Change Policy for all housing, commercial and industrial developments within the County.
CC03	Continue to reduce energy and chemical consumption within the Council’s treatment plants and pumping stations.

CCO4	Mitigate the causes of climate change as per COP21 also known as the 2015 Paris Climate Conference.
	Energy
ENO1	Support International, National and County initiatives for limiting emissions of greenhouse gases through energy efficiency and the development of renewable energy sources using the natural resources of the County in an environmentally sustainable manner where such development does not have a negative impact on the surrounding environment, landscape or local amenities.
ENO2	Support and encourage pilot schemes which promote innovative ways to incorporate energy efficiency.
ENO3	Consider the adaptability of buildings over time and seek to improve the efficiency of existing building stock and promote energy efficiency and conservation in the design and development of all new buildings in the County
ENO4	Encourage development proposals that are low carbon, well adapted to the impacts of Climate change and which include energy saving measures and which maximise energy efficiency through siting, layout and design.
ENO5	Prepare a Climate Change Mitigation and Adaptation Strategy and a Local Authority Renewable Energy Strategy (LARES), Spatial Energy Demand Analysis (SEDA) and a Sustainable Energy Action Plan (SEAP).
ENO6	Encourage and facilitate the development of renewable energy sources, optimising opportunities for the incorporation of renewable energy in large scale commercial and residential development
ENO7	Support the implementation of the 'Strategy for Renewable Energy 2012-2020' Department of Communications, Energy and Natural Resources (now Department of Communications, Climate Action and Environment) and the related National Renewable Energy Action Plan (NREAP) and National Energy Efficiency Action Plan (NEEAP).
ENO8	Work with relevant stakeholders to carry out a Spatial Energy Demand Analysis (SEDA) of the County within the Plan period as resources permit
ENO9	Require details of the requirements for alternative renewable energy systems, for buildings greater than 1000sq m or residential schemes above 30 units, under SI 243 of 2012 European Communities (Energy Performance of Buildings) to be submitted at pre-planning stage for consideration. These should take the form of an Energy Statement or Feasibility Study carried out by qualified and accredited experts.
EN12	Support Ireland's renewable energy commitments outlined in national policy by facilitating the exploitation of solar power where such development does not have a negative impact on the surrounding environment, landscape, historic buildings or

	local amenities.
EN13	Encourage and support the development of solar energy infrastructure, including solar PV, solar thermal and seasonal storage facilities
EN14	<p>Promote and encourage the development of suitable sites within the County for use as Solar PV farms where such development does not have a negative impact on the surrounding environment, landscape, historic buildings, biodiversity or local amenities.</p> <p>Support Ireland's renewable energy commitments outlined in national policy by facilitating the exploitation of geothermal energy where such development does not have a negative impact on the surrounding environment, landscape, biodiversity or local amenities.</p>
EN16	Ensure that any proposal for geothermal technologies or any other subsurface exploration does not impact on groundwater quality
EN17	Support Ireland's renewable energy commitments outlined in national policy by facilitating the exploitation of hydro energy where such development does not have a negative impact on the surrounding environment, landscape, biodiversity or local amenities
EN18	Support Ireland's renewable energy commitments outlined in national policy by facilitating the exploitation of biomass technology energy while ensuring that a balance is met that such development does not have a negative impact on the surrounding environment, landscape, biodiversity or local amenities, nor on the environment nor food production elsewhere either directly or through indirect land use change
EN19	Encourage the production of bio-crops for biomass in the generation of renewable energy
EN20	Support and facilitate the integration of local bioenergy into gas and electricity networks and its use as a transport fuel.
EN21	Support Ireland's renewable energy commitments outlined in national policy by promoting the use of district heating systems in new residential and commercial developments where such development does not have a negative impact on the surrounding environment, landscape, biodiversity or local amenities
EN22	Facilitate energy infrastructure provision at suitable locations, so as to provide for the further physical and economic development of Fingal.
EN23	Establish a Climate Change Adaptation Team within Fingal County Council to prepare a Climate Change Mitigation and Adaptation Strategy with relevant stakeholders, Dublin Local Authorities and various interest groups. The Climate Change Mitigation and Adaptation Strategy will include targets for emissions reduction from the County; provision for reporting on

progress in reducing emissions; and a process of engagement with citizens, businesses and civil society in relation to the changes required.

NATURAL HERITAGE

Conserve and enhance the County's biodiversity.

Conserve and enhance the County's geological heritage.

Promote a unified approach to landscape planning and management, provide an understanding of Fingal's landscape in terms of its inherent and unique character and ensure that Fingal's landscape is appropriately protected, managed and planned.

Protect, enhance and sustainably manage the coastline and its natural resources

NH01	Support the implementation of the Fingal Heritage Plan in relation to the promotion and protection of Fingal's Natural Heritage
NH02	Integrate provision for biodiversity with public open space provision and sustainable water management measures (including SuDS) where possible and appropriate.
NH03	Implement the Fingal Biodiversity Action Plan 2015 and any revisions thereof in partnership with all relevant stakeholders.
NH04	Undertake necessary ecological surveys and complete habitat mapping for the County during the lifetime of the Plan, prioritising sensitive coastal areas
NH05	Raise awareness in relation to biodiversity across the community
NH06	Consider developing a Natural Heritage Trail or Trails to support raising awareness about these natural assets amongst the public.
NH07	Actively support the aims and objectives of the All Ireland Pollinator Plan 2015-2020 by encouraging bee keeping and other measures to protect and increase the population of bees and other pollinating insects in Fingal
NH08	Ensure that the management of the Council's open spaces and parks is pollinator-friendly, provides more opportunities for biodiversity, and does not introduce or lead to the spread of invasive species.
NH09	Support the National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, in the maintenance and, as appropriate, the achievement of favourable conservation status for the habitats and species in Fingal

	to which the Habitats Directive applies
NH10	Ob Ensure that the Council takes full account of the requirements of the Habitats and Birds Directives, as they apply both within and without European Sites in the performance of its functions.
NH11	Ensure that the Council, in the performance of its functions, takes full account of the objectives and management practices proposed in any management or related plans for European Sites in and adjacent to Fingal published by the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs
NH12	Undertake field studies and map invasive species throughout the County and initiate control programs with all relevant stakeholders and landowners to control the key invasive species
NH13	Ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).
NH14	Protect inland fisheries within and adjacent to Fingal and take full account of Inland Fisheries Ireland Guidelines in this regard when undertaking, approving or authorising development or works which may impact on rivers, streams and watercourses and their associated habitats and species.
NH15	Strictly protect areas designated or proposed to be designated as Natura 2000 sites (i.e. Special Areas of Conservation (SACs) and Special Protection Areas (SPAs); also known as European sites) including any areas that may be proposed for designation or designated during the period of this Plan.
NH16	Protect the ecological integrity of proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, and Habitat Directive Annex I sites.
NH17	Ensure that development does not have a significant adverse impact on proposed Natural Heritage Areas (pNHAs), Natural Heritage Areas (NHAs), Statutory Nature Reserves, Refuges for Fauna, Habitat Directive Annex I sites and Annex II species contained therein, and on rare and threatened species including those protected by law and their habitats
NH18	Protect the functions of the ecological buffer zones and ensure proposals for development have no significant adverse impact on the habitats and species of interest located therein.
NH19	Develop Ecological Masterplans for the Rogerstown, Malahide and Baldoyle Estuaries focusing on their ecological

	protection and that of their surrounding buffer zones.
NH20	Maintain and/or enhance the biodiversity of the Nature Development Areas indicated on the Green Infrastructure maps.
NH21	Develop a demonstration site for each Nature Development Area.
NH22	Explore the development of a small grants scheme to assist landowners with the management of their lands within the ecological network for nature conservation purposes
NH23	Protect the ecological functions and integrity of the corridors indicated on the Development Plan Green Infrastructure Maps
NH24	Protect rivers, streams and other watercourses and maintain them in an open state capable of providing suitable habitat for fauna and flora, including fish
NH25	Provide for public understanding of and public access to rivers, waterway corridors and wetlands, where feasible and appropriate, in partnership with the National Parks and Wildlife Service, Waterways Ireland and other relevant stakeholders, while maintaining them free from inappropriate development and subject to Ecological Impact Assessment and screening for Appropriate Assessment as appropriate.
NH26	Promote the use of watercourses, rivers and lakes for the pursuit of angling, through working with Inland Fisheries Ireland to improve water quality, to improve fish stocks and to provide safe access to fishing, where appropriate, taking full account of the requirements of the Habitats Directive and other relevant legislation
NH27	Protect existing woodlands, trees and hedgerows which are of amenity or biodiversity value and/or contribute to landscape character and ensure that proper provision is made for their protection and management
NH28	Consider the use of Tree Preservation Orders (TPOs) to protect important trees, groups of trees or woodlands.
NH29	Promote, encourage and support NeighbourWood Schemes by identifying suitable areas and support other initiatives that aim to establish and enhance woodlands for recreational purposes in partnership with local communities
LANDSCAPE	
NH33	Ensure the preservation of the uniqueness of a landscape character type by having regard to the character, value and sensitivity of a landscape when determining a planning application.
NH34	Ensure development reflects and, where possible, reinforces the distinctiveness and sense of place of the landscape character types, including the retention of important features or characteristics, taking into account the various elements

	which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity
NH35	Resist development such as houses, forestry, masts, extractive operations, landfills, caravan parks and large agricultural/horticulture units which would interfere with the character of highly sensitive areas or with a view or prospect of special amenity value, which it is necessary to preserve.
NH36	Ensure that new development does not impinge in any significant way on the character, integrity and distinctiveness of highly sensitive areas and does not detract from the scenic value of the area. New development in highly sensitive areas shall not be permitted if it: Causes unacceptable visual harm Introduces incongruous landscape elements
NH37	Ensure that new development meets high standards of siting and design.
NH38	Protect skylines and ridgelines from development.
NH39	Require any necessary assessments, including visual impact assessments, to be prepared prior to approving development in highly sensitive areas.
NH40	Protect views and prospects that contribute to the character of the landscape, particularly those identified in the Development Plan, from inappropriate development
NH41	Ensure that the results of the Historic Landscape Character studies undertaken in the County are taken into account in the development of plans and in the assessment of projects on an ongoing basis.
NH42	Ensure development reflects and reinforces the distinctiveness and sense of place of identified historic landscape character types, including the retention of important features or characteristics, taking into account the results of the historic landscape characterisations carried out in the County

