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STRATEGIC ENVIRONMENTAL ASSESSMENT ENVIRONMENTAL REPORT

DÚN LAOGHAIRE-RATHDOWN COUNTY COUNCIL

DRAFT CLIMATE CHANGE ACTION PLAN

2019-2024

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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 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 Dún Laoghaire Rathdown 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	*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.*
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 the 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 provision[1].

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 the coast and lowlying parts of the county, whilst the more rural, hills of the county reflect lower population densities.

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.

Dún Laoghaire-Rathdown supports a variety of natural and semi-natural habitats and a wide range of plant and animal species, which have come under threat due to development pressures and increased demand for new development land.

Green space, which makes up a large part of the southern portion of the County, consists of a variety of habitats including corridors which provide for the movement of wildlife. Green space within Dún Laoghaire-Rathdown is comprised of agricultural lands, bogs and heath in the uplands, woodlands, grasslands and a number of open spaces in residential areas. There are also a number of large parks within the County including Marlay Park, Deerpark, Cabinteely Park and Shanganagh Park.

[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/

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. Dún Laoghaire Rathdown is situated 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.

A strategic flood risk assessment was undertaken as part of the Dún Laoghaire Rathdown County Development Plan 2016-2022. Dún Laoghaire Rathdown is

2.3.4 Soil and Geology

Bedrock geology is the county is varied between the harder, granite uplands composed of igneous rock and the lowlying limestone in the north of the county. The varied geological history gives rise to the diverse landscape in a relatively small area.

Urban soils make up the northern, most built-up section of the Plan area. The majority of the Plan area is covered by grey brown podzols with areas of brown podzolics, peaty podzols and litosols and outcropping rock existing as the Plan area extends to the south west.

Dún Laoghaire Rathdown includes existing areas under agricultural landuse and 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.

In Dún Laoghaire-Rathdown, there are approximately 400 items on the RMP, with a Zone of Archaeological Potential identified around each monument. There are more entries to the RMP in the rural, south eastern parts of the Plan area though clusters exist at Dalkey Island and at Dalkey. Clusters also exist west of Loughlinstown and at Glencullen and also at Kilmashogue Mountain in the west of the Plan area.

In terms of architectural heritage, 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.

There are currently in excess of 2,000 Protected Structures within the County. These structures include harbours, piers, boat slips, bridges, quarries, Martello Towers, Victorian terraces, Georgian houses, public buildings, street furniture, churches, castles, schools, yacht clubs and a range of domestic architecture.

2.3.6 LANDSCAPE

Landscape Character Assessment describes landscapes in terms of their character in an objective way. This can be used to inform decision making in relation to the protection of the environment, natural resources and heritage; it can be used to monitor change and can be used to guide development. In accordance with the DEHLG's Landscape and Landscape Assessment Guidelines (2000), Dún Laoghaire-Rathdown County Council have identified 14 Landscape Character Areas which are listed below:

1. Kilmashogue Valley 2. Western Half of Kellystown Road 3. Ticknock Road 4. Marlay Park 5. Kilternan Plain 6. Ballycorus 7. Glencullen Valley 8. Glendoo Valley 9. Barnacullia 10. Rathmichael 11. Ballyman 12. Shanganagh 13. Carrickmines 14. Cherrywood Rathmichael.

The County Development Plan designates High Amenity Zones in the southern portion of the County. These areas consist of landscapes of special value where inappropriate development would contribute to a significant diminution of the landscape setting of the County.

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. Dún Laoghaire Rathdown is located within the 'Dublin City' region. 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 DLR CCAP. The adaptation baseline has identified that the effects of climate change are already impacting Dún Laoghaire Rathdown 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. Dún Laoghaire Rathdown 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.

Dún Laoghaire-Rathdown County Council (DLRCC) 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 DLRCC consumed a total of 50.57 gigawatt hours (GWh) of primary energy in 2017. The energy database also shows that DLRCC improved its energy performance by 28.2% between the baseline year and 2017. This highlights a gap-to-target of 4.8%, meaning that DLRCC must improve its energy performance by a further 4.8% 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 55% of the Council's overall energy consumption. Buildings and facilities were the second highest energy consumers,

accounting for 38% of the total energy consumption, while the municipal fleet accounted for 7% of the total energy use.

As a signatory to the Covenant of Mayors for Climate and Energy, DLRCC is committed to reducing its own emissions by 40% by 2030, compared to the baseline year.

The most recently-available information for the total emissions in the entire Dún Laoghaire-Rathdown area is based on Census 2016 data. Using this data, Codema was able to calculate that the total emissions for the Dún Laoghaire-Rathdown area amounted to 1,139,570 tonnes of CO2eq in 2016. The sectors that produced the most emissions were the residential, transport and commercial sectors, accounting for 44%, 33% and 19% of the total emissions, respectively. The emissions attributed to Dún Laoghaire-Rathdown County Council amounted to only 1% of the total County emissions, with social housing contributing another 1.2%. This highlights the need for collaboration and action from all stakeholders to tackle the remaining 97.8% of emissions from public and private sector sources in the County.

2.3.8 Material Assets

In terms of trips to work, school and college, walking travel mode share in Dún Laoghaire Rathdown is below the Greater Dublin Area (GDA) average, cycling is higher than the GDA average, while overall public transport usage is also above the GDA average. The car, however, remains the dominant mode of transport with 54% of trips being undertaken by this mode (including car passengers). There is a relatively high quality pedestrian network throughout the County. The continued expansion of the Bus Network is of the upmost importance. In addition, the continuation and improvement of existing bus services along radial and orbital routes, subject to sufficient demand and availability of finance, is also considered a priority.

There are two rail corridors in Dún Laoghaire- Rathdown, the Luas Green Line and the South

Waste water in Dún Laoghaire Rathdown is currently treated in Ringsend Wastewater Treatment Works which discharges into Dublin Bay. The treated waters are treated to a Tertiary standard, which is in compliance with the Urban Wastewater Treatment Directive. Over 98% of water distributed in Dún Laoghaire-Rathdown is supplied from Dublin City Council. This water is sourced from catchments outside Dún Laoghaire-Rathdown County Council, primarily Roundwood (Vartry), Ballymore Eustace (Liffey) and Ballyboden (Dodder). Total daily demand in the Dún Laoghaire- Rathdown County area is approximately 51 mega litres (11 million gallons) per day.

The Regional Waste Management Plan 2015-2024 for the Eastern-Midlands Region encompasses the local authorities: Dublin City, Dún Laoghaire- Rathdown, Fingal, Dún Laoghaire Rathdown, 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 fishing industry in Dún Laoghaire- Rathdown relates not only to commercial fishing (at sea and inland) but also to tourism and recreational activities. The harbours of Dún Laoghaire and Bullock provides fishing year round and are used as recreational and amenity harbours.

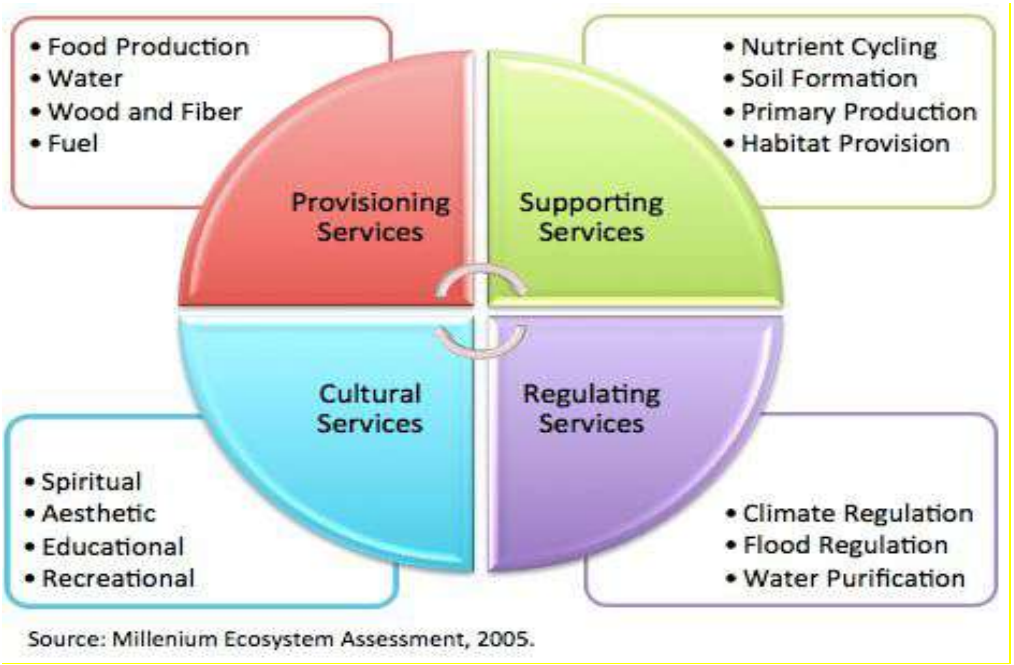
The marine resource is very important to Dún Laoghaire-Rathdown as it supports a significant number of water based activities, both work and pleasure related. These include boat hire, yachting, adventure sports, pier/shore angling, sea angling, dolphin and bird watching, hiking, visiting heritage sites and festivals. Dublin Bay Cruises also sail from Dún Laoghaire-Rathdown to Howth daily during the summer months.

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.

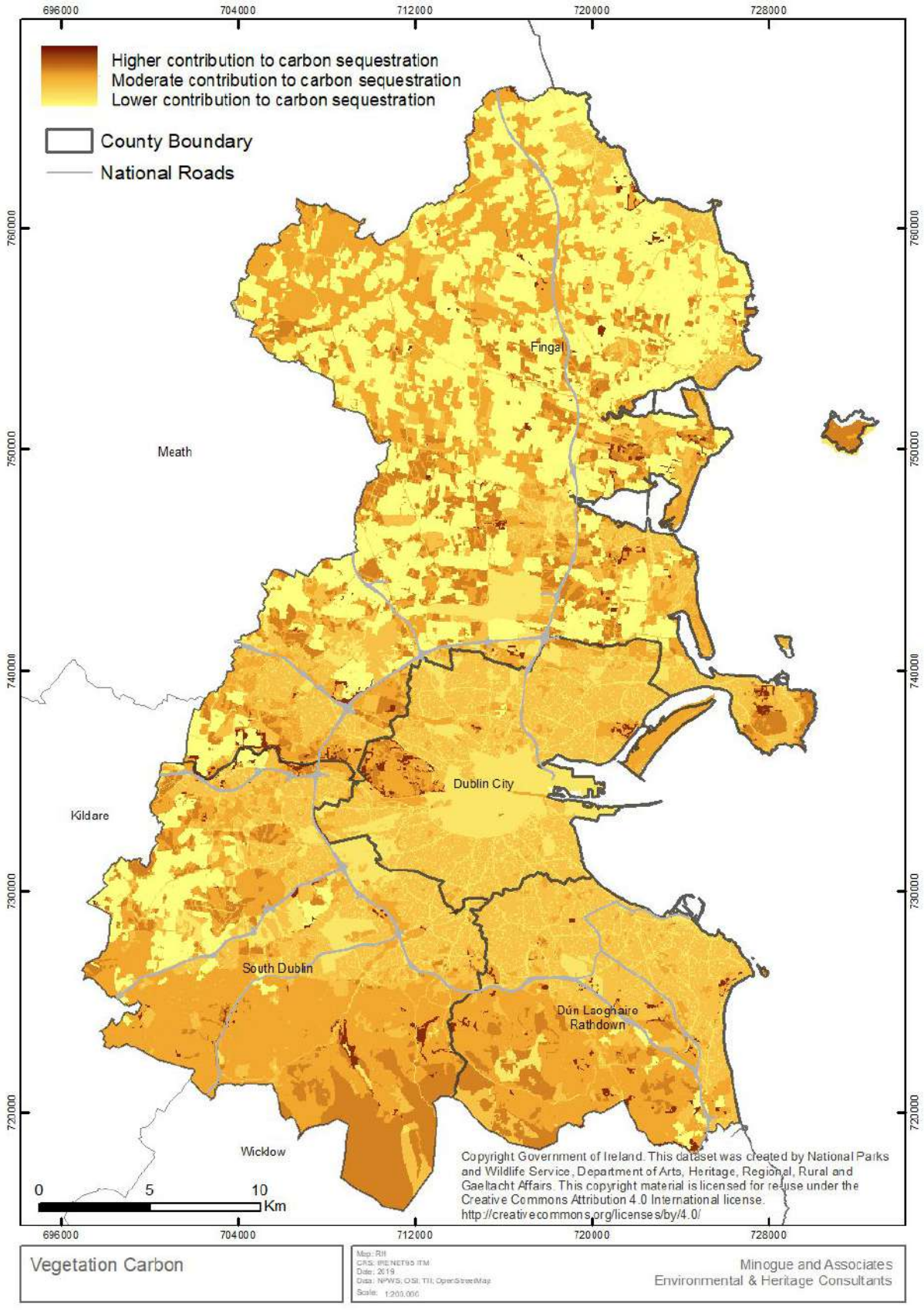


NATIONAL ECOSYSTEM AND ECOSYSTEM SERVICES MAPPING PILOT (NPWS)

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 Dún Laoghaire Rathdown , the above assessment demonstrates the importance of the foothills and uplands in terms of water storage, filtration and carbon sequestration. The agricultural lands in the lowlying western and southern parts of the county also fulfil an important role in water services.