8.3 RECOMMENDED MITIGATION MEASURES FOR THE FINGAL CCAP

Overarching measure	An integrated approach to decision making in relation to these climate change actions is recommended.
New measure – for consistency with DLR and DCC	Consider the feasibility of preparation of an Integrated Coastal Zone Management Plan that addresses natural and cultural heritage and aligns with the Marine Spatial Planning Directive
New Measure – again for consistency with the three other DLAs	Work with other Dublin Local Authorities to update DLA urban drainage and flooding policies for current knowledge of flood risk and the latest best practice in drainage design promoting natural flood measures as a priority
Flood Resilience Action 8	Develop template to capture impacts, response and costs (including ecosystem services/natural capital costs for all major climate events
Preamble to Flood Defence actions	The following flood defence will incorporate nature based solutions and biodiversity enhancement measures where possible
Nature Based Solutions Action 4	Map access to green space in County to identify areas of need and integrate green infrastructure in access considerations.
Action 8	Identify sites for woodland planting that promotes an appropriate native species mix
Action 17	Prepare a heathland management plan for Howth with ecological input
Action 18	Prepare a fire management plan for heathland on Howth that includes environmental considerations.

9 MONITORING

9.1 INTRODUCTION

It is proposed, in accordance with Article 10 of 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 CCAP 2019-2024.

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.

Overall, this Climate Change Action Plan will be monitored on an ongoing basis and actions will be reviewed and updated annually. A full review and revision of the plan will take place every five years. This draft of the Climate Change Action Plan was developed through FCC's Water and Environmental Services SPC who report to the full County Council. The Director of the Water Services and Environment Department will report on progress to the SPC annually and the SPC will monitor progress towards the set targets. Every five years there will be a full review and revision of the plan taking into account demographic, technical and other changes that have occurred and any new targets that have been changes that have occurred and any new targets that have been introduced.

Consequently, it is recommended that this SEA monitoring regime be undertaken in line with the development plan review process; as the data will be captured through the CCAP monitoring regime, the strategic environmental monitoring can both use these data and also be derived from the planning and landuse data by DCC.

In turn the list below is subject to review at each reporting stage to reflect new data. Should the monitoring regime identify significant impacts (such as impacts on designated sites) early on in the plan implementation, this should trigger a review of the CCAP and monitoring regime. In addition, the identification of positive impacts from monitoring should also be reported as this will assist in determining successful environmental actions.

Fingal County Council are responsible for the implementation of the SEA Monitoring Programme including

- Monitoring specific indicators and identifying any significant effects, including cumulative effects;
- Reviewing the effectiveness of monitoring/mitigation measures during the lifetime of the CCAP; and
- Identifying any cumulative effects.

It is recommended that the monitoring report be made available to the public upon its completion. Table 12 below presents the SEA Monitoring Table. This table sets out the strategic environmental objectives, indicators and targets to be applied in monitoring the significant environmental effects of the implementation of the CCAP, in accordance with Section 13J(2) of the Planning and Development (SEA) Regulations 2004, as amended. It is proposed that the SEA monitoring reporting should go parallel with the reviewing of the CCAP to the CDP and when the next plan is being prepared.

Table 12 Monitoring Measures

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
Biodiversity Flora and Fauna	Preserve, protect, maintain and where appropriate restore the terrestrial, aquatic and soil biodiversity, particularly EU and nationally designated sites and protected species.	Update the Biodiversity action plan with a clear programme of delivery of actions Develop a Green Infrastructure Strategy within the lifetime of the Development Plan	Number of programmes and actions in the Development Plan Period <i>Note this is an Action of the CCAP now, to be completed by 2021.</i>	Fingal Biodiversity Section
 Population and human health 	Provide high quality residential, working and recreational environments with access to sustainable transport options Protect Human Health	Increase the number of people living and working in Fingal compared to 2016 Census base findings Undertake Local Area Plan for Lissenhall which outlines and specify that services will be put in place in advance of residential development Compliance with Air Quality Legislation Undertake a review of	Number of people living and working in Fingal n/a Number of breaches of Air Quality	EPA Air Quality Monitoring Fingal CC

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
		the Dublin Agglomeration Noise Action Plan of the areas within Fingal identified as being exposed to high levels of noise and develop a programme of implementation of the mitigation measures within the lifetime of the Development Plan	Number of measures implementation	
Water 	Protect and where necessary improve and maintain water quality and the management of watercourses and groundwater, in compliance with the requirements of the Water Framework Directive objectives and measures.	Implementation of the programme of measures in the ERBD River Basin Management Plan Compliance with the recommendations of the Fingal Groundwater Protection Scheme	% increase in waters achieving and maintaining at least good status Number of planning permissions granted in areas identified as vulnerable under the Groundwater Protection Scheme	EPA and DECLG National River Basin District 2017 Programme of Measures
Air Quality and Climate	Minimise emissions of pollutants to air associated with transport.	10% increase in the number of people using sustainable transport modes (rail, bus, cycling, walking) against current 2011 Travel to Work	% increase in walking, cycling and public transport modes	National Travel Survey, Census and Fingal Transport Dept

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
		Modes (linked to objective 3).		
	Minimise contribution to climate change by adopting adaptation and mitigation measures	No new high vulnerable development applications, as defined by the OPW the Planning System and Flood Risk Guidelines (2009) within lands that fall within the 1% AEP and 0.1% AEP. All new buildings to have an A3 or higher BER	No of high vulnerable development applications permitted within lands in the 1% AEP and 0.1% AEP % of new residential buildings granted permission with A3 or higher BER	National Travel Survey, Census and Fingal Transport Dept
Soil and Geology	Safeguard the soil resources within Fingal in recognition of the strong agricultural and horticultural base.	Higher rate of brownfield and infill development as opposed to greenfield development	% development within brownfield and infill compared to greenfield	Fingal CC
				
Material Assets	Make best use of existing infrastructure and promote the sustainable development of new infrastructure to meet the needs of Fingal's population	Require all new residential planning permissions to be within 500m of bus stop and 1km of railway stations Phased development in line with wastewater capacity	% of planning permissions within 500m of bus stop and 1km of railway station Available capacity for treatment of phased development	Fingal CC

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
				
Cultural Heritage 	Protect places, features, buildings and landscapes of cultural, archaeological and/ or architectural heritage from impact as a result of development in Fingal.	Develop a code of practice for the management of architectural heritage in private ownership	n/a	FCC Planning and Water services
Landscape 	Protect and maintain the special qualities of the landscape character, including coastal character within Fingal	Review and prioritise a programme of the objectives and policies within the Special Amentiy Area Orders of Liffey Valley and Howth Conduct a habitat characterisation study in the South Shore Rush Area as detailed in the Natura Impact Report of the Fingal CDP 2017-2023	Number of programmed objectives and policies achieved in Development plan period	Fingal planning dept

SEA Topic	Environmental Protection Objective	Target	Draft Indicators	Data Sources
	<p><i>Interrelationships Maintain and improve the health of people, ecosystems and natural processes</i></p> <p><i>Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change</i></p>	<p><i>% or number of blue and green infrastructure measures included in approved planning applications within Fingal CC including SUDS, Integrated Wetlands, Hedgerows, Native tree planting scheme</i></p> <p><i>FCC supported community blue/green infrastructure measures</i></p>	<p><i>Review per grant application and # of FCC supported schemes such as integrated wetlands</i></p>	<p><i>Fingal CC</i></p>

9.3 Conclusion

This SEA Environmental Report demonstrates how environmental parameters have been addressed in the plan preparation process. Consultation has been undertaken for the Scoping of this Environmental Report and further opportunity to comment on the CCAP will be possible over the forthcoming weeks.

The SEA and Appropriate Assessment processes have been undertaken in line with the Planning and Development (Strategic Environmental Assessment) Regulations 2004 to 2011 (as amended). Subject to the full and proper implementation of the mitigation measures outlined in this SEA Environmental Report and the Proposed CCAP, it is considered that significant adverse impacts on the environment will be avoided.