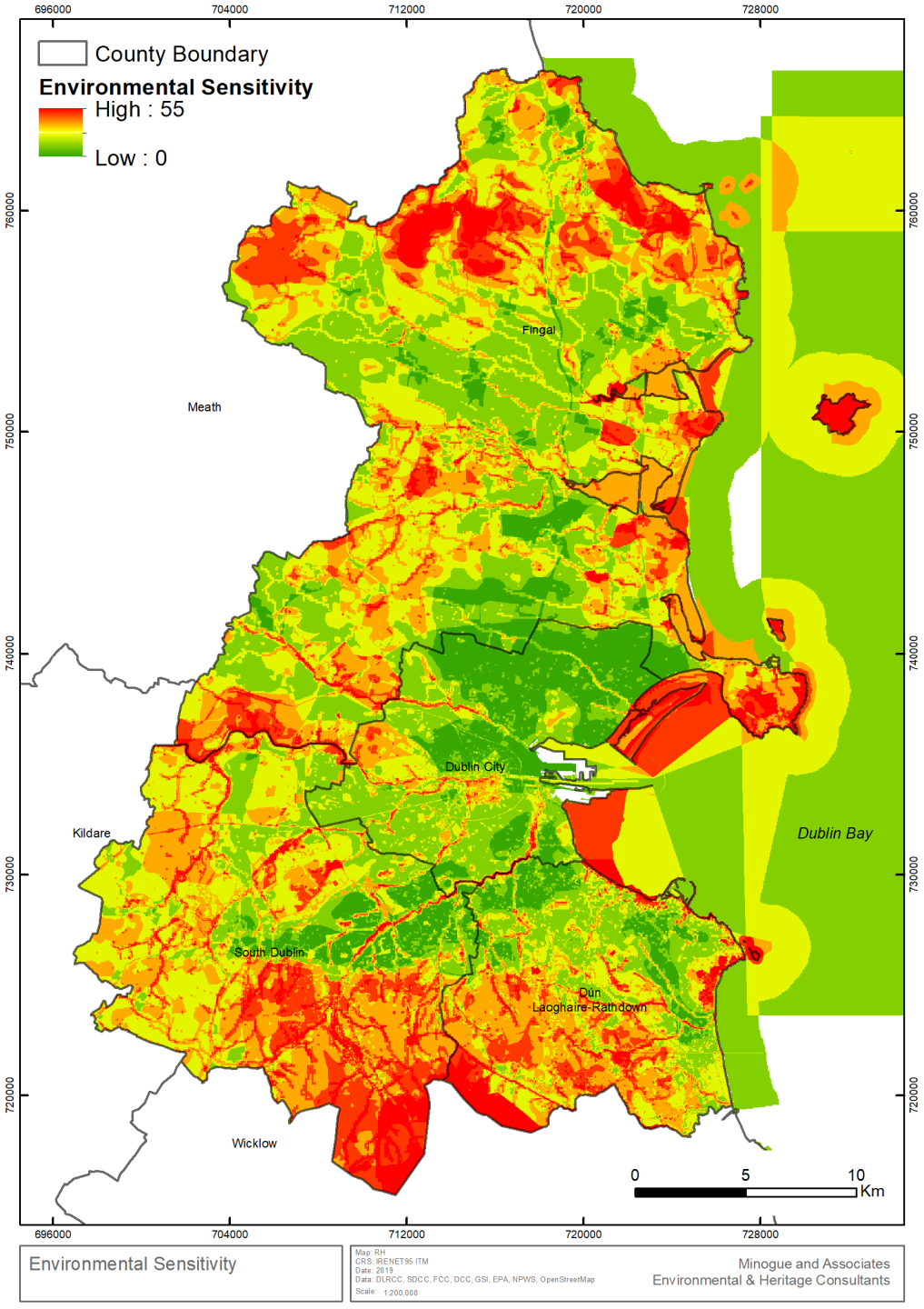
FIGURE 2 ECOSYSTEM SERVICES –CARBON SEQUESTRATION



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 DLR CDP 2016-2022 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 DLR County 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 the SEA ER).

TABLE 2 STRATEGIC ENVIRONMENTAL OBJECTIVES

SEA Topic	Target
Biodiversity Flora and Fauna 	***B1: To avoid the loss of important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features, or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.***
	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan .
	B3: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, resulting from the implementation of the Plan, to important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.
	B4 To maintain and restore key ecological processes (e.g. ecohydrology, hydrogeology, hydrogeomorphology, water quality, coastal processes).
Population and human health 	PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan
Soil 	S1: To minimise reductions in soil extent and hydraulic connectivity
Water 	W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status'63

	W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)
	W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC
	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning Sy stem and Flood Risk Management Guidelines for Planning Authorities
Material Assets 	M1: All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment over the lifetime of the Plan
	M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan
	M3i: Minimise increases in and, where possible, reduce household waste generation M3ii: Maximise increases in packaging recovered (t) by self-complying packagers
 **Air Quality and Climate**	C1: An increase in the percentage of the population travelling to work, school or college by public transport or non-mechanical means
Cultural Heritage 	CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from significant adverse effects arising from new development granted permission under the Plan
	CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from new development granted permission under the Plan
Landscape 	L1: To implement Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects
	***Maintain and improve the health of people, ecosystems and natural processes Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change***
Interrelationships	

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 Energy: *Action 5* relating to deep retrofits of the councils' housing stock provides 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.

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.

Mapping trees in the county (*Nature Based Solutions Action 12*), Review the Dublin Bay Biosphere and identify areas vulnerable to climate change (*Action 17*), as well as Action 18 Co-ordinate action on biodiversity across the four Dublin Local Authorities are examples of actions that are long term positive and consistent with these SEOs.

Water Resources: The Dún Laoghaire Rathdown CDP 2016-2022 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 strengthen these through the flood resilience actions and nature based solutions in particular. Additional tree planting and a focus on riparian habitat (*Actions 32 and 33*) provide for positive effects as they reduce soil run off and allow for 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.

Awareness raising around illegal dumping (*Actions 14 and 15*) and *Action 17 leaf composting* can generate positive effects on soil through enhancement of the resource and a more sustainable approach to enriching soil.

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 4 provides for an evidence based climate change chapter in the County Development Plan, both of which will allow for policy responses and in the CDP context, landuse zoning responses based on the evidence prepared.

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 rivers 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, and Action 17 Monitoring of smart lighting trials

- Transport: Action 7 Develop and extend cycle network; Action 17: Engagement with citizens on new sustainable travel initiatives and schemes.

- Flood Resilience: whilst most of the measures here mitigate and adapt to climate change, with accompanying positive effects on material assets SEOs, Actions 7 Develop template to capture impacts, response and costs for all major climate events and 10 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. Similarly with actions relating to flood storage actions in public parks, a mitigation measures is recommended to highlight nature based solutions where possible.

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 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.

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

Action	**Suggested mitigation measures**	**Included in CCAP?**
	An integrated approach to decision making in relation to these climate change actions is recommended.	
3	**Prepare and** Implement an I**ntegrated** Coastal Zone Management Plan **that addresses natural and cultural heritage and follows the Marine Spatial Planning Directive/framework**	
7	Develop template to capture impacts, response and costs (**including ecosystem services/natural capital costs** for all major climate events	
10	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**	
	The following flood storage actions will incorporate nature based solutions and biodiversity enhancement measures where possible.(Refers to actions 11 to 18)	
New measures to be consistent with neighbouring	***Communication and awareness campaigns on flood risk management and natural flood management measures***	

Local Authorities		
	Nature Based Solutions	
11	Incorporate natural play space into existing parks **for recreation and as SuDS**	
	Develop nature based solutions for design and retrofit in the built environment in urban areas of DLR and encourage their incorporation by property owners, businesses and local government.	

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 DLRCC's Environment, Climate Change and Energy SPC and approved by the full County Council. The Director of Infrastructure and Climate Change 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 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 DLR.

SEA Topic	Target	Indicator	Data Source
Biodiversity Flora and Fauna			Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). Mapping of DLR important habitats and species as part of the new DLR County Biodiversity Plan Department of Arts, Heritage and the Gaeltacht report of the implementation of the measures contained in the Habitats Directive - as required by Article 17 of the Directive (every 6 years). •Department of Arts, Heritage and the Gaeltacht's National Monitoring Report for the Birds Directive under Article 12 (every 3 years). Consultations with the NPWS (at monitoring evaluation - see Section 10.4). Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). CORINE mapping resurvey (every c. 5 years). Review of Council Ecological Network Mapping Mapping of DLR Wildlife Corridor Plan 2019 Internal monitoring of likely significant
	To avoid the loss of important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features, or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.	B2: Percentage increase of functional connectivity and ecosystem services value due to remediation resulting from development provided for by the Plan	
	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan	B3i: on the protection of listed species	
	B3: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, resulting from the		

SEA Topic	Target	Indicator	Data Source
	implementation of the Plan, to important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.		environmental effects of grants of permission (grant by grant). •Consultations with the NPWS (at monitoring evaluation - see Section 10.4)
	B4 To maintain and restore key ecological processes (e.g. ecohydrology, hydrogeology, hydrogeomorphology, water quality, coastal processes).		
Population and human health Noise	PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan	PHH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive and Environmental Protection Agency	Dún Laoghaire Rathdown County Council, EPA Consultations with EPA and Health Service Executive (at monitoring evaluation - see Section 10.
Soil and Geology	S1: To minimise reductions in soil extent and hydraulic connectivity	S1: Soil extent and hydraulic connectivity	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant
Water	W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve	W1i: Classification of Overall Status (comprised of ecological and chemical status) under the European	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Data issued

SEA Topic	Target	Indicator	Data Source
	'good status'63 W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)	Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) W1ii: Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)	under the Water Framework Directive Monitoring Programme for Ireland (multi-annual). •EPA The Quality of Bathing Water in Ireland reports.
	W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual
	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning Sy stem and Flood Risk Management Guidelines for Planning Authorities	Number of incompatible developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant).
Material Assets	M1: All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment over the lifetime	M1: Number of new developments granted permission which can be adequately and appropriately served with waste water treatment over the	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant).

SEA Topic	Target	Indicator	Data Source
	of the Plan	lifetime of the Plan	
	M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan	M2: Number of non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan	•EPA The Provision and Quality of Drinking Water in Ireland reports (multi-annual). •EPA Remedial Action List (every quarter).
	M3i: Minimise increases in and, where possible, reduce household waste generation M3ii: Maximise increases in packaging recovered (t) by self-complying packagers	M3i: Total collected and brought household waste M3ii: Packaging recovered (t) by self-complying packagers	•EPA National Waste Reports •EPA Ireland's Environment Reports
Air Quality and Climatic Factors	C1: An increase in the percentage of the population travelling to work, school or college by public transport or non-mechanical means	C1: Percentage of population travelling to work, school or college by public transport or non-mechanical means	CSO Population Data (every c. 5 years).
Cultural Heritage	CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from significant adverse effects arising	CH1: Percentage of entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and the context of the above within the surrounding landscape where relevant) -	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4).l

SEA Topic	Target	Indicator	Data Source
	from new development granted permission under the Plan	protected from significant adverse effects arising from new development granted permission under the Plan	
	CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from new development granted permission under the Plan	CH2: Percentage of entries to the Record of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects arising from new development granted permission under the Plan	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4).
	L1: To implement Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects	L1: Implementation of Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant).
Inter-relationships	***Maintain and improve the health of people, ecosystems and natural processes*** ***Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change***	***% or number of blue and green infrastructure measures included in approved planning applications within Dún Laoghaire Rathdown including SUDS, Integrated Wetlands, Hedgerows, Native tree planting scheme*** ***DLR supported community***	***Review per grant application and # of DLR supported schemes such as integrated wetlands.***

SEA Topic	Target	Indicator	Data Source
		blue/green infrastructure measures	

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.

DÚN LAOGHAIRE RATHDOWN COUNTY COUNCIL

Strategic Environmental Assessment Environmental Report- Dún Laoghaire Rathdown County Council Climate Change Action Plan 2019-2024

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

Minogue and Associates

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 Dún Laoghaire Rathdown 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
Draft 21.01.2019	R Minogue MCIEEM
Draft 2 05.02.2019	RM

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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 Dún Laoghaire Rathdown 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 Dún Laoghaire Rathdown 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 DÚN LAOGHAIRE RATHDOWN 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 Dún Laoghaire Rathdown 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 area of Dún Laoghaire Rathdown County. The administrative area of County Council for which the Plan has been prepared comprises 125.8 km^2.

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 and Competencies

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

- Ruth Minogue MCIEEM, AILI. 20 years professional practice as an environmental consultant with SEA experience including researcher on EU Guidance for SEA, SEA of County Development Plans, Local Area Plans, Recreational Strategies, Wind and Renewable Energy Strategies plus Planning

Schemes. (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), GIS and water pollution law training through IEEM, and Advanced Diploma in Planning and Environmental Law (Kings Inn).

- Pat Doherty MCIEEM. 19 years professional practice as an ecologist. Contributes to Biodiversity, Flora and Fauna elements of SEA and author of Habitat Directive Assessments including county and local area plans, recreational and tourism strategies, greenways, planning schemes and wind and renewable energy strategies. Qualifications are: 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, 15 years professional practice. 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 Dún Laoghaire Rathdown 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
	Relevant Plans and Programmes You should ensure that the Plan aligns with	Noted and agreed, in response to this comment the SEA ER included

Consultee	Key Issue Raised	SEA Response
	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 adaption plans. We recommend including a flow diagram or/ schematic, illustrating where the Plan fits within the hierarchy of land-use, climate and related plans	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.
	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.	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.
	Greenhouse Gas Emissions 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.	Noted. 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 DLR's own operations and emissions for the whole of Dún Laoghaire Rathdown. Consideration of significant effects in Chapter Seven of this SEA ER discusses this point.
	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.	Noted, this SEA ER addresses this in Table 3 and shows where the Dún Laoghaire Rathdown 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.
	Adaptation In preparing the Plan and SEA, you should	Codema carried out an adaptation risk assessment on behalf of DLR,

Consultee	Key Issue Raised	SEA Response
	consider how the impacts of climate change, individually and in combination, are likely to influence the implementation of the Plan. The Plan should look to improve resilience of existing and planned critical infrastructure, systems and procedures to the effects and variability of climate change. Recent extreme weather events could be useful to assist in identifying areas where for further work is needed to improve resilience, e.g. the resilience of critical water service infrastructure to flooding and drought. 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. Additional aspects to consider may include changes in native species and habitats and the spread of invasive species, pests and pathogens.	which identifies and assesses the current climate change risks facing Dún Laoghaire Rathdown. Research into people's attitudes and awareness was used in order to inform the stakeholder engagement actions of the plan. A key principle and stage of the CCAP relates to adaptation and responses to same. Noted, this is highlighted in Chapter 4 Baseline as a key issue for biodiversity and human health
	EPA State of the Environment Report 2016 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/	Noted and utilised in this SEA ER. Please see Chapter 3.
	Air quality We welcome that the Plan will take into account the Draft National Clean Air Strategy (DCCAE), 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	Noted this is used in Chapter 4 Baseline Environment

Consultee	Key Issue Raised	SEA Response
	the four air quality zones in Ireland. 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 integrated as appropriate. The pollutants of most concern are traffic-related, including Particulate Matter and Nitrogen Dioxide	
	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.	Noted and included in Chapter Four.
	Available Guidance & Resources Climate The EPA has published guidelines to support Local Authorities in developing local climate adaptation strategies (EPA, 2016). The DCCAE have incorporated this EPA guidance into national level Guidelines, to also assist local authorities prepare adaptation strategies. (DCCAE, 20185). 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/#/ 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. Water Quality Our WFD Application provides a single point of access to water quality and	Noted

Consultee	Key Issue Raised	SEA Response
	catchment data from the national WFD monitoring programme. The Application is accessed through EDEN https://wfd.edenireland.ie/ and is available to public agencies. Publicly available data can be accessed via the Catchments.ie website	
	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/ Best practice guidance on Integrated Biodiversity Impact Assessment is also available at: http://www.epa.ie/pubs/reports/research/biodiversity/strivereportno90.html	Noted and used where appropriate in this SEA.
	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. These reports are indicative and will provide an overview of key aspects of the environment within a specific plan area. 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	Considered at SEA Screening stage of this CCAP.
	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.	Noted, please see Chapter 3 for review of this and how the SEA and CCAP relates to the State of the Environment Report. Noted, and agreed, where possible the preparation of the CCAP and SEA have sought to prioritize "win-win" actions.