ANNEX A: DETAILED ASSESSMENT OF ACTIONS IN THE FINGAL CLIMATE CHANGE ACTION PLAN 2019-2024

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

SEA Topic										
Biodiversity Flora and Fauna	Population and human health Noise	Water Resources including flood	Soil and Geology	Material Assets	Air Quality and Climatic Factors	Cultural Heritage	Landscape	Interrelation ship		
										

Energy Actions

No.	Action ENERGY & BUILDINGS									
ENERGY PLANNING										
1	Create Energy Master Plan for the Dublin Region	↕	↑	↕	↕	↕	↑	↕	↕	↑
2	Prepare Fingal Sustainable Energy and Climate Action Plan	↕	↑	↑	↑	↑	↑	↑	↑	↑
3	Prepare Local Authority Renewable Energy Strategy	↑↕	↑	↑	↑	↑	↑	↑	↑↕	↑
4	Outputs and recommendations from the Fingal Spatial Energy Demand Analysis (SEDA) 2016 to inform the review of the Fingal	↑	↑	↑	↑	↑	↑	↑	↑	↑

No.	Action ENERGY & BUILDINGS									
	Development Plan 2017-2023									
	ENERGY EFFICIENCY & RENEWABLES									
5	Complete the roll out of LED public lighting by 2021 (27,000 units remaining)									
6	Fingal Energy Management Team established	O								
7	Develop ISO 50001 compliant energy management system	O		O	O			O	O	
8	Comply with S.I. 426 under the EU (Energy Efficiency) Regulations	O		O	O			O	O	

No.	Action ENERGY & BUILDINGS									
	2014									
9	Procure upgrades through an Energy Performance Contract for County Hall (Swords) and Civic Offices, Draíocht Arts Centre and public library in Blanchardstown	○	↑	↑	↑	↑	↑	↑	↑	↑
10	Participate in the SEAI Energy Public Partnership Programme	○	↑	○	○	↑	↑	○	○	↑
11	Annual Monitoring & Reporting to SEAI	↑	↑	○	○	↑	↑	○	○	↑

No.	Action ENERGY & BUILDINGS									
12	Publish Fingal County Council's Energy Review annually	○	↑	○	○	↑	↑	○	○	↑
13	Display Energy Certificates for public buildings	○	↑	○	○	↑	↑	○	○	↑
14	All new Council buildings built to nZEB standard	○	↑	○	○	↑	↑	○	○	↑
15	Refurbishment programme for Fingal Corporate buildings to include energy reviews and retrofits as standard	○	↑	○	○	↑	↑	○	○	↑
16	Boiler replacement programme in social housing stock	○	↑	○	○	↑	↑	○	○	↑

No.	Action ENERGY & BUILDINGS									
	underway									
17	Insulation of all council owned social housing stock; extended to include acquisitions and long term leasing where feasible	O	↑	O	O	↑	↑	O	O	↑
18	LED lighting changeover of social housing voids and tenant changeover	↑	↑	↑	↑	↑	↑	O	↑	↑
19	Complete single glazing replacement programme in social housing stock and extend to include long term leases and acquisitions	O	↑	O	O	↑	↑	O	O	↑
20	Conduct a pilot to deep retrofit social housing	↕	↑	↑	↑	↑	↑	↑	↑	↑

No.	Action ENERGY & BUILDINGS									
	voids to inform potential for roll out for all stock									
21	Automatic shutdown of computers and lighting in all of Fingal's offices and depots	O	↑	O	↑	↑	↑	O	O	↑
	RESEARCH & INNOVATION									
22	Study potential for viable district heating projects within Fingal	O	↑	O	O	↑	↑	O	O	↑
23	Study potential for viable renewable energy projects on a temporary/permanent basis, on council controlled lands	O	↑	O	O	↑	↑	O	O	↑

No.	Action ENERGY & BUILDINGS									
24	Work with SMEs in partnership with SEAI to promote energy efficient adaptations	O	↑	O	O	↑	↑	O	O	↑
25	Engage with SEAI to help develop education programme for SME sector	O	↑	O		↑	↑			↑
26	Support Small Business Innovation & Research (SBIR) programme	↑	↑	↑	↑	↑	↑	↑	↑	↑
27	Work with CARO / Codema on research and project proposals for grant funding	O↑	↑	↑	↑	↑	↑	↑	↑	↑
	ENERGY AWARENESS									

No.	Action ENERGY & BUILDINGS									
28	Monitor and develop the Home Energy Saving Kits scheme in Fingal Libraries	0	↑	0	0	↑	↑	0	0	↑
29	Annual energy awareness event	0	↑	0	0	↑	↑	0	0	↑
30	Promote and support SEAI's Better Energy Communities and Sustainable Energy Communities	↑	↑	↑	↑	↑	↑	↑	↑	↑
31	Develop and encourage CPD training in energy awareness amongst Fingal staff	0	↑	0	0	↑	↑	0	0	↑
32	Expand tenant induction programme to include tenant	0	↑	0	0	↑	↑	0	0	↑

No.	Action ENERGY & BUILDINGS									
	energy awareness									
	ENERGY & BUILDINGS									
33	Install high visibility PV panels on suitable Council roofs such as libraries and community buildings	0	↑	0	0	↑	↑	0	0	↑

Comment: For all of the above actions there are positive, long term impacts regarding climate change, air quality, population and human health and overall will achieve consistency with the Interrelationship SEOs.

For a number of the actions, there are no significant interactions identified for a number of SEOS, examples being energy awareness raising and SEOs relating to water or biodiversity eg: Action 33 or 31..

A small number of SEOs could, in the absence of mitigation give rise to potential adverse effects; these relate to the following:

Action 1: Create an Energy Masterplan for Dublin,

Action 2: Prepare Sustainable Energy and Climate Action Plan

Action 3: Develop a Public Lighting Masterplan “

However the above targets relate to plan preparation and there are sufficient and appropriate mitigation measures through environmental protection measures in the

No.	Action ENERGY & BUILDINGS									
Fingal 2017-2023 to address these and provide appropriate mitigation.										
Actions 9,15 and 17 relating to retrofitting of housing stock and buildings/boiler upgrades etc. are positive in relation to the SEOs listed above, but also in terms of soil and geology and waste management, by retrofitting the existing housing stock it extends the life of buildings, and in addition to energy savings and reductions, reduces the need for geological and soil resources associated with new build, it indirectly supports the circular economy.										

Transport

										
STAFF TRAVEL							↑			
1	Install quality teleconferencing facilities between Blanchardstown and Swords	0	↑	0	0	↑	↑	0	0	↑

										
2	Modernise the workplace to facilitate flexible working arrangements to reduce staff travel (e.g. Skype)	0	↑	0	0	↑	↑	0	0	↑
3	Implement carbon offset programme for official flights	↑	↑	↑	↑	↑	↑	↑	↑	↑
4	Promotion of Cycle-to-Work Scheme for Council staff	0	↑	0	0	↑	↑	0	0	↑
5	Provide an electric vehicle in County Hall courtyard and Blanchardstown for use by staff travelling to site visits and meetings	0	↑	0	0	↑	↑	0	0	↑
OPERATIONS										

										
6	Continued electrification of the Council's vehicle fleet as market technology develops	0	↑	0	0	↑	↑	0	0	↑
7	Expand availability of EV charging points for Council staff and operational vehicles	0	↑	0	0	↑	↑	0	0	↑
8	Electric vehicle charge points to be provided in car parking for new Fingal Corporate buildings and social housing where technically feasible	0	↑	0	0	↑	↑	0	0	↑
9	Provide eco driving training to Council drivers	0	↑	0	0	↑	↑	0	0	↑
INTEGRAT										

										
ION OF SPATIAL PLANNING & TRANSPORT										
10	To plan spatial development patterns which reduce transport demand and encourage low carbon transport modes. E.g. consolidation of the existing communities already served by public transport and close to established social and community infrastructure and the creation of new communities serviced by high quality transport links	↑	↑	↑	↑	↑	↑	↑	↑	↑
11	Promote the installation of EV charge points in	○	↑	○	○	↑	↑	○	○	↑

										
	curtilage, for all new house constructions in Fingal									
ACTIVE TRAVEL & BEHAVIOR CHANGE										
12	Build out Fingal's cycle network offering direct routes to local destinations and public transportation hubs. Develop linked cycling trails, greenways and green belts for recreation and biodiversity protection	↑↕	↑	↑↕	↑↕	↑	↑	↑↕	↑↕	↑
13	Advance the provision of new cycle network across the County such as the Fingal Coastal Way, the	↕	↑	↕	↕	↑	↑	↕	↑↕	↑

										
	Sutton to Malahide Cycleway, the Broadmeadow Way, the Harry Reynolds Road Cycle Route and the Royal Canal Urban Greenway, etc.									
14	Advance the construction of the following road schemes which will include high quality cycle network - Donabate Distributor Road, Rathbeale Road Upgrade and Snugborough Interchange and Ongar - Barnhill Link Road, etc.	↕		↕	↕	↑	↑	↕	↕	↑
15	Implement traffic calming programme including provision of new signalised pedestrian crossings	0	↑	0	0	↑	↑	0	0	↑

										
16	Regular maintenance of regional and local roads to encourage modal shift to cycling	↕	↑	↕	↕	↑	↑	↕	↕	↑
17	Improve conditions and uptake of cycling through public realm / local area plans	○	↑	○	○	↑	↑	○	↑	↑
18	Re-organisation of allocation of space to pedestrians in the public realm	↑	↑	↑	↑	↑	↑	↑	↑	↑
19	Increase the quantity of bicycle stands in the public domain	○	↑	○	○	↑	↑	○	○	↑
20	Expand Bike Sharing Schemes in urban areas	○	↑	○	○	↑	↑	○	○	↑

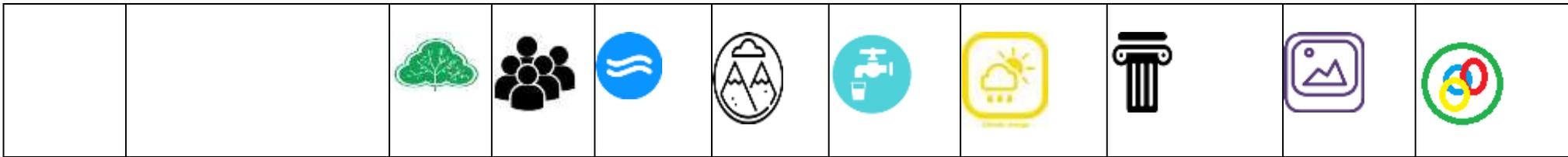
										
21	Promote and facilitate additional car sharing schemes	0	↑	0	0	↑	↑	0	0	↑
PUBLIC TRANSPORT										
22	Develop a policy with NTA for the provision of Park & Ride facilities across the county	↕	↑	↕	↕	↑	↑	↕	↕	↑
23	Support the development and expansion of existing public transport services including MetroLink, BusConnects and DART expansion to Balbriggan	↕	↑	↕	↕	↑	↑	↕	↕	↑
TRANSPORT - ACTIONS										

										
AWAITING BUDGET										
24	Expand the availability of EV charge points in towns and villages in line with national policy as it develops	0	↑	0	0	↑	↑	0	0	↑
25	Identify and put in place the resources necessary to develop & implement a cycling strategy	↕	↑	↕	↕	↑	↑	↕	↕	↑

Comment: As with the energy actions, all of these actions for Transport generate positive, medium to long term effects across Climate change, Air quality, Material Assets and Human Health.