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 Dún Laoghaire Rathdown County Council Development Plan 2016-2022, 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 Dún Laoghaire Rathdown 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 Dún Laoghaire Rathdown 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 Dún Laoghaire Rathdown County Council Development Plan 2016-2022. 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 Dún Laoghaire Rathdown County Council Development Plan 2016-2022.

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 Dún Laoghaire Rathdown CDP 2016-2022 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. Whilst county level green corridors and infrastructure have been identified, gaps are also present in terms of smaller areas of green infrastructure, ecological stepping stones etc.

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 Dún Laoghaire Rathdown County Development Plan 2016-2022 (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 CCAP[1].

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 ER[2].

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

[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 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.

- The Stockholm Convention 2001
- 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 2016-2023[3]
- 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
- Dún Laoghaire Rathdown County Council Development Plan 2016-2022
- Dún Laoghaire Rathdown Local Economic and Community Plan 2016
- Dún Laoghaire Rathdown Local Biodiversity Action Plan 2009 – 2013 (under review).
- Catchment-Based Flood Risk Management Plans (CFRMP)
- Eastern Catchment Flood Risk Assessment and Management (CFRAM) Study 2011-2016
- Greater Dublin Strategic Drainage Study
- Dún Laoghaire Rathdown County Council's Tree Strategy 2011-2015

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 2019-2024
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 30	Housing Assistance Package – Local Authorities signed up to participate and scheme operational.	Yes but awaiting budget Action 21 of the Energy Section *Expand housing assistance programme to include tenant energy awareness*
Action 31	Warmth & Wellbeing Scheme – 1,500 homes will be upgraded for occupants who qualify for the scheme	Recommended as a Mitigation Measure in this SEA ER as follows: Promote and highlight the Warmth and Wellbeing Scheme in conjunction with HSE
Action 51	Investment in infrastructure and behavioural change interventions to encourage and support a shift to sustainable modes of transport.	Actions 3 to 17 of 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	The role of the Dublin Metropolitan CARO (which will oversee implementation of the CCAP) is to: • 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.	In partnership with Enterprise Ireland, Smart Dublin runs Small Business Innovation Research (SBIR) competitions, which challenge smart technology providers, researchers and citizens to come up with solutions that will improve the operation and resilience of the Dublin Region.
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 15 and 19 under Flood Resilience are consistent with this RPO Action 15: *Glenavon Park flood storage and integrated wetland* Action 19: *Promote and encourage community involvement in the retrofit of SuDS in existing developments*
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 Actions 1 and,3 in Nature Based Solutions are consistent with this as follows: 1. Establish regional working group to identify areas and priorities for actions 3 Workshop to develop Dublin Risk Assessment for nature and climate change 2018 Multi-departmental Workshop conducted, assessment developed 5 Produce regional floodplain management guidelines - use Santry River as a demonstration
REGIONAL POLICY OBJECTIVES: Green Infrastructure	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	DLR County Development Plan 2016-2022 includes a large number of GI policy and objectives such as (Policies LHB2, LHB4, LHB7, LHB11; LHB12; LHB13, LHB16, LHB18; LHB19; LHB19; LHB20; LHB21; LHB22; LHB23; LHB24; LHB25; LHB26; LHB28; OSR1; OSR2; OSR3; OSR6; OSR8; UD7)

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region		
RPO 7.21	European sites, other nature conservation sites, ecological networks, and protected species.	Actions in the Nature Based Solutions theme include a number of GI actions such as Action 20, for example: 20: Promote the natural, historical and amenity value of watercourses while maximising flood protection
RPO 7.22	Support the further development of Green Infrastructure policies and coordinate the mapping of strategic Green Infrastructure in the Region.	See Action 7 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 7.31:	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 guiding principles of the National Adaptation Framework	The CCAP is the draft action plan that will meet this objective.
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 16 in Energy: Facilitate the Small Business Innovation and Research (SBIR) challenge for climate change solutions

Relevant Policy Objectives from the Draft Regional Spatial and Economic Strategy Eastern and Midlands Region		
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 Energy Performance of Buildings Directive (EPBD).	Actions in the Energy theme including Action 5: Deep retrofits of housing stock to nZEB or EnerPHit standard
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 1 Operations,

3.5 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	• 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	Implementation of legislation Climate change Environment and health and well being Nature and wild places	Nature Based Solutions Citizen Engagement and Awareness Flood Resilience Resource management
Population and Human Health	• Provide for sustainable communities with key services • Energy efficiency in buildings and model transport shift • A high quality environment to live, work and play in • Avoid pollution and environmental health impacts (noise and air quality) through mitigation and design • Awareness raising	Environment and health and well being Implementation of legislation Climate change Community engagement Sustainable economic activities	Energy Transport Nature Based Solutions Resource Management Citizen engagement
Water	• Maintain and improve water quality	Restore and protect water	Nature Based Solutions

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
	• 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	quality Implementation of legislation Climate change Environment and health and well being	Resource Management Citizen engagement and awareness
Soil and Geology	• 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	Climate change Environment and health and well being Sustainable economic activities	Resource Management Nature Based Solutions Citizen engagement and awareness
Material Assets	• 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 • 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	Restore and protect water quality Implementation of legislation Climate change Environment and health and well being Sustainable economic activities	Nature Based Solutions Resource Management Citizen engagement and awareness Flood Resilience Energy Transport

SEA Topic	Principles/Implications for the CCAP and SEA	EPA State of Irelands Environment 2016 Key Issues	CCAP 2019-2024 Relevant Theme
Air Quality and Climate	• 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	• 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	• 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	• Adapt and improve resilience to the effects of climate change • Promote local/ sustainable sourcing of materials Promote sustainable design and innovation to reduce material consumption	Environment and health and well being Sustainable economic activities Climate change Implementation of legislation	Nature based solutions Flood resilience Citizen Engagement Resource Management Energy Transport
Inter-relationships	• 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	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
	environmental enhancement	Nature and wild places Restore and protect water quality Community engagement	Transport

4 KEY ENVIRONMENTAL RESOURCES

4.1 INTRODUCTION

This chapter describes the environmental baseline for the Dún Laoghaire Rathdown 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 Dún Laoghaire Rathdown 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 Dún Laoghaire Rathdown 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.

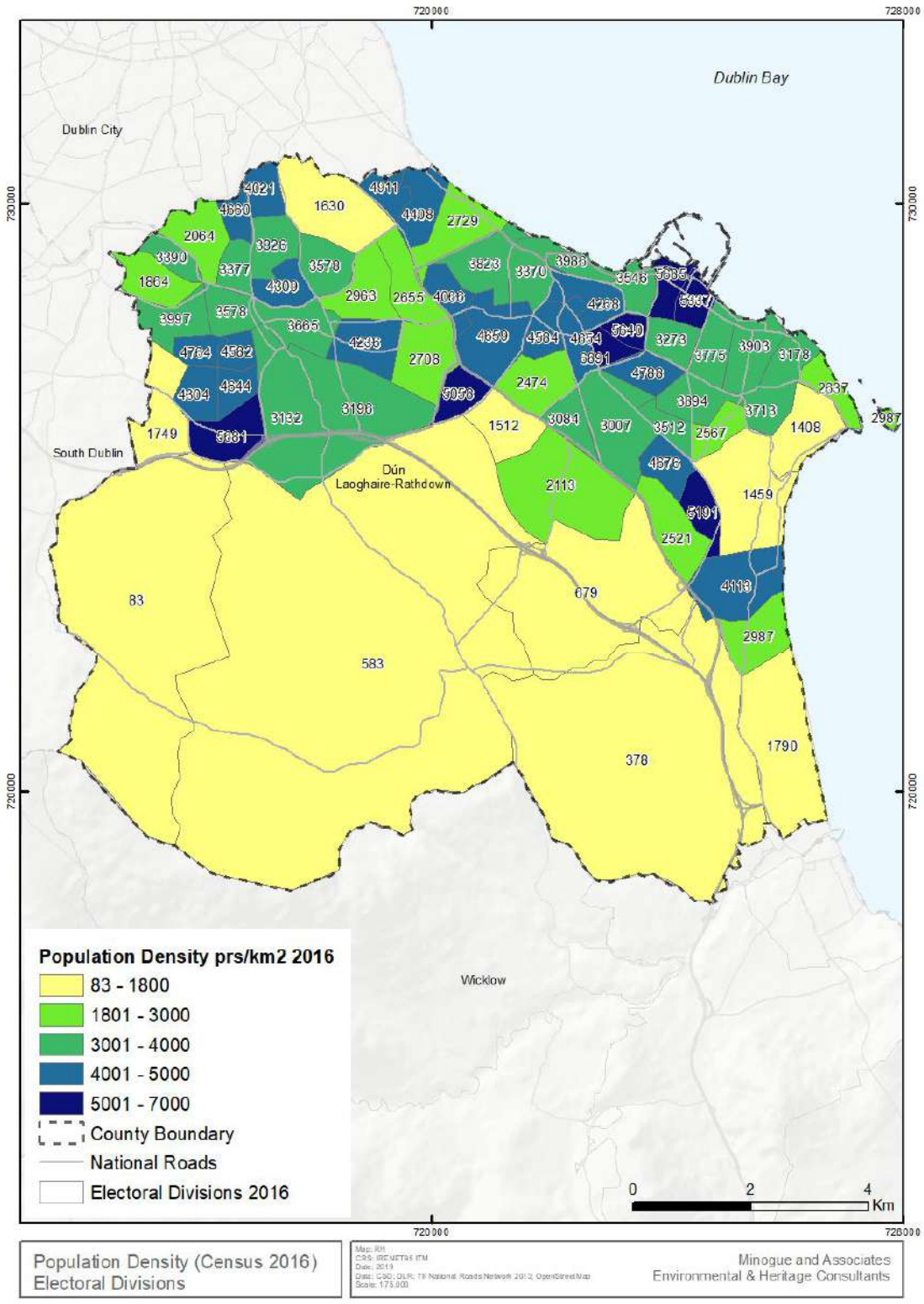
When compared with their surrounding regions, urban areas are considered to be particularly vulnerable to these climatic changes. This is due to: the high concentrations of population, infrastructure and economic activities located in these areas, the exacerbation of climate impacts by urban-scale phenomena and dependency on surrounding regions for service provision[4].

Figure 1 below presents population density for the Dún Laoghaire Rathdown County based on the 2016 Census. As the figure shows, population density varies throughout the county, with implications

[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/

in terms of provision of services, ecological connectivity and maximising sustainable transport and landuse. In terms of broad trends however, the figure below shows greater population densities closer to the coast and lowlying parts of the county, whilst the more rural, hills of Dún Laoghaire reflect lower population densities.

Figure 1 Population Density of Dún Laoghaire Rathdown 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 HEALTH[5]

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

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 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. Dún Laoghaire Rathdown 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

The noise mapping for roads show the M50 as the largest contributor to noise, with the N11 also generating significant noise emissions. Smaller areas of noise hotspots are present around the local authority area.

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. Dún Laoghaire Rathdown as part of the Dublin City agglomeration is designated as a Zone A.

The Air Quality Index of health[6] is based on hourly monitoring data from sites around Ireland and is based is based on measurements of five air pollutants all of which can harm health. The five pollutants are:

- Ozone gas

[6] http://www.epa.ie/air/quality/

- Nitrogen dioxide gas
- Sulphur dioxide gas
- PM2.5 particles and
- PM10 particle

Dún Laoghaire Rathdown is located within the 'Dublin City' region. The two key sectors that predominantly impact negatively on air quality are residential heating and transport[7].

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

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 onwards[8].

4.2.5 Existing issues Population and human health.

The key issues associated with the Eastern and Midland RSES[9] and population/human health were used for this section, complemented by issues identified in the Dún Laoghaire Rathdown CDP 2016-2022, key relevant issues include:

- Addressing historic settlement pat terns leading to sprawl and unbalanced regional development;
- Increased capacity/ infrastructural requirements for water and wastew ater 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.

[7] Air Quality in Ireland 2016 EPA
[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 biodiversity[10] 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.

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

4.3.1 Overview

Dún Laoghaire-Rathdown supports a variety of natural and semi-natural habitats and a wide range of plant and animal species, which have come under threat due to development pressures and increased demand for new development land.

Green space, which makes up a large part of the southern portion of the County, consists of a variety of habitats including corridors which provide for the movement of wildlife. Green space within Dún Laoghaire-Rathdown is comprised of agricultural lands, bogs and heath in the uplands, woodlands, grasslands and a number of open spaces in residential areas. There are also a number of large parks within the County including Marlay Park, Deerpark, Cabinteely Park and Shanganagh Park.

The Loughlinstown River, with tributaries such as the Shanganagh River and the Cabinteely, Ballyogan and the Glenamuck Streams, forms the largest catchment in Dún Laoghaire- Rathdown. The southernmost branch of the River, also known as Brides Glen stream, is particularly rich in biodiversity. Trout, otter, and bats occur in the river while kingfisher may be present along sections of the stream. Other rivers supporting good areas of biodiversity include the Little Dargle which rises in Three Rock Mountain and flows through Marlay Park and the Glencullen River, which drains the uplands around Glendoo and Glencullen Mountains before crossing the County boundary into County Wicklow.

The County's coastline, including areas such as South Dublin Bay and the Dalkey

Coastal Zone, provides a number of habitats for a variety of species. The Shanganagh Coastline represents a long stretch of the Killiney Bay shoreline, extending from Ballybrack to Bray in Wicklow. The area is important particularly for its sedimentary cliffs, displaying clear geological time sequences through the quaternary period. The shoreline also has an example of a drowned forest, visible in the sand only at extreme low tide.

The upland areas around Three Rock and Two Rock Mountains are valuable for their heath habitats and their exposed rocky outcrops. Red grouse, an upland bird species thought to be in decline across the Country, occurs in this area.

Man-made habitats within the Plan area are also important biodiversity areas. Gardens provide habitats for a range of wildlife including various bird species, invertebrates, such as bees and butterflies and mammals, such as hedgehogs, mice, rats and foxes. These species move around between gardens using hedgerows and vegetated areas. These urban green spaces, however small, are therefore of importance as they form part of a network of green spaces across the Plan area including gardens, parks, graveyards, amenity walks, railway lines and patches of woodland and scrub within which animals and plants continue to thrive.

'Treasuring our Wildlife', the Dún Laoghaire-Rathdown Biodiversity Plan, was published in 2009. The Plan identifies areas which are important for biodiversity, threats posed to these areas and lists of targets for the County's biodiversity including the completion of a County Habitats Survey.

The Dalkey Islands Conservation Plan 2013-2023 was adopted by the Council in September 2013. The Plan sets out guiding principles for the conservation of the heritage and habitats of the island. The Dalkey Islands are protected as an SAC.

Habitat Mapping commissioned by DLR, at county level, buildings and built land is identified as being the largest habitat group covering approximately 43% of the County area. Cultivated land, including agriculture was the second largest group type covering approximately 24% of the County. Semi-natural natural habitats covered approximately 17% non-native and disturbed ground covering 17%. Farming and urban dwellings, which are identified as being the main land use and land management activity in the area, exerts a major influence upon the local ecology and landscape character.

Three Areas of High Ecological Value which include a number of high diversity habitats were identified in the Habitat Mapping Survey. These areas are listed and briefly described below.

1. Upland Region to the South East of the County

This area, which begins at the Glendoo Mountains, is an upland area with a wide variety of habitat types including upland blanket bog, wet heath, dry siliceous heath, conifer plantation, dense bracken, and pockets of dry humid acid grassland.

2. Woodland Area to the South East of the County

Located in the south eastern area of the County, this area includes Ballyman Glen SAC which contains a variety of habitats including habitats listed on Annex I of the Habitats Directive such as alkaline fen and petrifying springs.

3. Kiltiernan / Loughlinstown Area

This area is located to the east of Kiltiernan and is surrounded by an area dominated by agricultural grassland lies a large pocket of dry meadows and grassy verges. This habitat is particularly rich in species diversity. Enhancing the ecological value of the area is a large strip of wet grassland, mixed broadleaved woodland, wet pendulate oak-ash-hazel woodland and riparian woodland.

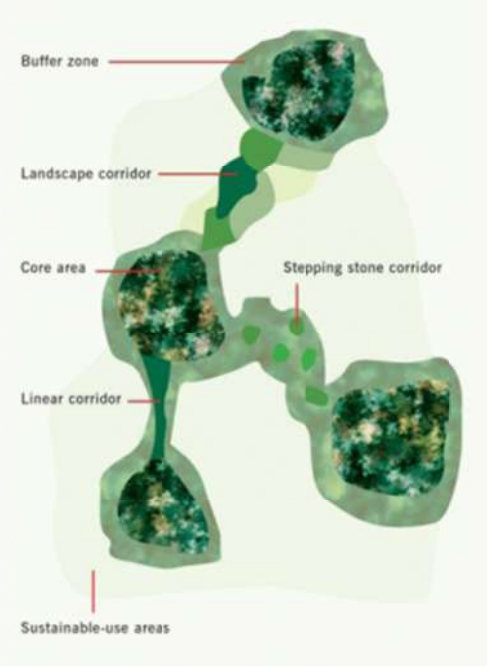
Parks and open spaces cover over 800 hectares of the County. Prominent parks include Marlay Park, Cabinteely Park, The Peoples Park, Killiney Hill Park and the seafront from Dún Laoghaire to Sandycove. These parks and open spaces provide for a range of habitats for various species within the Plan area.

4.3.2 Ecological Networks and Connectivity

Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent islands of habitat from being isolated entities. They are composed of linear features, such as treelines, hedgerows and rivers/streams, which provide corridors or stepping stones for wildlife species moving within their normal range. They are important for the migration, dispersal and genetic exchange of species of flora and fauna particularly for mammals, especially for bats and small birds and facilitate linkages both between and within designated ecological sites, the non-designated surrounding countryside and the more urban areas of the County.

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.

FIGURE 3 OVERVIEW OF LANDSCAPE MOSAIC WITH STEPPING STONES AND ECOLOGICAL CORRIDORS[11]



Within and surrounding the County, the ecological networks are made up of components including the Loughlinstown River, the Little Dargle and the Cabinteely, Ballyogan, and the Glenamuck Streams and their tributaries and banks, the various woodlands, parks, gardens and hedgerows within and surrounding the Plan area and lands used for agriculture.

4.3.3 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

[11] source: http://www.sicirec.org/definitions/corridors)

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.

A summary of designated sites in Dún Laoghaire Rathdown is provided below, for further information on European Sites please see the accompanying Natura Impact Report.

There are four cSACs within the Plan area to include South Dublin Bay cSAC, Ballyman Glen cSAC, Knocksink Wood cSAC and Wicklow Uplands cSAC.

The South Dublin Bay and River Tolka Estuary SPA lies to the north of the Plan area while the Dalkey Islands SPA lies to the east and the Wicklow Mountains SPA lies to the south.

4.3.4 Proposed Natural Heritage Areas

Proposed NHAs in the Plan area including Booterstown Marsh pNHA, Ballybetagh Bog There are ten pNHA, Fitzsimon's Wood pNHA, Dingle Glen pNHA, Loughlinstown Wood pNHA and Dalkey Coastal Zone and Killiney Hill pNHA. South Dublin Bay SAC, Ballyman Glen SAC and Knocksink Wood SAC are also designated as pNHAs.

The Scalp and the Shanganagh Coastline are recognised as being of NHA status for their geological interest.

Ramsar Sites Ramsar sites are designated and protected under the Convention of Wetlands of International Importance, especially as Water Fowl Habitat, which was established at Ramsar in 1971 and ratified by Ireland in 1984. Ireland presently has 45 sites designated as Wetlands of International Importance, with surface areas of 66,994 hectares.

The objective of a Ramsar site is the conservation of wetlands for wildfowl. While Ireland ratified the Ramsar Convention in 1984 there is no legal backing for Ramsar sites unless they are also Nature Reserves or SPAs and as such are protected by the Wildlife Acts 1976 and 2000 or the Birds or Habitats Directives.

Sandymount Strand/Tolka Estuary (Site No. 4024) was designated a Ramsar Site on 11 June 1996 and provides 654 hectares of Wetlands of International Importance. The exact boundaries of the Ramsar designation were unavailable from the Ramsar Sites Information Service however they are likely to be similar to those of the Strand/Tolka Estuary SPA.

4.3.5 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).

4.3.6 Salmonid Waters

The main channel of the River Dargle is designated and protected as a Salmonid Water under the European Communities (Quality of Salmonid Waters) Regulations 1998 (SI No. 293 of 1988). Designated Salmonid Waters are capable of

supporting salmon (Salmo salar), trout (Salmo trutta), char (Salvelinus) and whitefish (Coregonus). Although the River Dargle does not flow through the Plan area, a tributary of the Dargle does flow through the south eastern corner of the Plan area.

The Dodder, which rises to the south east of the Plan area and flows along the north-east boundary, and several of its tributaries are exceptional in the area in supporting Atlantic Salmon and Sea Trout in addition to resident Brown Trout populations, eels and other fish species.

The Glencullen River flows through the south east of the plan area. The Glencullen is a tributary of the River Dargle and, along with its tributaries, constitutes a Salmonid system. The Carrickmines (Glenamuck) / Shanganagh system is a regionally important Salmonid system. The Carrickmines system supports a resident population of Brown Trout and a migratory population of Sea Trout. The lower reaches of the Deansgrange Stream support a small but significant population of Brown Trout.

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 Dodder 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:

- Enhancing existing ecological resources such as the coastal habitats and river corridors
- Promoting and facilitating ecological connectivity through consideration of green infrastructure and blue infrastructure
- Considering open space provision
- Enhancing ecological considerations within the urban realm
- Addressing and controlling invasive species
- 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 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