Cumulatively and in combination, several of these actions encourage a modal shift and in turn this would give 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 populations, human health and with a reduction in emissions associated with Particulate Matter and Nitrogen Dioxide positive effects on Biodiversity, flora and fauna and surface water features.

A number of these Transport Actions are recommended for mitigation either due to the potential in the absence of mitigation on conservation management objectives of European Sites, water or soil SEOs (Actions 13 and 14); however it is considered the existing environmental protection measures in the DLR CDP2016-2022 should address these potential effects appropriately.



In terms of larger/regional transport actions (eg Action 23 Expand public transport network in the County) the SEA ER of the Eastern and Midland RSES (draft) highlights the following

Modifications to existing road and rail routes, and the building of any new routes, have potential to impact negatively on biodiversity. Any potential impacts of ongoing or proposed road or rail projects should be considered. Key projects include proposed road projects in the Region and an aspiration for the future twin tracking of the rail line both north and south from Dublin with the DART extension involving electrification of part of it. As the rail line runs adjacent to, and in some cases through, European sites, such projects will require appropriate assessment. In addition to loss of annexed habitat there is potential for bird collisions with overhead cables for the DART where it crosses estuaries such as at Malahide and Rogerstown (Scoping submission)

Construction of linear road and rail infrastructure has the potential for short to long term direct and indirect negative effects for all environmental receptors as a result of emissions, habitat loss and disturbance of species, deterioration in air quality and noise disturbance. Robust feasibility studies and site / route selection are the most effective manner to reduce impacts on the environment from such enhancements and the RSES should require these stages are fully delivered before decisions are made. It is particularly important that demand management and overall systems management options are given proper consideration as options to online and offline solutions. It is acknowledged that investment priorities for these strategic assets are administered by other agencies and departments and as such an RPO which seeks to proactively engage with the key stakeholders for land transport would be a positive addition

(Discussion in SEA ER of Transport policies)

Flood Resilience

FLOOD RESILIENCE										
FLOOD RISK MANAGEMENT										
1	Implement 'The Planning System and Flood Risk Management - Guidelines for Planning Authorities' (2009)	↑	↑	↑	↑	↑	↑	↑	↑	↑
2	Undertake Strategic Flood Risk and SuDS Assessments for all LAPS, SDZs and development plans	↑	↑	↑	↑	↑	↑	↑	↑	↑
3	Finalise a SuDs policy in collaboration with all	↑	↑	↑	↑	↑	↑	↑	↑	↑

FLOOD RESILIENC E										
	Fingal departments									
4	Mid-term review of the SFRA for the County Development Plan	↑	↑	↑	↑	↑	↑	↑	↑	↑
5	Protect and conserve floodplains, wetlands and coastal areas subject to flooding through available policy instruments	↑	↑	↑	↑	↑	↑	↑	↑	↑
6	Assess the feasibility of green roofs on all new Fingal public, operational and social buildings and provide where viable and appropriate		↑			↑	↑		↑	↑
7	Update Council Emergency Response Plans to include flood event response		↑			↑	↑			↑

FLOOD RESILIENC E										
8	Develop template to capture impacts, response and costs (including ecosystem services/natural capital costs for all major climate events	↕		↕	↕			↕	↕	
9	To engage with the Fingal Coastal Liaison Group with the integration of adaptation strategies into planning policies, etc.	↑	↑	↑	↑	↑	↑	↑	↑	↑
10	Develop a climate change impact GIS risk map with scenarios for the Dublin Region	↑	↑	↑	↑	↑	↑	↑	↑	↑
FLOOD DEFENCE										

FLOOD RESILIENC E										
The following flood defence will incorporate nature based solutions and biodiversity enhancement measures where possible										
11	Develop and implement Coastal Protection Plan for Portrane	↕	↑	↕	↕	↑	↑	↕	↕	↑
12	Progress OPW flood protection scheme at Mill Stream Skerries	↕		↕	↕			↕	↕	
13	Progress OPW flood protection scheme at Bissett Strand and The Green Malahide Village	↕		↕	↕			↕	↕	
14	Progress OPW flood protection scheme at Portmarnock Bridge	↕		↕	↕			↕	↕	
15	Continued engagement with the OPW to progress	↕	↕↑	↕	↕	↕	↕↑	↕	↕	↕↑

FLOOD RESILIENC E										
	further studies of areas within Fingal at risk of flooding, and development of suitable schemes such as Strand Road Sutton and Santry									
FLOOD RESILIENC E										
16	<i>Develop a coastal monitoring programme to measure coastal erosion along the Fingal coast</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑
17	<i>Identify sites where flood defence features can be removed or relocated to increase flood capacity of rivers and estuaries</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑
18	<i>Restore St Ita's wetlands to maximise water</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑

FLOOD RESILIENC E										
	<i>attenuation capacity and nature conservation benefits</i>									
19	<i>Record on a GIS layer the council surface water system and make it available to all relevant staff from Operations & Planning. This must include all SuDs systems and flood embankments</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑
20	<i>Prepare a maintenance register for the entire surface water system within the county, including SuDs, pipes and culverts to aid proactive maintenance, alleviate flooding and maintain water quality</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑
21	<i>Identify and put in place the resources to develop and</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑

FLOOD RESILIENC E										
	<i>promote SuDs, including: Promote and encourage community involvement in the retrofit of SuDS in existing developments, maintaining community rain gardens, discourage hard paving in gardens & retrofit raingardens / waterbutt installations</i>									
22	<i>Create a case study of SuDs at LAP level</i>	↑	↑	↑	↑	↑	↑	↑	↑	↑

Nature Based Solutions

NATURE BASED SOLUTIONS										
OPERATIONS										

NATURE BASED SOLUTIONS										
1	Engage with sectoral adaptation plan on biodiversity to identify key habitats and species at risk from climate change impacts	↑	↑	↑	↑	↑	↑	↑	↑	↑
2	Engage with working group on nature-based solutions once set up	↑	↑	↑	↑	↑	↑	↑	↑	↑
GREEN INFRASTRUCTURE										
3	Develop Green Infrastructure Strategy that incorporates climate change mitigation and adaptation to increase climate resilience	↑	↑	↑	↑	↑	↑	↑	↑	↑

NATURE BASED SOLUTIONS										
4	Map access to green space in County to identify areas of need and integrate green infrastructure in access considerations.	↑↕	↑	↑	↑	↑	↑↕	↑	↑	↑
AGRICULTURE										
5	Engage with the agri food sector to gain an understanding of how Fingal might better support more sustainable farming practices	↑	↑	↑	↑	↑	↑	↑	↑	↑
6	Develop climate change initiatives in partnership with local farmers and	↑	↑	↑	↑	↑	↑	↑	↑	↑

NATURE BASED SOLUTIONS										
	other stakeholders									
TREE MANAGE MENT										
7	Review and implement Tree Strategy to protect existing trees, increase tree cover, establish guidelines on tree maintenance and investigate feasibility of urban orchards	↑	↑	↑	↑	↑	↑	↑	↑	↑
8	Identify sites for woodland planting that promotes an appropriate native species mix	↕	↑	↑	↑	↑	↑	↑	↑	↑
9	Map and protect strategic agricultural land for national food security	↑	↑	↑	↑	↑	↑	↑	↑	↑

NATURE BASED SOLUTIONS										
	purposes									
10	Incorporate SuDs into Constructed Tree Pits provided by the Council and in requirements for Constructed Tree Pits conditioned by the Council in Planning Permissions	↑	↑	↑	↑	↑	↑	↑	↑	↑
CONSERVATION AND PRESERVATION										
11	Develop a map of habitats and species at risk of climate change	↑	↑	↑	↑	↑	↑	↑	↑	↑
12	Develop a monitoring programme of the habitats and species considered at risk of	↑	↑	↑	↑	↑	↑	↑	↑	↑

NATURE BASED SOLUTIONS										
	climate change									
13	Prepare a climate proof biodiversity plan	↑	↑	↑	↑	↑	↑	↑	↑	↑
14	Support and promote 'National Biodiversity Data Centre All-Ireland Pollinator Plan Actions for Councils'	↑	↑	↑	↑	↑	↑	↑	↑	↑
15	Increase pollinator areas in public parks and open spaces	↑	↑	↑	↑	↑	↑	↑	↑	↑
16	Support the use of allotments as a way communities can grow their own food, and lower food miles and food waste	↑	↑	↑	↑	↑	↑	↑	↑	↑
NATURE BASED										

NATURE BASED SOLUTIONS										
SOLUTIONS										
17	Prepare a heathland management plan for Howth with ecological input	↕↑	↑	↑	↑	↑	↑	↑	↑	↑
18	Prepare a fire management plan for heathland on Howth that includes environmental considerations.	↕	↑	↑	↑	↑	↑	↑	↑	↑
19	Create multi-functional master plans for Rogerstown & Baldoyle Estuaries and their surroundings	↑	↑	↑	↑	↑	↑	↑	↑	↑

Comment: the nature based solutions provide for consistency with all the SEOs. This is largely due to the multi-benefit effects of such actions, for example expanding multifunctional masterplans (Action 19) and mapping of habitats, and identification of woodland sites. These can all provide co-benefits to biodiversity, flora and fauna, assist with air quality purification, with

<p>NATURE BASED SOLUTIONS</p>									
<p>accompanying positive effects on human health, assist with carbon storage, and provide landscape benefits.</p> <p>A number of these actions are recommended for mitigation to ensure the nature based solution element is included more explicitly such as Actions 17 and 18 relating to Howth heath and fire protection.</p> <p>In addition the action relating to mapping green space for access is recommended for additional measures to integrate green infrastructure measures, rather than simply access considerations (Action 4).</p>									