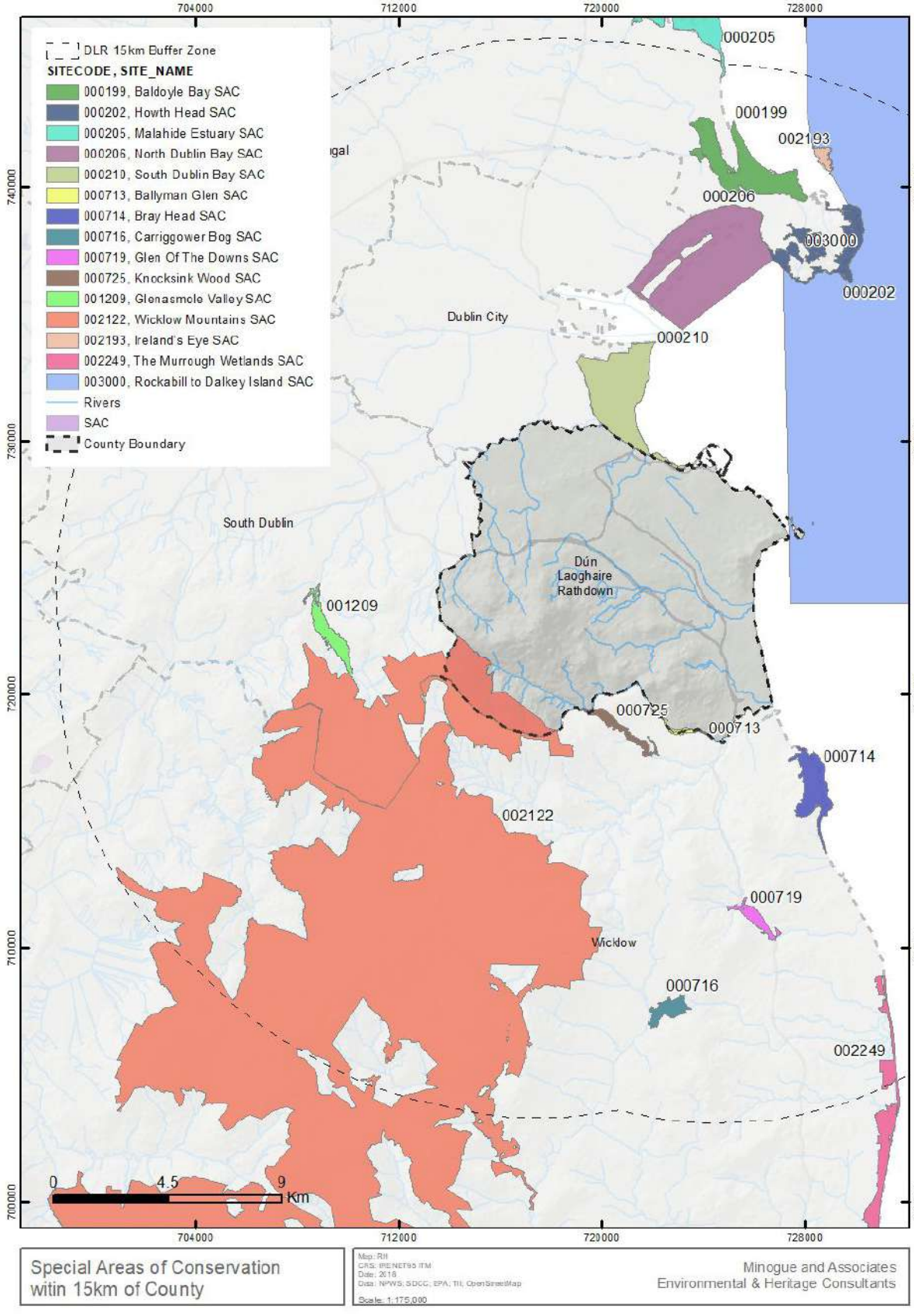


Figure 5 Special Protection Area sites within 15km of the County

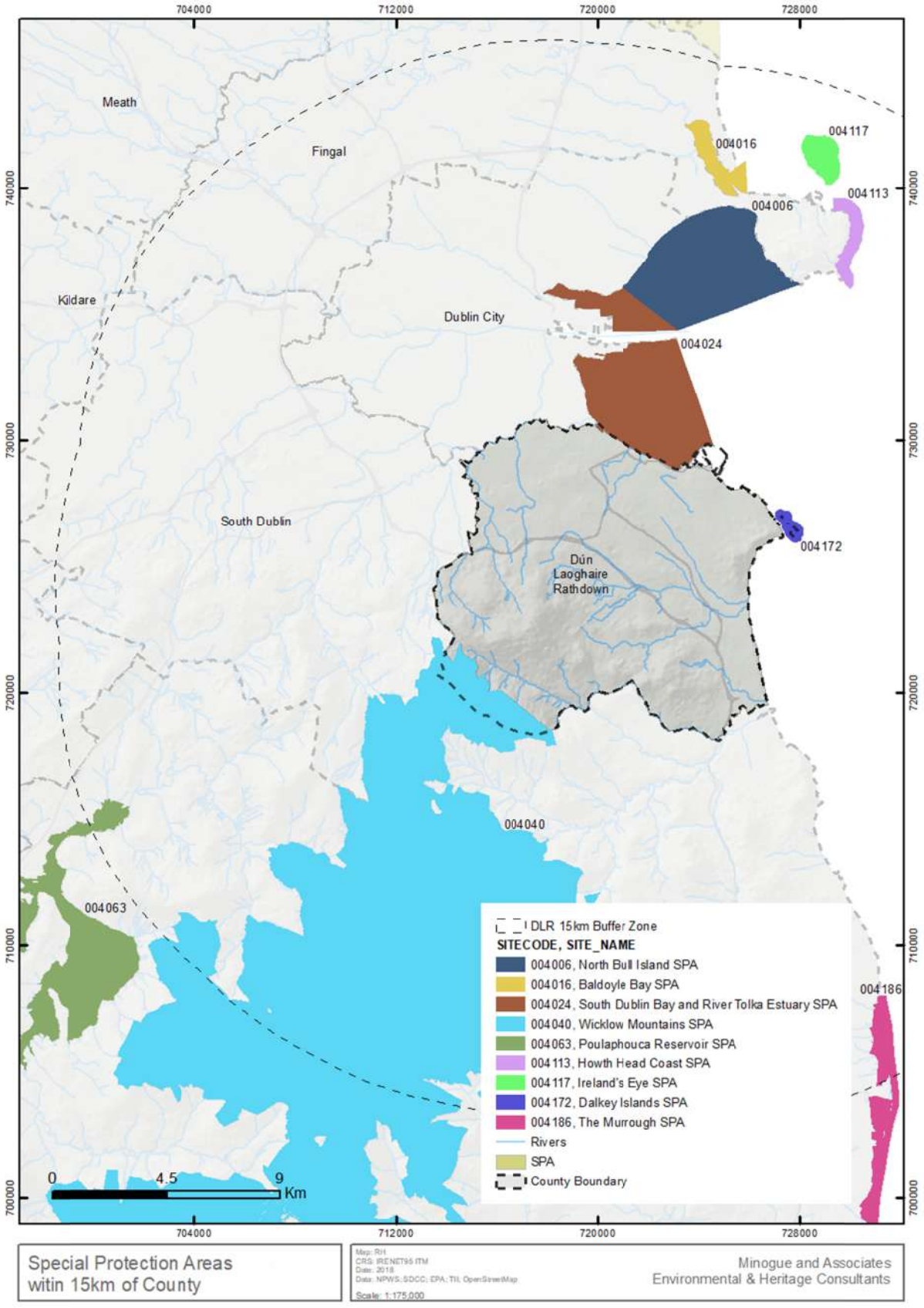
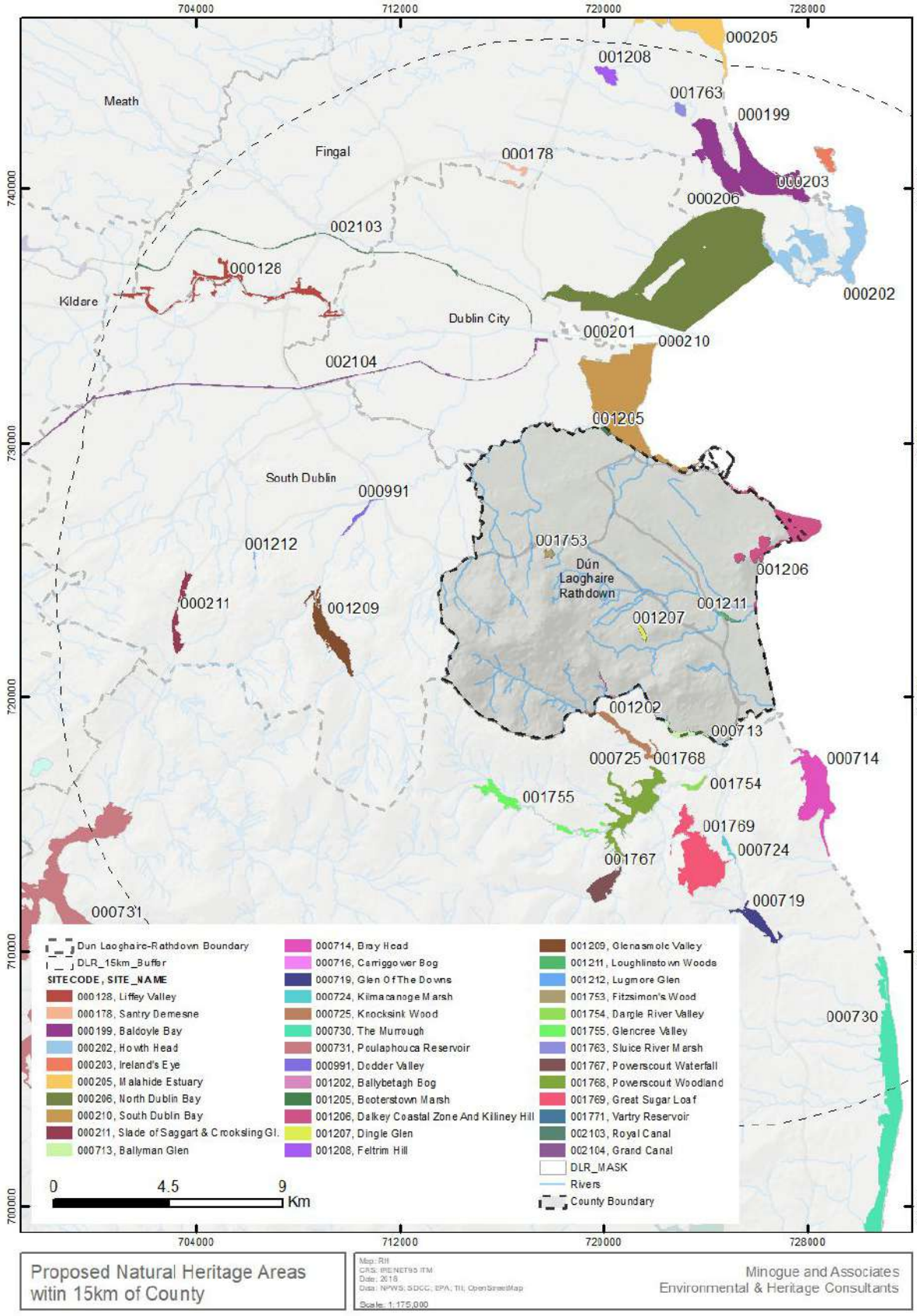


FIGURE 6 PROPOSED NATURAL HERITAGE AREAS



4.4 Water Resources[12] 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. Dún Laoghaire Rathdown is situated within the Liffey and Dublin Bay Catchment (code: 09). The area of this catchment covers 1,624,42km^2 and supports a total population density of 777 people per km^2.

[12] From Catchments.ie

4.4.2 Surface Waters

Surface Waters: The main rivers within the Plan area are the Loughlinstown River, the Glencullen River, the Little Dargle River and the River Dodder.

The Loughlinstown (or Shanganagh) River has a number of tributaries which merge in Loughlinstown. The most southerly of these tributaries rises in Kilternan near Two Rock Mountain. The next of these tributaries rises to the north of this, near Stepaside and flows through Carrickmines, a number of smaller streams merge with it on the way. Another tributary rises in Cornelscourt and flows to the south east. A final stream rises in Deansgrange and flows to the south east to meet the Loughlinstown River just before it enters the sea at Killiney Bay.

The Glencullen River rises on Glendoo Mountain in Dún Laoghaire-Rathdown and flows to the south east through Glencullen before entering County Wicklow where it merges with the Dargle River which flows into the sea at Bray.

The Little Dargle River also rises in Three Rock Mountain. It flows to the north through Ballinteer where it merges with another stream. It continues to flow to the north where it merges with the Dodder at Rathfarnham, in the north west of the Plan area.

The River Dodder rises in the Dublin Mountains and in its upper reaches it forms a reservoir system which is an integral part of the water supply to Dublin. It flows down through Tallaght, Rathfarnham, Donnybrook and Ballsbridge before discharging into the Liffey Estuary at Ringsend. The lower section of the river is tidal up to Ballsbridge**. Figure 7** shows the river systems in the County. **Figure 8 Water Quality and Figure 9** shows the subcatchments under the WFD.

4.4.3 Groundwater:

Groundwater is a further significant resource and refers to water stored underground in saturated rock, sand, gravel, and soil. Surface and groundwater functions are closely related and form part of the hydrological cycle. The protection of groundwater from land uses is a critical consideration and groundwater vulnerability is becoming an important management tool. The entire island of Ireland has been designated as a Protected Area for Groundwater under the WFD.

Groundwater is important as a drinking water supply as well as the supply to surface waters. In addition, groundwater supplies surface waters. Groundwater is exposed to higher concentrations of pollutants that are retained in the layers of rock and soil. The exposure to pollutants lasts much longer as groundwater moves at a slower pace through the aquifer. The quality of our drinking water supply, fisheries and terrestrial based habitats is intrinsically linked with groundwater quality. The Geological Survey of Ireland (GSI) aquifer categories are based on their vulnerability to pollution, i.e. the ease at which it can enter the subsurface layers. The classification of extreme or high vulnerability means that the groundwater in these areas is very vulnerable to contamination due to hydrogeological and soil factors.

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

4.4.5 Coastal Waters

Coastal water around the coast of the county is classified as Good under the WFD for Dublin Bay (to Killiney), and then of High quality from Killiney Bay southwards to Wicklow.

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.

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. The River Liffey and Estuary are listed on the RPA for Nutrient Sensitive Waters. Nutrient Sensitive Areas comprise nitrate vulnerable zones designated under the Nitrates Directive (91/676/EEC) and areas designated as sensitive under the Urban Waste Water Treatment Directive (91/271/EEC).

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. **Figure 11** presents flood zones A and B.

4.4.6 KEY ISSUES: WATER RESOURCES

The SEA ER of the DLR County Development Plan 2016-2022 highlighted the following issues:

Subject to exemptions provided for by Article 4 of the WFD8, based on available water data, certain surface water bodies within the County will need improvement in order to comply with the objectives of the WFD:

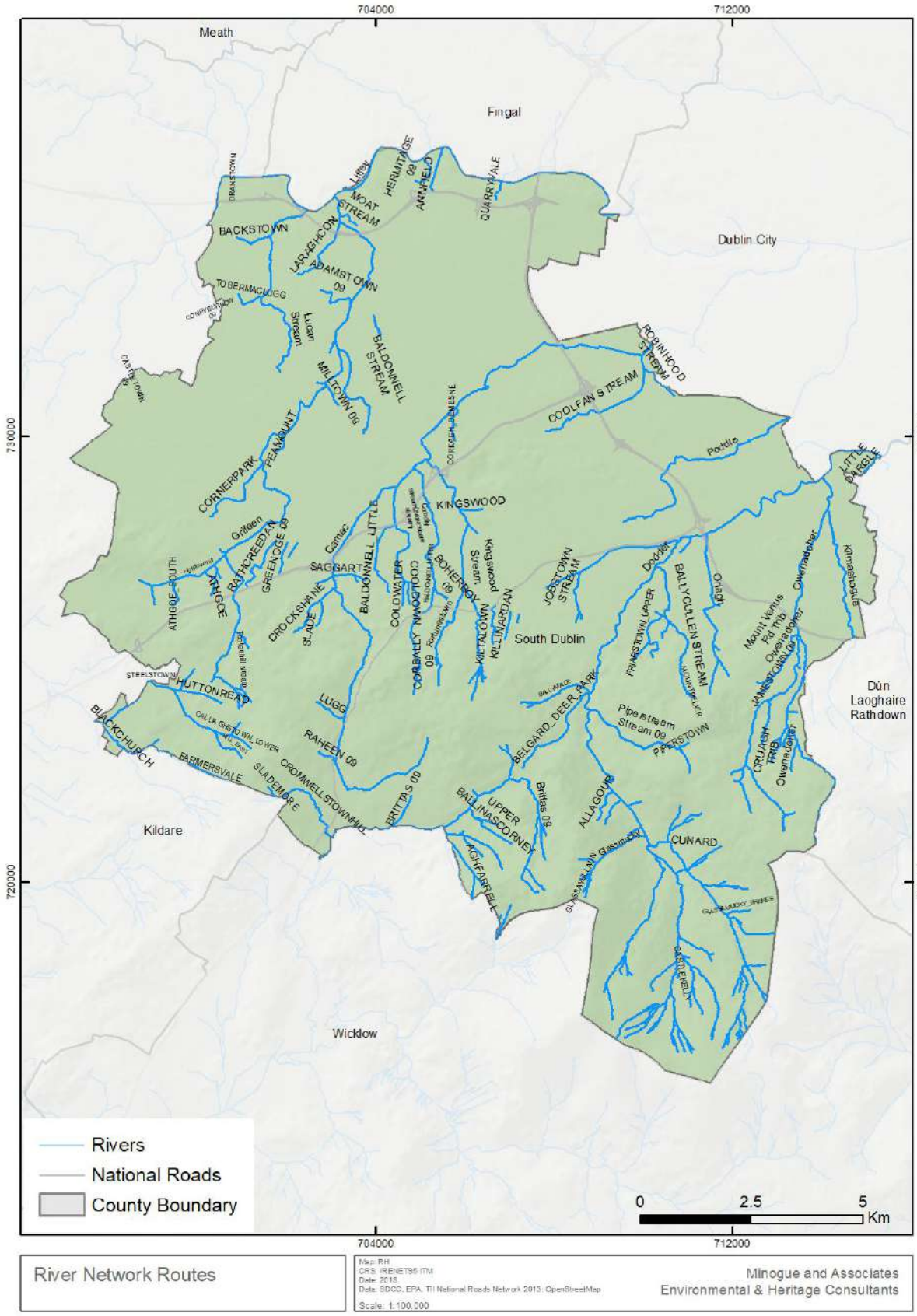
- The River Dodder is identified as being of poor status along the northern boundary of the Plan area. In the north of the Plan area at Miltown it is indicated as being of moderate status (Q3-4).
- The Carrickmines Stream is identified as being of moderate status (Q3-4) before it joins the Loughlinstown (or Shanganagh) River at Loughlinstown.
- The Loughlinstown River is identified as being of poor status downstream of Loughlinstown, after it joins with the Carrickmines Stream.
- The Kill-O-The-Grange Stream which flows into the Loughlinstown River south of Ballybrack is indicated in two locations as being of poor status (Q2- 3, Q3).
- Note that these classifications in the County are contributed towards by the morphological pressures found along these often urban waterbodies such as culverts, river straightening and bed/bank reinforcement.
- Coastal waters are generally of moderate status to the north of Sorrento Point.

Other 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.

- Maintaining and enhancing water quality-both surface water and groundwater
- Ensuring no further deterioration in surface water
- Avoiding the spread of alien and invasive species
- Ensuring flood risk is fully considered and measures to adapt to flood risk take proper consideration of ecological and other environmental parameters.
- Opportunities to integrate blue infrastructure measures through flood risk management

Ensuring that water quality is maintained and enhanced is particularly important. Groundwater in Dún Laoghaire Rathdown currently meets the standards of the WFD; however, it is noted in the Greater Dublin Strategic Drainage Study (GDSDS) that there is a likely possibility of the groundwater in the urbanised northern section of the County being at risk from diffuse sources including inadequate urban sewerage systems and point sources including some contaminated land.

FIGURE 7 RIVERS IN DÚN LAOGHAIRE RATHDOWN COUNTY



River Network Routes

Map: RH
CRS: IRENET95 ITM
Date: 2016
Data: SDCC, EPA, TII National Roads Network 2015, OpenStreetMap
Scale: 1:100,000

Minogue and Associates
Environmental & Heritage Consultants

FIGURE 8 WATER FRAMEWORK DIRECTIVE SUBCATCHMENTS OF DÚN LAOGHAIRE RATHDOWN COUNTY

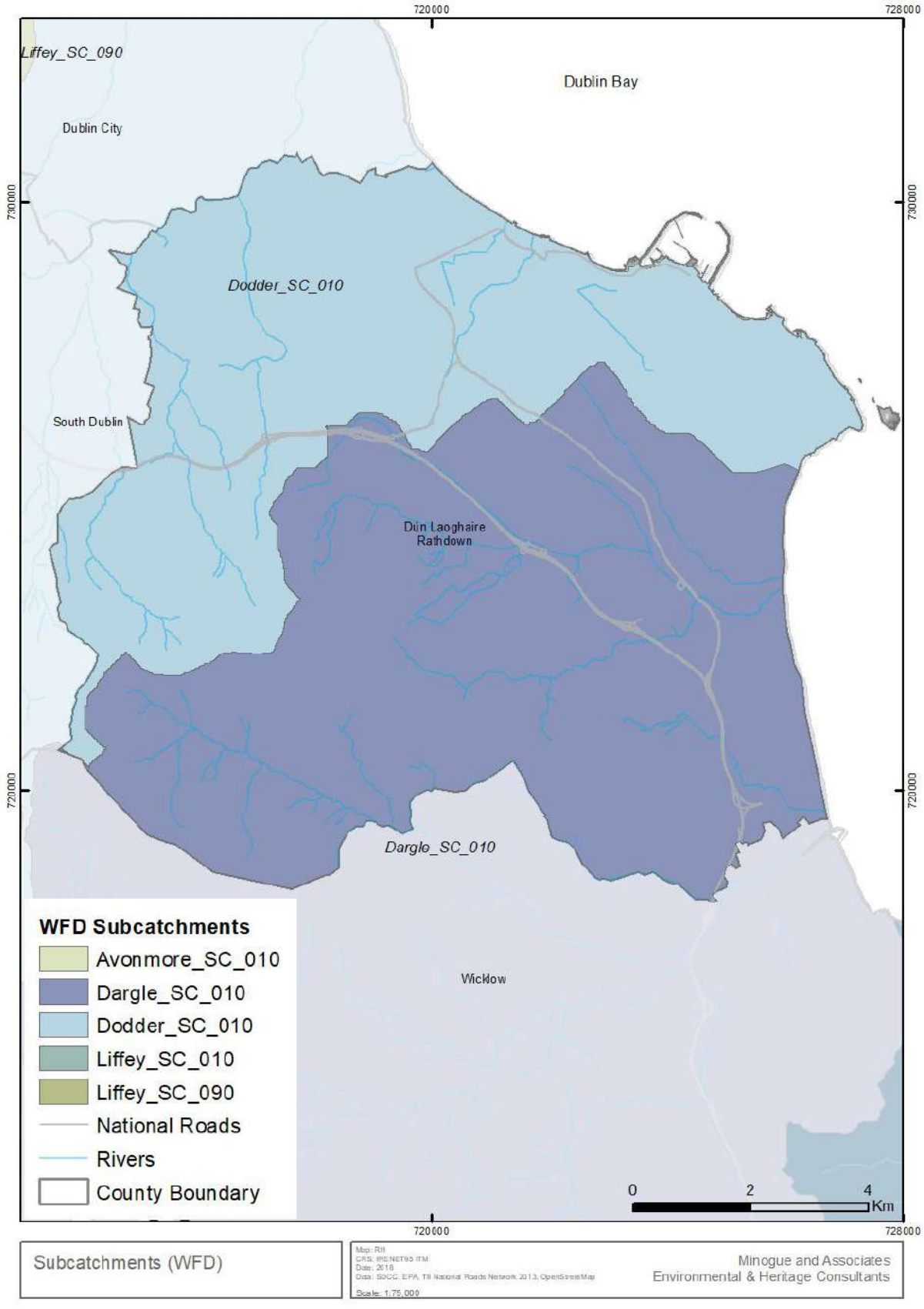
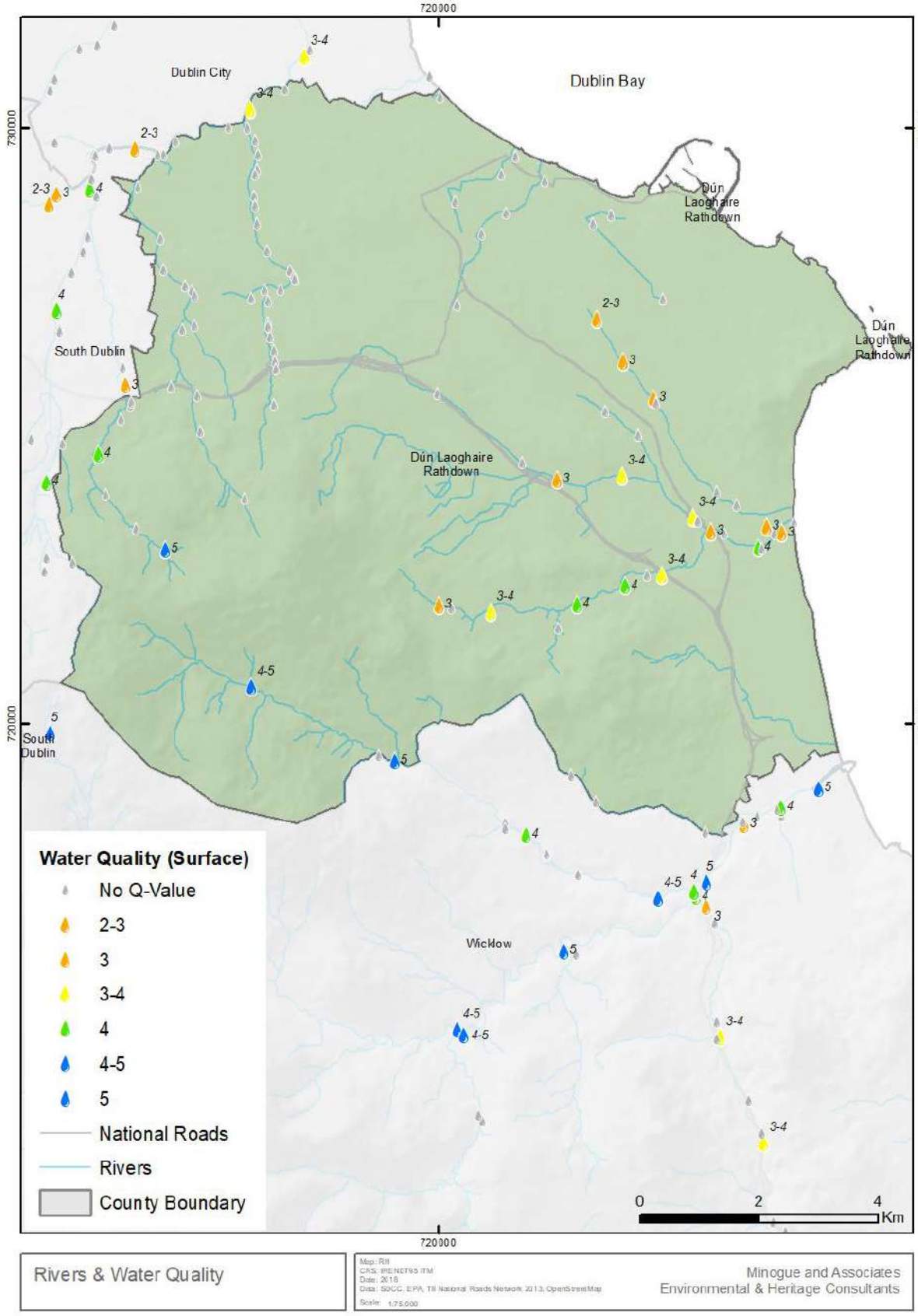


FIGURE 9 WATER QUALITY OF SURFACE WATER DÚN LAOGHAIRE RATHDOWN



Rivers & Water Quality

Minogue and Associates
Environmental & Heritage Consultants

FIGURE 10 COASTAL WATERBODIES UNDER THE WFD FOR DÚN LAOGHAIRE RATHDOWN COUNTY

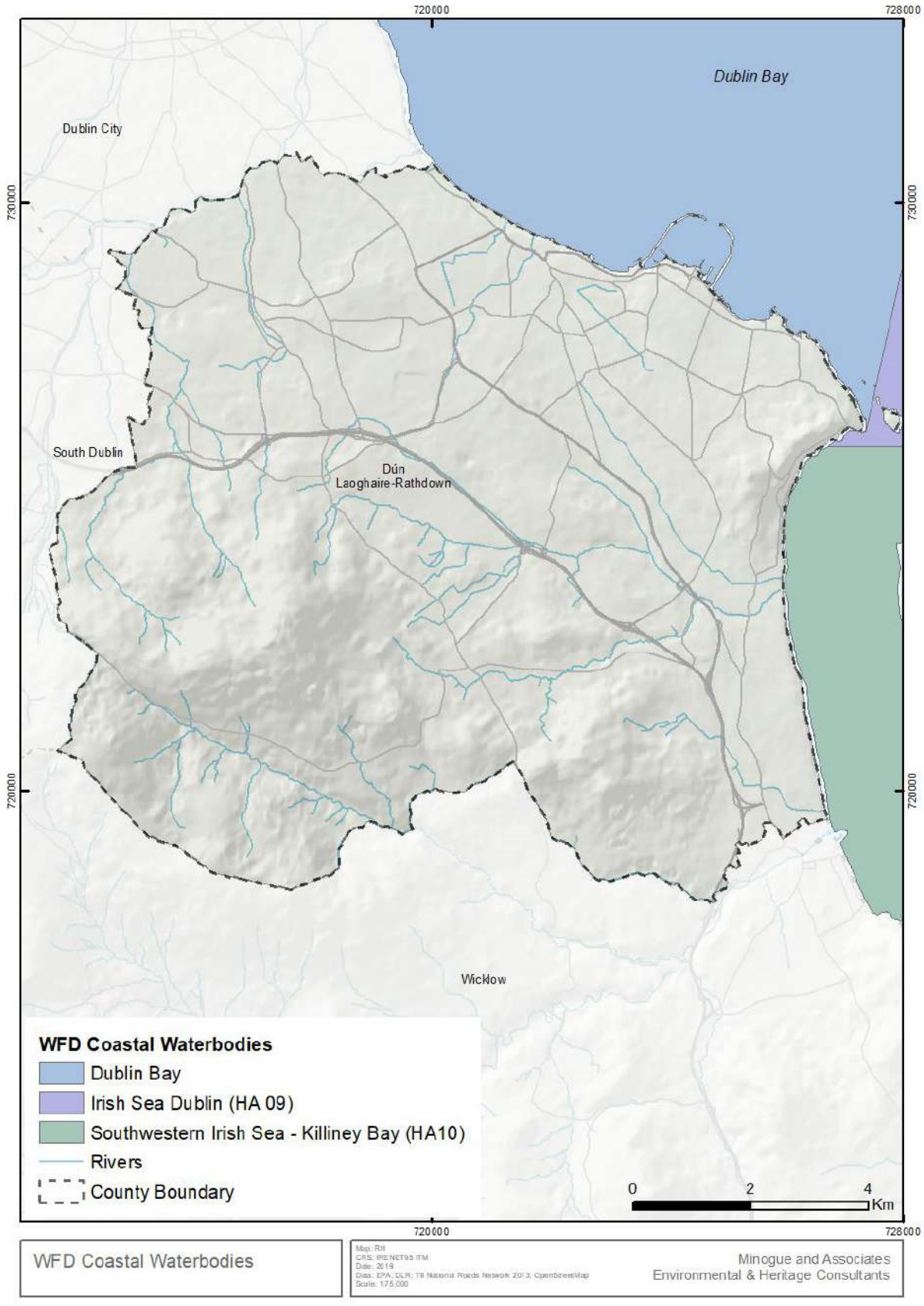
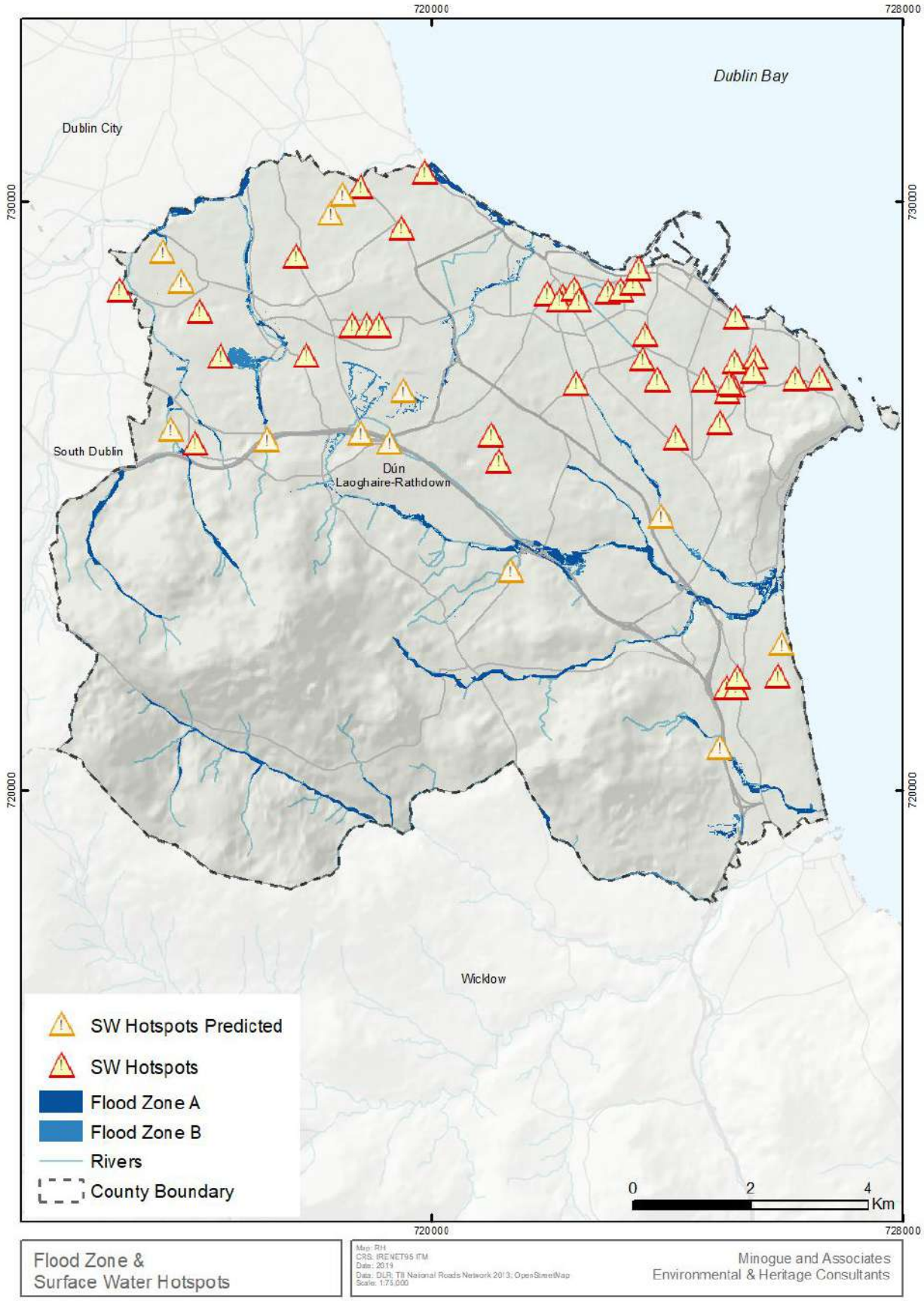