Resource Management

RESOURCE MANAGEMENT										
Procurement										
1	Implement green procurement where feasible, starting with office consumables		↑			↑	↑			↑
2	Implement green procurement at Council supported events where feasible, including reduction of single use plastics	↑	↑	↑	↑	↑	↑	↑	↑	↑
WASTE MANAGEMENT										
3	Implement Environmental Management System for	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGEMENT										
	Council buildings including reduction in waste and water usage, and increased recycling									
4	Remove all single use items from Council canteens	↑	↑	↑	↑	↑	↑	↑	↑	↑
5	Apply for Local Authority Waste Prevention Network grants		↑			↑	↑			↑
6	Promote Conscious Cup Campaign		↑			↑	↑			↑
7	Promote 'Reuse Month' annually	↑	↑	↑	↑	↑	↑	↑	↑	↑
8	Help implement Recycling Ambassadors Programme	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGEMENT										
9	Promote recycling centres and expand the range of materials accepted where possible	↑	↑	↑	↑	↑	↑	↑	↑	↑
LITTER & RECYCLING IN PUBLIC REALM										
10	Trial recycling bins in regional parks		↑		↑	↑				↑
11	Implement a programme for the installation of big belly bins across the County to reduce collection frequencies and emissions	↑	↑	↑	↑	↑	↑	↑	↑	↑
12	Support and promote the inclusion of climate	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGEMENT										
	change initiatives in tidy town, green schools and cleaner communities									
13	Support marine litter clean-up initiatives	↑	↑	↑	↑	↑	↑	↑	↑	↑
LANDFILL MANAGEMENT										
14	Maintain landfill gas collection and reuse system at Dunsink and Balleally Landfill	↑	↑	↑	↑	↑	↑	↑		↑
15	Look at feasibility of planting trees on Dunsink Landfill	↑	↑	↑	↑	↑	↑	↑	↑	↑
WATER CONSERV										

RESOURCE MANAGEMENT										
ACTION										
16	Provide a water butt retrofit programme for council owned housing on a cost benefit basis, starting with voids and tenant changeovers		↑	↑		↑	↑			↑
17	Assess the feasibility of including rainwater harvesting on all new Fingal public, operational and social buildings and provide where viable and appropriate	↑	↑	↑	↑	↑	↑	↑		↑
18	Incorporate low flush toilets into Council buildings, depots and housing, in line with refurbishment programmes	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGE MENT										
AWARENE SS										
19	Develop and implement an ongoing public Climate Awareness Programme	↑	↑	↑	↑	↑	↑	↑	↑	↑
20	Implement a Climate Awareness Programme for staff	↑	↑	↑	↑	↑	↑	↑	↑	↑
21	Develop and implement a Climate Change Awareness Grant Programme for schools and communities	↑	↑	↑	↑	↑	↑	↑	↑	↑
22	As part of an emerging 'Green City' concept to produce A Guide to Sustainable Business in Swords	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGEMENT										
23	Expand tenant induction programme to include tenant energy, water, waste and environmental awareness	↑	↑	↑	↑	↑	↑	↑	↑	↑
RESOURCE MANAGEMENT										
24	Establish a network of public drinking water fountains to help reduce plastic waste	↑	↑	↑	↑	↑	↑	↑	↑	↑
25	Examine the feasibility of retrofitting rainwater harvesting measures in existing council buildings, particularly for vehicle washing, toilet flushing and landscaping	↑	↑	↑	↑	↑	↑	↑	↑	↑

RESOURCE MANAGE MENT										
<p>Comment: Many of the actions included in Resource Management generate positive interactions across all SEOS, in particular those action that relate to awareness raising and engagement which can increase overall environmental awareness and encourage behavioural change for example around waste management, water access points etc.</p> <p>Dunsink landfill gas is converted back to the grid which is a good example of reuse.</p> <p>The potential for tree planting is positive subject to feasibility as it may encourage uptake of emissions via the tree root system.</p> <p>Actions such as 17 and 18 relating to water conservation etc are also identified as giving rise to indirect, longer term positive effects in relation to biodiversity and material assets should it result in reductions in waste such as plastic water bottles and overall resource management.</p>										

ANNEX B: REVIEW OF PLANS AND PROGRAMMES

International Level

Title	Summary
Sustainable Development	
UN convention of Biological Diversity, 1992	The UN convention of Biological diversity was opened for signature at the Earth Summit in Rio de Janeiro on 5 June 1992 and entered into force on 29 December 1993. To date, there are 193 Parties signed up. The CBD is often seen as the key international instrument for sustainable development. The Ecosystem Approach, an integrated strategy for the management of resources, is the framework for action under the Convention.
EU Environmental Action Programme to 2020	The 7 th EU Environmental Action Programme is more strategic in nature and identifies three main areas to guide EU environmental policy and research. The three thematic priority objectives are intended to: <ul style="list-style-type: none"> • Protect nature and strengthen ecological resilience • Boost sustainable resource-efficient low-carbon growth, and • Effectively address environment-related threats to health.
Environmental Assessment	
SEA Directive - Assessment of the effects of certain plans and programmes on the Environment, (2001/42/EC) 2001	This Directive requires plan-makers to carry out an assessment of the likely significant environmental effects of implementing a plan or programme before the plan or programme is adopted.
Environmental Impact Assessment Directive (85/337/EEC) .	The EIA Directive (85/337/EEC) came into force in 1985 and applies to a wide range of defined public and private projects, which are defined in Annexes I and II of the Directive. This has been amended with Directive 2011/92/EU and the 2014 Directive (see below).
Environmental Impact Assessment Directive (2014/52/EC)	It is necessary to amend Directive 2011/92/EU in order to strengthen the quality of the environmental impact assessment procedure, align that procedure with the principles of smart regulation and enhance coherence and synergies with other Union legislation and policies, as well as strategies and policies developed by Member States in areas of national competence. The Directive now applies from May 2017.
Biodiversity, Flora and Fauna	
UN Convention of	The Convention on Biological Diversity (CBD) entered into force in December 1993. It has 3 main objectives:

Title	Summary
Biological Diversity, 1992	<ol style="list-style-type: none"> 1. The conservation of biological diversity. 2. The sustainable use of the components of biological diversity. 3. The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.
The Convention on Wetlands of International Importance (The Ramsar Convention) 1971 and subsequent amendments	Protection and conservation of wetlands and habitats of importance to waterfowl
EU Biodiversity Strategy to 2020	<p>In 2011 the European Commission adopted a new strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets, and 20 actions to help Europe reach its goal. The six targets cover:</p> <ul style="list-style-type: none"> · Full implementation of EU nature legislation to protect biodiversity. · Better protection for ecosystems, and more use of green infrastructure. · More sustainable agriculture and forestry. · Better management of fish stocks. · Tighter controls on invasive alien species. · A bigger EU contribution to averting global biodiversity loss.
EU Directive on the Conservation of Wild Birds, (2009/147/EC) 1979. Known as the Birds Directive	This Directive ensures far-reaching protection for all of Europe's wild birds, identifying 194 species and sub-species among them as particularly threatened and in need of special conservation measures. Member States are required to designate Special Protection Areas (SPAs) for 194 particularly threatened species and all migratory bird species. SPAs are scientifically identified areas critical for the survival of the targeted species, such as wetlands. They are part of the Natura 2000 ecological network established under the Habitats Directive 92/43/EEC.
EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, (92/43/EEC), 1992 known as the Habitats Directive	The main goal of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain, protect or restore natural habitats, animal and plant species to a favourable conservation status, introducing robust protection for those habitats and species of European importance. For Ireland, these habitats include raised bogs, active blanket bogs, turloughs, sand dunes, machair (flat sandy plains on the north and west coasts), heaths, lakes, rivers, woodlands, estuaries and sea inlets. The Directive provides for a network of protected sites known as The Natura 2000 network, which limits the extent and nature of development which may have a detrimental effect on the flora or fauna identified therein.
European Communities (Birds and Natural	These regulations consolidate the European Communities (Natural Habitats) Regulations 1997 to 2005 and the European Communities (Birds and Natural Habitats)(Control of Recreational Activities) Regulations 2010, as well as addressing transposition failures identified in the CJEU

Title	Summary
Habitats) Regulations 2011	<p>judgements.</p> <p>Articles 6(1) and (2) of the Regulations require Member States to take appropriate conservation measures to maintain and restore habitats and species, for which a site has been designated, to a favourable conservation status. Furthermore the Regulations require Member States to avoid damaging activities that could significantly disturb these species or deteriorate the habitats of the protected species or habitat types. Under these regulations any plan or project likely to have a significant effect on a Natura 2000 site, either individually or in combination with other plans or projects, shall undergo an Appropriate Assessment to determine its implications for the site. The competent authorities can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site concerned. In exceptional circumstances, a plan or project may still be allowed to go ahead, in spite of a negative assessment, provided there are no alternative solutions and the plan or project is considered to be of overriding public interest.</p>
Green Infrastructure Strategy	<p>The European Commission in May 2013 adopted a Green Infrastructure Strategy, '<i>to promote the deployment of green infrastructure in the EU in urban and rural areas</i>'. This is a key step in implementing the EU 2020 Biodiversity Strategy and specifically Target 2 that requires that 'by 2020, ecosystems and their services are maintained and enhanced by establishing green infrastructure and restoring at least 15% of degraded ecosystems'. Green Infrastructure (GI) is contributing to all other targets of the EU Biodiversity strategy – in particular the full implementation of the Birds and Habitats Directive (target 1) – and to maintain and enhance biodiversity in the wider countryside and the marine environment (targets 3 and 4).</p>
Population and Human Health	
The Stockholm Convention	<p>The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have adverse effects to human health or to the environment.</p>
Several environmental parameters interact and impact on human health including water quality, infrastructure, air quality, soil, cultural heritage and landscape; the plans, policies and programmes associated with these are presented under thematic headings as appropriate.	
Geology and Soil	
EU Soil Thematic Strategy	<p>In September 2006, the European Commission published the final Thematic Strategy for Soil Protection (COM(2006)231 final) and a proposal for a Directive establishing a framework for the protection of soil across the EU (COM(2006)232). The objective of the strategy is to protect and ensure the sustainable use of soil, based on the guiding principles of preserving soil functions, preventing further degradation and restoring degraded soils to a level of functionality consistent with current and intended use. Once adopted the European Soil Thematic</p>