FIGURE 11 FLOOD ZONES A AND B



4.5 Soil and Geology

4.5.1 Geology

Bedrock geology is the county is varied between the harder, granite uplands composed of igneous rock and the lowlying limestone in the north of the county. The varied geological history gives rise to the diverse landscape in a relatively small area, see **Figure 12.** There are also number of Geological Heritage Sites in the County, see **Figure 13.**

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.

Urban soils make up the northern, most built-up section of the Plan area. The majority of the Plan area is covered by grey brown podzols with areas of brown podzolics, peaty podzols and litosols and outcropping rock existing as the Plan area extends to the south west.

Dún Laoghaire Rathdown includes existing areas under agricultural landuse and 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.

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 12 BEDROCK GEOLOGY

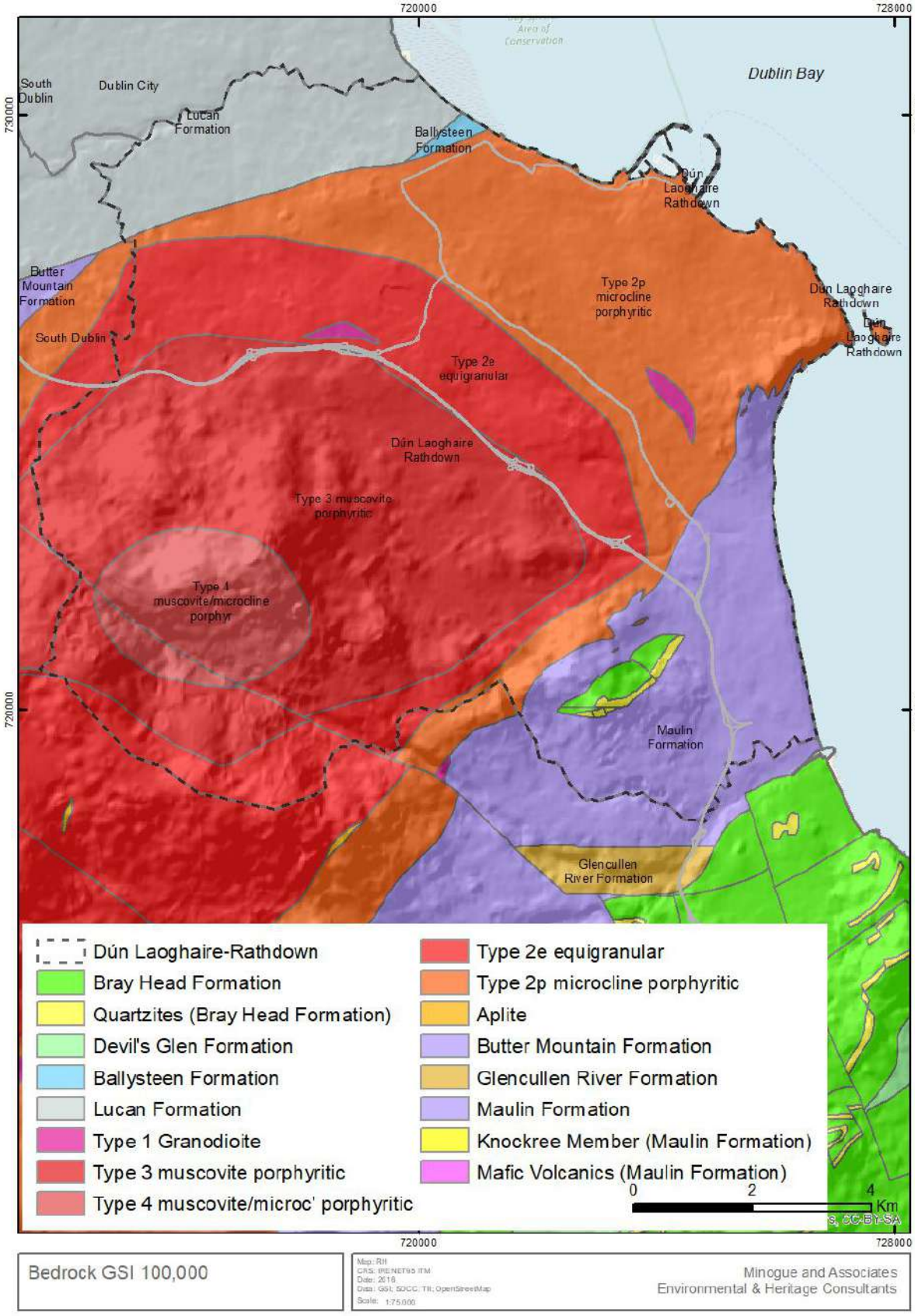


FIGURE 13 GEOLOGICAL HERITAGE SITES IN THE COUNTY

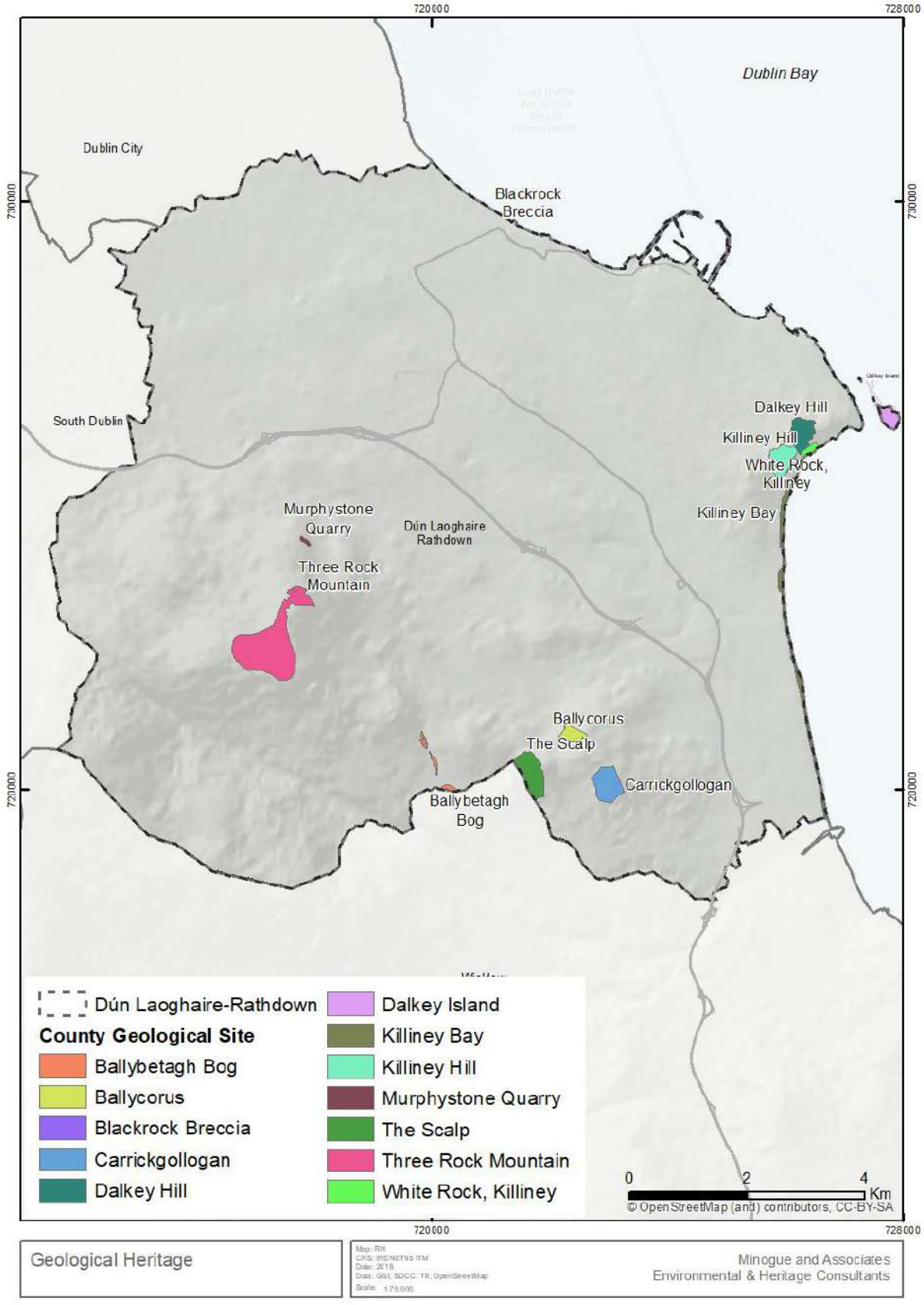
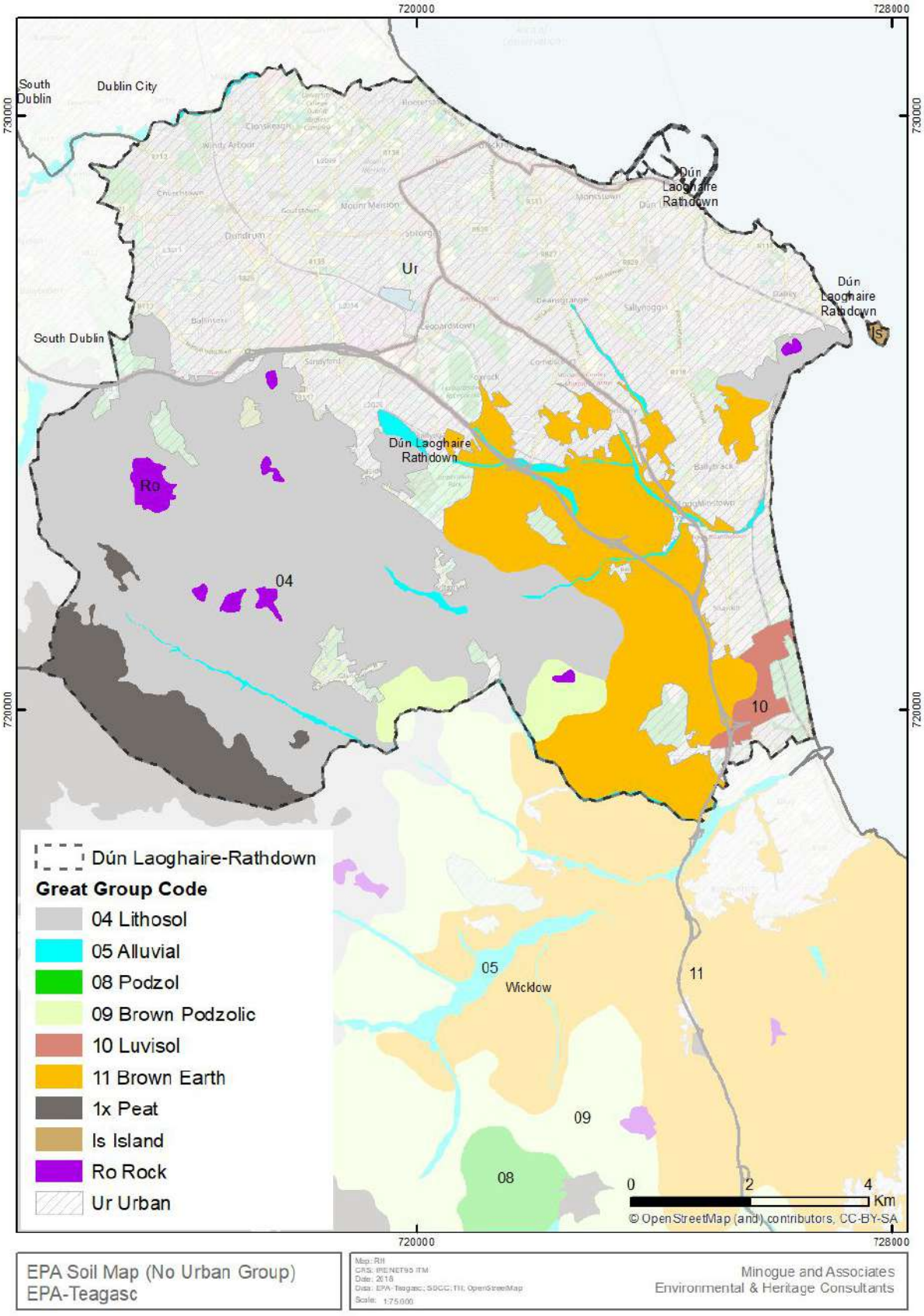


FIGURE 14 SOIL MAP OF THE COUNTY



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 havebeen left on the landscape by previous and indeed current generations.