Title	Summary
	Strategy will guide and frame Ireland’s approach to developing its own soil protection strategy.
Water Resources	
Water Framework Directive (2000/60/EC) as amended	<p>The Water Framework Directive (WFD) was adopted in 2000 in an effort to establish a framework for the protection of waterbodies within the EU including:</p> <p>inland surface waters; groundwater; transitional waters; and coastal waters.</p> <p>The key aims of the WFD are:</p> <p>expanding the scope of water protection to all waters, surface waters and groundwater;</p> <p>achieving "good status" for all waters by a set deadline</p> <p>water management based on river basins;</p> <p>"combined approach" of emission limit values and quality standards.</p> <p>getting the prices right;</p> <p>getting the citizen involved more closely, and</p> <p>streamlining legislation.</p> <p>Its ultimate objective is to achieve “good ecological and chemical status” for all Community waters by 2015.</p>
Floods Directive (2007/60/EC)	The Directive aims to establish a common framework for assessing and reducing the risk that floods within the European Union pose to human health, the environment, property and economic activity.
The Drinking Water Directive (DWD), (98/83/EC) 1998	This Directive is intended to protect human health by laying down healthiness and purity requirements which must be met by drinking water within the Community.
Groundwater Directive, (2006/118/EC) 2006	This directive establishes a regime which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater.
EC Bathing Water Quality Directive, (2006/7/EC) 2006	This Directive strengthens the rules guaranteeing bathing water quality It supplements Directive 2000/60/EC on water protection and management. Each year, the Member States are required to identify the bathing waters in their territory and define the length of the bathing season. They shall establish monitoring at the location most used by bathers or where the risk of pollution is greatest.
Climate and Air Quality	
Paris (Climate Change) Agreement	The Paris Agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation, adaptation, and finance, starting in the year 2020. There are 197 parties signed to the agreement, The main aim is to reduce the impacts of climate change through setting emission reduction Plans & guidelines.

Title	Summary
Kyoto Protocol	The Protocol was initially adopted on 11 December 1997 in Kyoto, Japan, and entered into force on 16 February 2005. To date 191 states have signed and ratified the protocol. Following the Conference of Parties to the Climate Change Convention (COP) meeting in Copenhagen 2009, the EU revised its commitment to reducing greenhouse gases by increasing the target to 20% reduction on 1990 levels by 2020.
The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive	The EU objective in relation to air quality is ‘to achieve levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment’.
Material Assets	
EU Directive on Waste, (2006/12/EC), 2006	This Directive requires EU States to publish waste management plans. It requires a system of permits and registrations to be put in place to authorise all waste management infrastructure, as well as setting down the basic requirements that need to be satisfied for these statutory authorisations to be issued.
EU Directive on Waste (2008/98/EC), 2008	This Directive establishes a legal framework for the treatment of waste within the Community. It aims at protecting the environment and human health through the prevention of the harmful effects of waste generation and waste management. The Directive requires Member States to take measures for the treatment of their waste in line with the following hierarchy which is listed in order of priority:· prevention;· preparing for reuse;· recycling;· other recovery, notably energy recovery;· disposal.
EU Urban Waste Water Treatment Directive (91/271/EEC), 1991	The aim of the Urban Waste Water Directive is to protect inland surface waters from the adverse effects of discharges of urban wastewater and discharge of certain biodegradable industrial waste water (particularly from the agro-food industry).
Directive 2009/28/EC on the promotion of the use of energy from renewable sources	Directive 2009/28/EC on the promotion of the use of energy from renewable sources establishes the basis for the achievement of the EU’s 20% renewable energy target by 2020. Under the terms of the Directive, each Member State is set an individually binding renewable energy target, which will contribute to the achievement of the overall EU goal. Each Member State is required to adopt a national renewable energy action plan.
Cultural Heritage Archaeology and Built Heritage	
The World Heritage Convention	The World Heritage Convention was adopted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in November 1972. The World Heritage Convention aims to promote cooperation among nations to protect heritage around the world that is of such outstanding universal value that its conservation is important for current and future generations.. The following sites are on the tentative list for World Heritage Site Designation in the county: Inis Cealtra and the Burren.
European Convention on	This Convention was ratified by Ireland in 1997 and as such the Planning Authority is legally bound by it. The aim of the Convention is to

Title	Summary
the Protection of the Archaeological Heritage, 1992 (The Valletta Convention)	'protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study'. It requires that appropriate consideration be given to archaeological issues at all stages of the planning and development process.
Convention for the Protection of the Architectural Heritage of Europe, 1985 (Granada Convention)	Ratified by Ireland in 1997, the 1985 Convention for the Protection of the Architectural Heritage of Europe is intended to reinforce and promote policies for the conservation and enhancement of Europe's heritage. The Convention is dual purpose, involving the promotion of architectural heritage policies while fostering European-wide co-operation measures. Covering monuments, groups of buildings and sites of importance, the Convention requires a national inventory of architectural heritage to be developed. Legal protection measures must be established, with a system of formal authorisation required for works affecting protected sites and structures. Architectural heritage conservation considerations are required to feature in the Convention signatories' town and Regional planning processes.
Landscape	
The European Landscape Convention 2000	The 2000 European Landscape Convention, adopted in Florence (and was ratified by Ireland in 2002), requires a commitment to introduce policies on landscape protection and management. It promotes the protection, management and planning of EU landscapes as a response to European-wide concerns that the quality and diversity of landscapes were deteriorating. The underlying purpose of the Convention is to encourage public authorities to adopt policies and measures at local, Regional, National and International level to protect and manage landscapes throughout Europe.
Other relevant conventions, plans, policies and programmes	
The Aarhus Convention	The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment. The Parties to the Convention are required to make the necessary provisions so that public authorities (at national, regional or local level) will contribute to these rights to become effective.
Environmental Liability Directive 2004/35/EC	<p>The overall objective of the Directive and the Regulations is to prevent and remedy environmental damage by holding operators whose activities have caused environmental damage financially liable for remedying the damage. The Environmental Liability Regulations 2008 define environmental damage under three categories:</p> <p>Damage to natural habitats and protected species - any damage that has significant adverse effects on reaching or maintaining the favourable conservation status of European designated habitats or species (i.e. those covered by the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC)). Water damage - damage which significantly adversely affects the ecological, chemical and/or quantitative status and/or ecological potential of waters covered in the Water Framework Directive (2000/60/EC). Land damage - any contamination that creates a significant risk of human health being adversely affected as a result of the direct or indirect introduction in or under the land of</p>

Title	Summary
	substances, preparations, organisms or micro-organisms.

National Level

Title	Summary
Sustainable Development	
Our Sustainable Future A framework for sustainable development in Ireland	Our Sustainable Future timeframe is to 2020 to tie in with other national and international frameworks, but a longer-term horizon to 2050 is also taken where appropriate, to provide a framework for guiding and reporting on long-term broad development trends such as on climate change.
Water Framework Directive River basin management plans 2018	On April 17th 2018 the Government published the River Basin Management Plan for Ireland 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.
National Mitigation plan	The National Mitigation Plan contains a series of mitigation measures and actions to address the immediate challenge of climate change to 2020 and to prepare for the EU targets that Ireland will take on for 2030. It will also begin the development of work to meet the objectives of the National Policy Position for 2050. The National Mitigation Plan covers greenhouse gas emissions in the Electricity Generation, Built Environment, Transport, and Agriculture, Forest and Land Use sectors, Environmental analysis was undertaken as part of the development of the Plan with appropriate assessment and environmental assessment taking place.
Sectoral Climate Adaptation Plans 2018	Sectoral Planning Guidelines for Climate Change Adaptation have been developed for, and are primarily intended for the use of, the sectors required to prepare statutory sectoral adaptation plans under the Framework(NAF). The guidelines aim to ensure that a coherent and consistent approach to adaptation planning is adopted by the key sectors in Ireland. With each specific region having a plan tailored to their specifics
Local Authority Adaptation strategy development Guidelines, EPA 2016	The guidelines are based on a staged and proportionate approach to adaptation planning and are structured around a 6-step planning cycle, these are: <ul style="list-style-type: none"> 1) Preparing the Ground; 2) Climate Impact Screening; 3) Prioritisation; Executive Summary - Sectoral Planning Guidelines for Climate Change Adaptation iii

Title	Summary
	4) Priority Impact Assessment; 5) Develop your Plan; 6) Implement, Evaluate and Review
The National Planning Framework 2040	<p>Is a national document that will guide at a high-level strategic planning and development for the country over the next 20+ years, so that as the population grows, that growth is sustainable (in economic, social and environmental terms).</p> <p>Finalisation of the NPF alongside the ten-year National Development Plan will put together one plan to guide strategic development and infrastructure investment at national level.</p> <p>The NPF with the National Development Plan will also set the context for each of Ireland’s three regional assemblies to develop their Regional Spatial and Economic Strategies taking account of and co-ordinating local authority County and City Development Plans in a manner that will ensure national, regional and local plans align.</p>
Biodiversity, Flora and Fauna	
Actions for Biodiversity 2017 – 2021, Ireland’s 3rd National Biodiversity Plan	<p>The National Biodiversity Plan is intended to play a central part in Ireland’s efforts to halt biodiversity loss and was developed as in line with the EU and International Biodiversity strategies and policies. It sets out the strategic objectives of the government in relation to biodiversity</p> <p>They include:</p> <ol style="list-style-type: none"> 1. mainstreaming biodiversity across the decision making process in the State; 2. strengthening the knowledge base underpinning work on biodiversity issues; 3. increasing public awareness and participation; 4. ensuring conservation of biodiversity in the wider countryside; 5. ensuring conservation of biodiversity in the marine environment; 6. expanding and improving on the management of protected areas and protected species; 7. enhancing the contribution to international biodiversity issues.
Wildlife (Amendment) Act 2000	<p>The Wildlife Act is Ireland’s primary national legislation for the protection of wildlife. It covers a broad range of issues, from the designation of nature reserves, the protection of species, regulation of hunting and controls in wildlife trading. It is implemented by a series of regulations.</p> <p>The Act provides strict protection for nearly all birds, 22 other animal species, and 86 plant species. These species are protected from injury, or from disturbance / damage to their breeding or resting place wherever these occur. The 2000 Act was amended in 2010.</p>
National Heritage Plan (2002)	<p>The Department of Arts Heritage Gaeltacht and the Islands published the National Heritage Plan in April 2002. The plan sets out a vision for the management of the heritage of Ireland. A key element of the process of formulating the National Heritage Plan is the requirement to prepare</p>

Title	Summary
	Local Heritage Plans at County and City level.
All Ireland Pollinator Plan 2015-2020	<p>The All-Ireland Pollinator Plan: A shared plan of action has been developed by a fifteen member steering group and identifies 81 actions across five objectives. Sixty-eight partner organisations from both public, private and NGO sectors have supported the Plan, with responsibility for delivering the 81 actions shared out between these organisations. It is a voluntary Plan.</p> <p>The Pollinator Plan has 5 key objectives:</p> <ol style="list-style-type: none"> 1. Making Ireland pollinator friendly (farmland, public land & private land) 2. Raising awareness of pollinators and how to protect them 3. Managed pollinators – supporting beekeepers and growers 4. Expanding our knowledge on pollinators and pollination service 5. Collecting evidence to track change and measure success
European Union (Invasive alien species) (Freshwater Crayfish) regulations 2018	<p>The European Union (Invasive Alien Species) (Freshwater Crayfish) Regulations 2018 (SI 354/18) came into force on 18 September 2018. The new measures are designed to combat the threat of disease spread from several species of non-native crayfish. The new regulations will give Irish authorities the powers to prevent the arrival and spread of the five non-native species of crayfish included on the EU list of invasive alien species.</p>
Irish waters Capital Investment programme	<p>This is a plan by Irish water to develop and implement investment in improvements in drinking water quality, leakage, water availability, wastewater compliance, efficiencies and customer service across 380 projects around Ireland. The main objectives are</p> <ol style="list-style-type: none"> 1. Eliminating Boil Water Notices in Roscommon 2. Providing more water and in particular reducing disruption to supply in the Dublin area 3. Improving Water Quality 4. Investing for economic development 5. Tackling leakage 6. Increasing wastewater treatment capacity and improving environmental compliance 7. Better Control and Monitoring 8. Improving existing plants
Irish waters Capital Investment programme 2017-2021 including forthcoming planning application for ring send	<p>The capital investment programme outlines the number of projects being invested in across the country by Irish water. An application to upgrade the Ringsend WWTP has been commissioned the application seeks permission for works required to facilitate the use of Aerobic Granular Sludge (AGS) technology, to omit the previously permitted long sea outfall tunnel and to upgrade the sludge treatment facilities at Ringsend, Dublin 4, and to provide for a Regional Biosolids Storage Facility in Newtown, Dublin 11. Environmental impact assessment and appropriate assessment were both carried out on this project.</p>

Title	Summary
WWTP upgrade	
Waterways Ireland Heritage Plan 2014-2020	The Waterways Ireland Heritage Plan provides, a strategic framework for the integration of built, natural and cultural heritage into the future management of the waterways of Ireland.
Population and Human Health	
Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages)(2009)	The aim of these guidelines is to set out the key planning principles which should be reflected in development plans and local area plans, and which should guide the preparation and assessment of planning applications for residential development in urban areas.

Geology and Soil	
Geological Heritage Sites Designation (under the Wildlife Amendment Act 2000)	The Wildlife (Amendment) Act 2000 provides for designation of Natural Heritage Areas (NHAs) which will include geological sites. Until actually designated, there is no real protection for any important sites identified by GSI and recommended for NHA status. However, a number of geological features are protected because they are the underlying reason for a biological or ecological site protected as a National Nature Reserve, National Park or as a Special Area of Conservation (SAC). In addition many local authorities have scheduled County Geological Sites within their County Development Plans.
Water Resources	
National River Basin District Management Plan 2018	The National River Basin District Management Plan is now published (2018). The second cycle River Basin Management Plan aims to build on the progress made during the first cycle with a greater emphasis on ensuring the evidence base is available and the administration supports are fully in place to support key measures. The approach to the plan development involves characterisation of Ireland's water bodies in order to develop a tailored programme of measures to allow for the protection of good status or the restoration of good status for all water bodies. The outcomes are then monitored in order to feed into further characterisation and measures setting as the cycle moves forward. The plan was subject to SEA and Appropriate Assessment.
Water Services Act (2007)	The Act sets down a comprehensive modern legislative code governing functions, standards, obligations and practice in relation to the planning, management, and delivery of water supply and waste water collection and treatment services. The Act focuses on management of water "in the pipe", as distinct from broader water resources issues such as river water quality, etc.
Water Services (Amendment) Act (2012)	The 2012 Act amends the 2007 Water Services Act in order to comply with a European Court of Justice ruling against Ireland in October 2009. The Court found that Ireland had failed to fulfil its obligations under the Waste Directive (75/442/EEC) regarding domestic waste waters

	disposed of through septic tanks and other individual waste water treatment systems. The new Part 4A requires each water services authority to establish and maintain a register of domestic waste water treatment systems situated within their functional area.
Irish Water Services Strategic Plan SEA and AA	The 25 year plan for strategic delivery of water services is currently being prepared and the SEA Scoping report was issued for consultation with a deadline in September 2014.
The Planning System and Flood Risk Management Guidelines (and Technical Appendices) for Planning Authorities (DoEHLG, OPW), 2009	<p>In relation to planning at the County level the guidelines require planning authorities to:</p> <ul style="list-style-type: none"> • introduce flood risk assessment as an integral and leading element of their development planning functions at the earliest practicable opportunity. • Align strategic flood risk assessment (SFRA) with the SEA process. • Establish flood risk assessment requirements as part of the preparation of the County Development Plan. • Assess planning applications against the guidance set out in the Guidelines. • Ensure development is not permitted in areas of flood risk except where there are no suitable alternative sites.
Climate and Air Quality	
National Adaptation Framework 2018	<p>Ireland's first statutory National Adaptation Framework (NAF) was published in 2018. The NAF sets out the national strategy to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts. The NAF was developed under the Climate Action and Low Carbon Development Act 2015.</p> <p>The NAF builds on the work already carried out under the National Climate Change Adaptation Framework (NCCAF, 2012). The NAF outlines a whole of government and society approach to climate adaptation in Ireland. Under the NAF a number of Government Departments will be required to prepare sectoral adaptation plans in relation to a priority area that they are responsible for. Work on these plans will begin in 2018. Local authorities are required to prepare local adaptation strategies The NAF will be reviewed at least once every five years. The NAF also aims to improve the enabling environment for adaptation through ongoing engagement with civil society, the private sector and the research community.</p>
National Climate Change Strategy (2007-2012)	The National Climate Change Strategy 2007 - 2012 sets out a range of measures, building on those already in place under the first National Climate Change Strategy (2000) to ensure Ireland reaches its target under the Kyoto Protocol. The Strategy provides a framework for action to reduce Ireland's greenhouse gas emissions
Review of Ireland's climate change policy and Climate Action and Low Carbon Bill	The National Economic and Social Council submitted a review of Ireland's climate change policy to the Minister of Environment in late 2012. The review includes the development of potential policies and measures to reduce greenhouse gas emissions in agriculture, transport, heat in buildings and renewable energy supply and a basis for a national transition to a low-carbon future by 2050.

2013	
Material Assets	
Smarter Travel, A Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020	Smarter Travel is the transport policy for Ireland that sets out how the vision of a sustainable travel and transport system can be achieved.
Design Manual for Urban Roads and Streets 2013	Design Manual for Urban Roads and Streets incorporates good planning and design practice to support and encourage more sustainable travel patterns in urban areas.
Electric Vehicle Grant scheme and VRT relief	The electric Vehicle grant scheme is a government initiative to promote electric car use throughout the country. The scheme provides grants of up to 5,000 euro that are incentivised to promote electric and hybrid car use and thus reduce carbon emissions and is carried out through the SEAI . VRT or vehicle registration tax is a measure introduced to tax accordingly in relation to emissions produced by vehicle.
Spatial Planning and National Roads Guidelines 2012	These guidelines set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions, outside the 50-60 kmh speed limit zones for cities, towns and villages.
National Transport Strategy for Greater Dublin Area 2016-2023	The Transport Strategy for the Greater Dublin Area, 2016-2035 has been prepared and published by the National Transport Authority in accordance with Section 12 of the Dublin Transport Authority Act, 2008. It sets out how transport will be developed across the region, covering Dublin, Meath, Wicklow and Kildare, over the period of the strategy and has been approved by the Minister for Transport, Tourism and Sport in accordance with the relevant legislation
Cultural Heritage Archaeology and Built Heritage	
National Monuments Act 1930 with subsequent amendments	This is the primary legal protection to archaeology in Ireland and has been amended a number of times, most recently 2004.
Architectural Heritage Protection - Guidelines for Planning Authorities (2011)	The 2004 guidelines were reissued in 2011 following the transfer of architectural heritage protection functions to the Department of Arts, Heritage and the Gaeltacht. Part IV of the Planning and Development Acts 2000 – 2011 sets out the legislative provisions for the protection and conservation of our architectural heritage
National Inventory of Architectural Heritage (NIAH)	The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of Arts, Heritage and the Gaeltacht. The purpose of the 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 to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).
Planning policy statement 2015	This document sets out the outline for the future of planning in Ireland and the objectives and guidelines for the continued development of Irish planning. It is a non-statutory statement that's main objectives are to set out: (1) Key principles that it expects planning authorities, other public bodies and those that engage with the planning process will observe; and (2) High level priorities for the continued enhancement of the planning system in Ireland.
Green Low Carbon Agriculture Environment scheme (GLAS)	The Green, Low-Carbon Agri-Environment Scheme is part of the Rural Development Programme 2014-2020. It provides funding to farmers in return for delivering environmental management on their land. Farmers must commit to the scheme for a minimum period of 5 years. GLAS has a number of interlinked aims, which include: <ul style="list-style-type: none"> • Protecting agricultural land, its habitats and biodiversity • Promoting environmentally sustainable methods of farming • Addressing issues of climate change mitigation, water quality and the preservation of habitats and species • Maintaining features such as traditional drystone walls and hedgerow The overall target for GLAS is to attract 50,000 farmers into the new scheme over its lifetime
Landscape	
A National Landscape Strategy for Ireland –2015	The Department of Arts, Heritage and the Gaeltacht has issued A National Landscape Strategy for Ireland which sets out objectives and principles in the context of a proposed National Landscape Strategy for Ireland.
Draft Landscape and Landscape Assessment Guidelines, (2000)	These Guidelines attempt to approach landscape appraisal in a systematic manner and recommend Landscape Character Assessment (LCA) as the method for assessment. LCA involves the characterisation of landscape based primarily on landcover (trees, vegetation, water etc.) and secondly on the value (i.e. historical, cultural, etc.). LCA is intended to aid the development management process as it gives indicators of development types which would be suited to certain locations using certain design criteria and consequently the character of the landscape remains intact.
National Cycle Policy Framework 2009-2020	The Government's 2009-2020 National Cycle Policy Framework. ... It outlined 19 high level objectives and detailed the 109 individual but integrated actions, aimed at ensuring that a strong cycling culture is developed in Ireland so that by 2020 10% of all journeys will be by bike,
National Transport authority Permeability best practice guide	The National transport Authority NTA published this guide in 2015. The document outlines how Dublin can improve and implement better walking and cycling throughout the city. Permeability, for the purpose of this guidance, describes the extent to which an urban area permits the movement of people by walking or s such, the Authority, in collaboration with County Council and AECOM, has developed this policy guidance on how best to facilitate demand for walking and cycling in existing built-up areas.
Public Transport Act 2016	An Act to amend and extend the Dublin Transport Authority Act 2008 , the Taxi Regulation Act 2013 and the Railway Safety Act 2005 , section 66 of the Transport (Railway Infrastructure) Act 2001 , to amend sections 27 and 27A of the State Airports Act 2004 and section 106 of the

	Road Traffic Act 1961 , to give the force of law to the Protocol of 3 June 1999 for the Modification of the Convention concerning International Carriage by Rail (COTIF) of 9 May 1980 (Protocol 1999) and to change the name of the Railway Safety Commission.
<p>Planning and Development Act 2000 (as amended).</p> <p>This Act consolidated all planning legislation from 1963 to 1999 and remains the basis for the Irish planning code, setting out the detail of regional planning guidelines, development plans and local area plans as well as the basic framework of the development management and consent system. Among other things, it provides the statutory basis for protecting our natural and architectural heritage, the carrying out of Environmental Impact Statements and the provision of social and affordable housing. There have been a number of changes to the legislation since 2000, the most significant of which are set out in The Planning and Development (Amendment) Act 2002 and the Housing (Miscellaneous Provisions) Act 2004, which made substantial changes to Part V of the Act.</p> <p>In addition, a suite of new planning policies are being prepared most notably the National Planning Framework due to be finalised first quarter of 2017 which will replace the National Spatial Strategy. Prior to this a non-statutory Planning Policy Statement was issued in 2015 establishing then key principles including the following:</p> <ul style="list-style-type: none"> - No. 8. Planning will conserve and enhance the rich qualities of natural and cultural heritage of Ireland – No. 9. Planning will support the protection and enhancement of environmental quality. 	

County level

Title	Summary
Regional Planning Guidelines 2010-2020- to be replaced by Regional Economic and Spatial Strategies	<p>The aim of the Regional Planning Guidelines (RPGs) is to provide a framework for long term strategic development of the Greater Dublin Region for the period 2010 – 2022 which is consistent with the National Spatial Strategy (NSS) 2002 – 2020 and which ensures the successful implementation of the NSS at regional, county and local level.</p> <p>A key aspect of the RPGs is integrating sustainable economic development with the protection and enhancement of the environment. The RPGs are influenced by a wide range of international, national and regional level plans, programmes and legislation and also establish a framework for other lower level plans and programmes.</p>
Fingal County Development Plan 2017-2023	<p>The Development Plan is a plan for Fingal and as such the assessment has been limited geographically to activities occurring within the functional area of the Development Plan. The Development Plan will cover the period from 2017 up to 2023</p> <p>It was subject to SEA and AA.</p>
Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020	<p>This document sets out the planned biodiversity conservation and related research actions of DBBP from 2016-2020. It aims, firstly, to provide a coordinated framework for biodiversity conservation and research activities to be undertaken by DBBP and, secondly, to provide clarity regarding these planned activities to all stakeholders within DBB. It builds on the themes and objectives set out in the Periodic Review of North Bull Island UNESCO Biosphere (DCC, 2014), which set out the following vision statement: “Our vision is to celebrate and promote a wider appreciation of the natural and cultural heritage of Dublin Bay, to capture the inherent passion of the community for the Biosphere concept and for the Dublin Bay</p>

	Biosphere to be an exemplar for a new wave of Biospheres in the world network.”
Eastern & Midland assembly regional spatial and economic strategy 2018	<p>The Draft RSES is a strategic plan which identifies regional assets, opportunities and pressures and provides appropriate policy responses in the form of Regional Policy Objectives. At this strategic level it provides a framework for investment to better manage spatial planning and economic development throughout the Region.</p> <p>The Draft RSES provides a:</p> <ul style="list-style-type: none"> • Spatial Strategy – to manage future growth and ensure the creation of healthy and attractive places to live, work, study, visit and invest in. • Economic Strategy – that builds on our strengths to sustain a strong economy and support the creation of quality jobs that ensure a good living standard for all. • Metropolitan Plan – to ensure a supply of strategic development areas for the sustainable growth and continued success and competitiveness of the Dublin metropolitan area. • Investment Framework – to prioritise the delivery of key enabling infrastructure and services by government and state agencies. • Climate Action Strategy – to accelerate climate action, ensure a clean and healthy environment and to promote sustainable transport and strategic green infrastructure.
Eastern-Midlands regional waste management plan 2015	<p>The Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 provides a framework for the prevention and management of waste in a sustainable manner in 12 local authority areas. The Eastern-Midlands Region comprises Dublin City Council, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Councils. The three key objectives of the Eastern-Midlands Region Waste Management Plan are:</p> <ul style="list-style-type: none"> • Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan. • More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020. • Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.
Greater Dublin area Transport strategy 2016-2035	<p>The Transport Strategy for the Greater Dublin Area, 2016-2035 has been prepared and published by the National Transport Authority in accordance with Section 12 of the Dublin Transport Authority Act, 2008. It sets out how transport will be developed across the region, covering Dublin, Meath, Wicklow and Kildare, over the period of the strategy and has been approved by the Minister for Transport, Tourism and Sport in accordance with the relevant legislation. Environmental assessment was carried out for this plan This transport strategy (Strategy) provides a framework for the planning and delivery of transport infrastructure and services in the Greater Dublin Area (GDA) over the next two decades. It</p>

	<p>also provides a transport planning policy around which other agencies involved in land use planning, environmental protection, and delivery of other infrastructure such as housing, water and power, can align their investment priorities.</p>
<p>Eastern Catchment Based Flood risk Management (CFRAM) study 2011-2016</p>	<p>The Eastern CFRAM study has been commissioned in order to meet the requirements of the Floods Directive, as well as to deliver on core components of the 2004 National Flood Policy, in the Eastern district. The main aims of the Eastern CFRAM Study are to</p> <ul style="list-style-type: none"> • assess flood risk, through the identification of flood hazard areas and the associated impacts of flooding; • identify viable structural and non-structural measures and options for managing the flood risks for localised high-risk areas and within the catchment as a whole; • prepare a strategic Flood Risk Management Plan (FRMP) and associated Strategic Environmental Assessment (SEA) that sets out the measures and policies that should be pursued to achieve the most cost effective and sustainable management of flood risk; • ensure that full and thorough public and stakeholder consultation and engagement is achieved
<p>Greater Dublin Strategic Drainage study</p>	<p>The Greater Dublin Strategic Drainage Study was commissioned in 2001 to carry out a strategic analysis of the existing foul and surface water systems in the local authority areas of Dublin City, Fingal, South Dublin, Dun Laoghaire Rathdown and the greater Dublin area. The study examined the new infrastructural requirements to 2031 in three-time frames:</p> <ul style="list-style-type: none"> • The existing situation: - This examined drainage requirements for all development to year 2002, this year being the study baseline. • The short term situation:- This examined drainage requirements for all anticipated developments due for completion to year 2011 • The long term situation: - This identified the broad drainage requirements to cater for anticipated and/or assumed development in the Greater Dublin Region to year 2031.