The 'Dún Laoghaire-Rathdown Heritage Plan' 2013- 2018 was adopted by the Council. 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.

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.

In Dún Laoghaire-Rathdown, there are approximately 400 items on the RMP, with a Zone of Archaeological Potential identified around each monument. There are more entries to the RMP in the rural, south eastern parts of the Plan area though clusters exist at Dalkey Island and at Dalkey. Clusters also exist west of Loughlinstown and at Glencullen and also at Kilmashogue Mountain in the west of the Plan area.

4.6.2 Built 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".

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.

There are currently in excess of 2,000 Protected Structures within the County.

These structures include harbours, piers, boat slips, bridges, quarries, Martello Towers, Victorian terraces, Georgian houses, public buildings, street furniture, churches, castles, schools, yacht clubs and a range of domestic architecture.

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

4.6.3 Existing Issues: Cultural Heritage

- Potential for additional archaeological resources

- Enhancing and linking cultural heritage of the area
- 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 for example effects on wetter uplands and ritual upland archaeological features
- Given the spatial concentration of many built heritage features associated with the coastline of DLR 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. ish ponds) and subtidal areas (e.g. shipwrecks).

FIGURE 15 SITES AND MONUMENTS RECORD DÚN LAOGHAIRE RATHDOWN

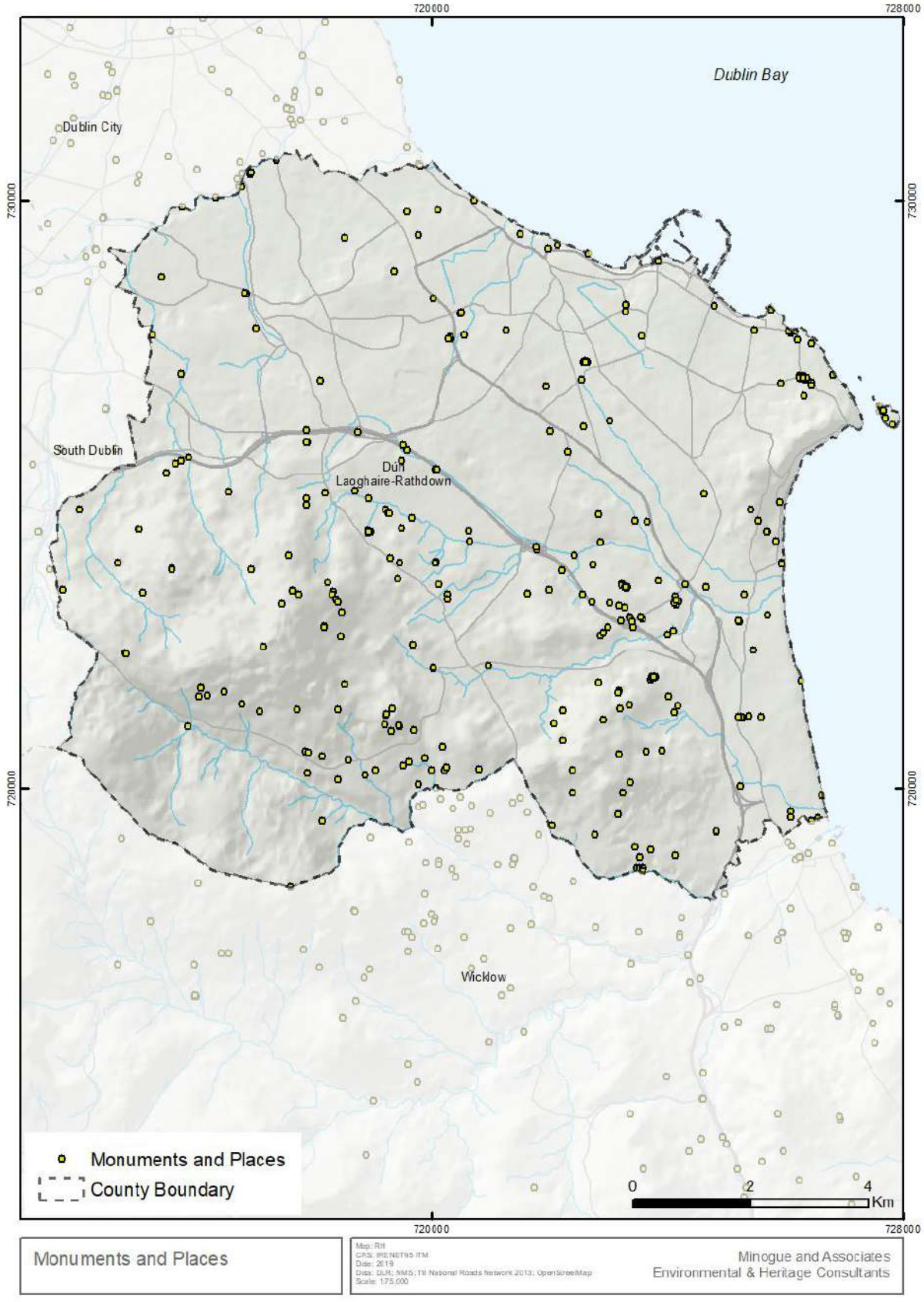


FIGURE 16 RECORD OF PROTECTED STRUCTURE

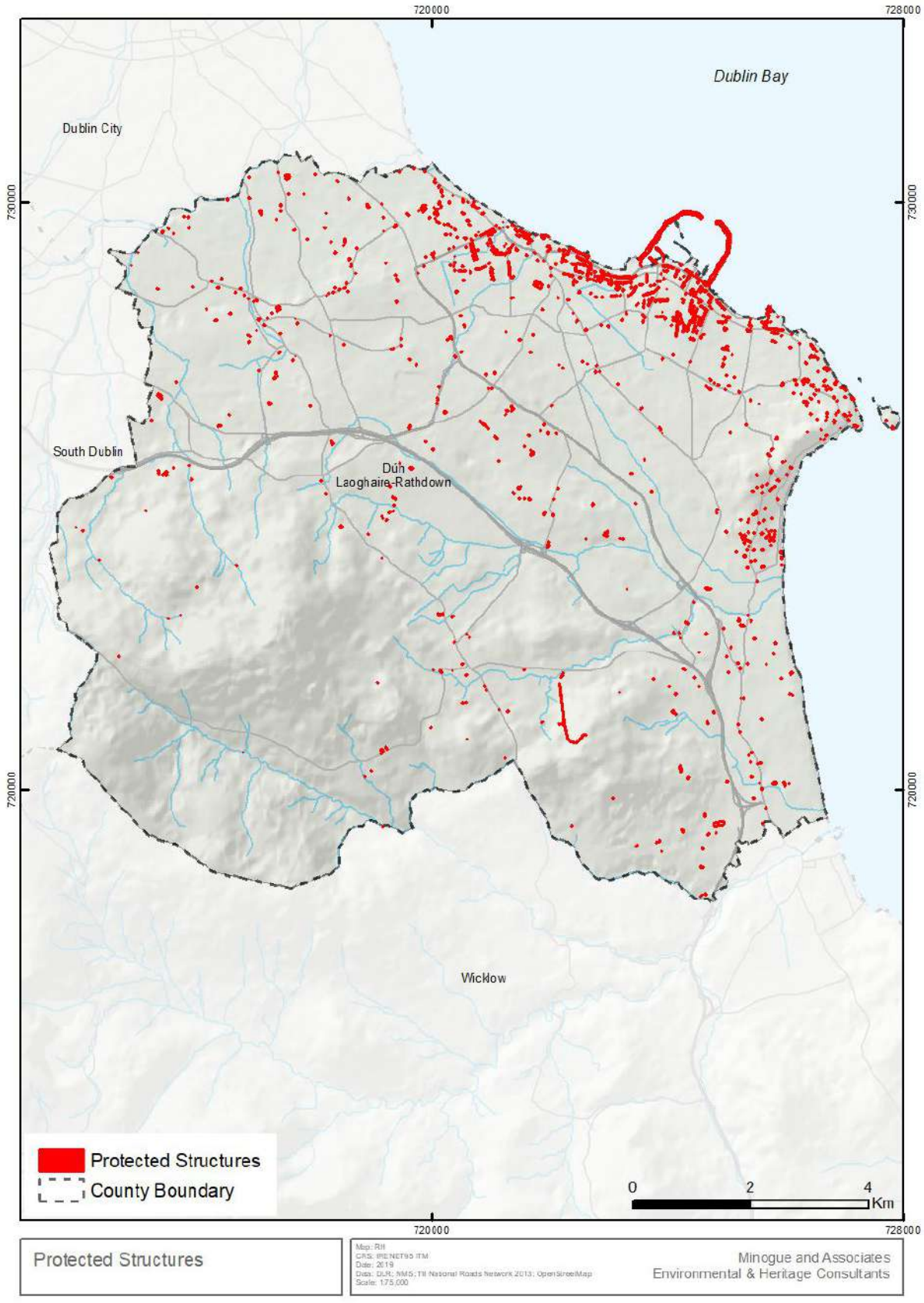
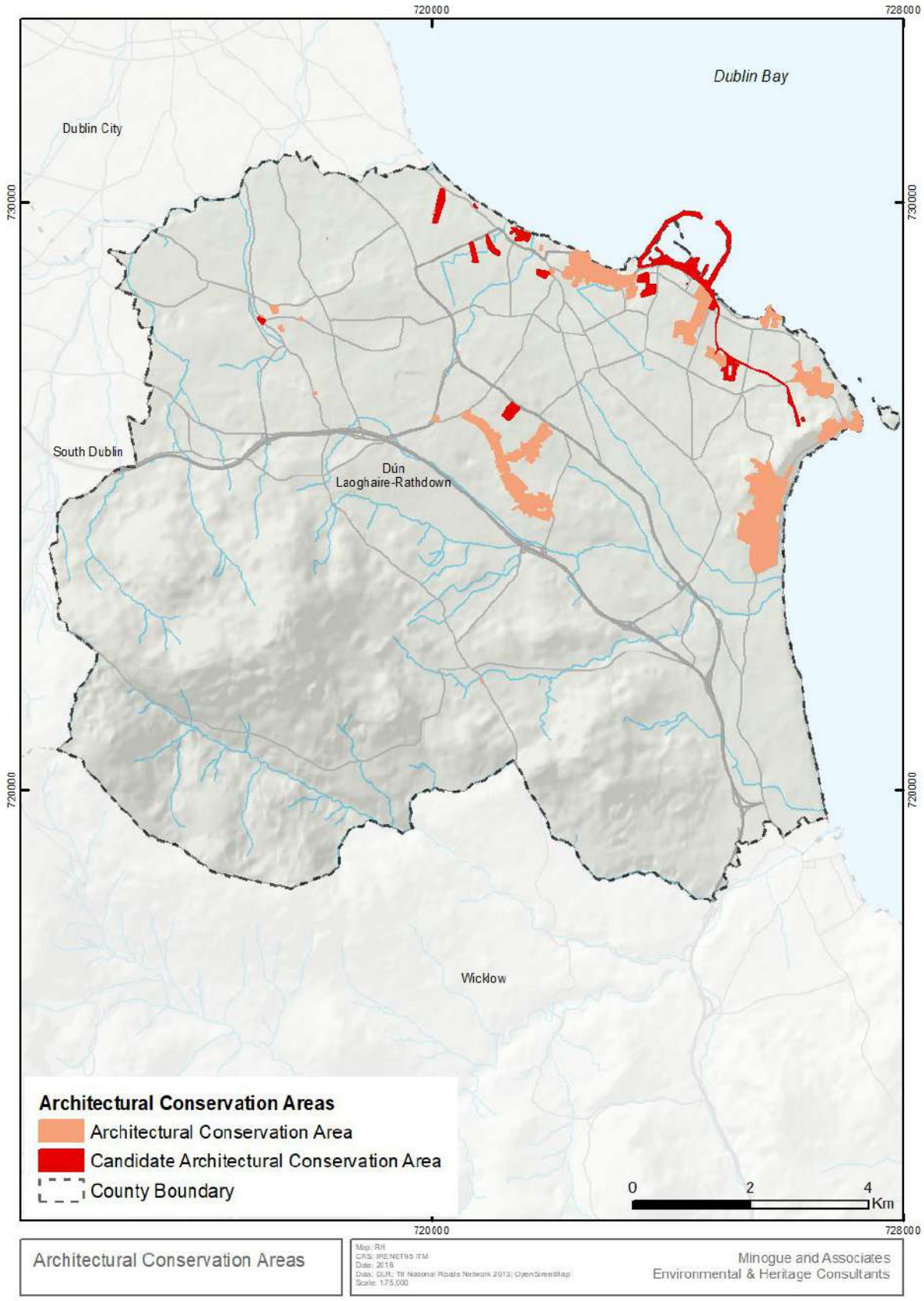


FIGURE 17ARCHITECTURAL CONSERVATION AREAS



4.7 LANDSCAPE

Landscape Character Assessment describes landscapes in terms of their character in an objective way. This can be used to inform decision making in relation to the protection of the environment, natural resources and heritage; it can be used to monitor change and can be used to guide development.

In accordance with the DEHLG's Landscape and Landscape Assessment Guidelines (2000), Dún Laoghaire-Rathdown County Council have identified 14 Landscape Character Areas which are listed below:

1. Kilmashogue Valley 2. Western Half of Kellystown Road 3. Ticknock Road 4. Marlay Park 5. Kilternan Plain 6. Ballycorus 7. Glencullen Valley 8. Glendoo Valley 9. Barnacullia 10. Rathmichael 11. Ballyman 12. Shanganagh 13. Carrickmines 14. Cherrywood Rathmichael.

The County Development Plan designates High Amenity Zones in the southern portion of the County. These areas consist of landscapes of special value where inappropriate development would contribute to a significant diminution of the landscape setting of the County.

It is the policy of the Council to conserve and enhance existing High Amenity Zones and to seek to manage these and other areas to absorb further recreational uses and activity without damaging the amenities that affords them their special character.

Areas covered by the High Amenity Zoning include the Glencullen Valley, Glendoo Valley and Kilmashogue Valley.

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 area. **Figure 18** presents the amenity objectives for the County and **Figure 19** shows the areas of green space (including parks, sports grounds and natural green space in the County).

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
- Greenway and blueway.
- 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 AMENITY OBJECTVES IN DLR COUNTY DEVELOPMENT PLAN 2016-2022

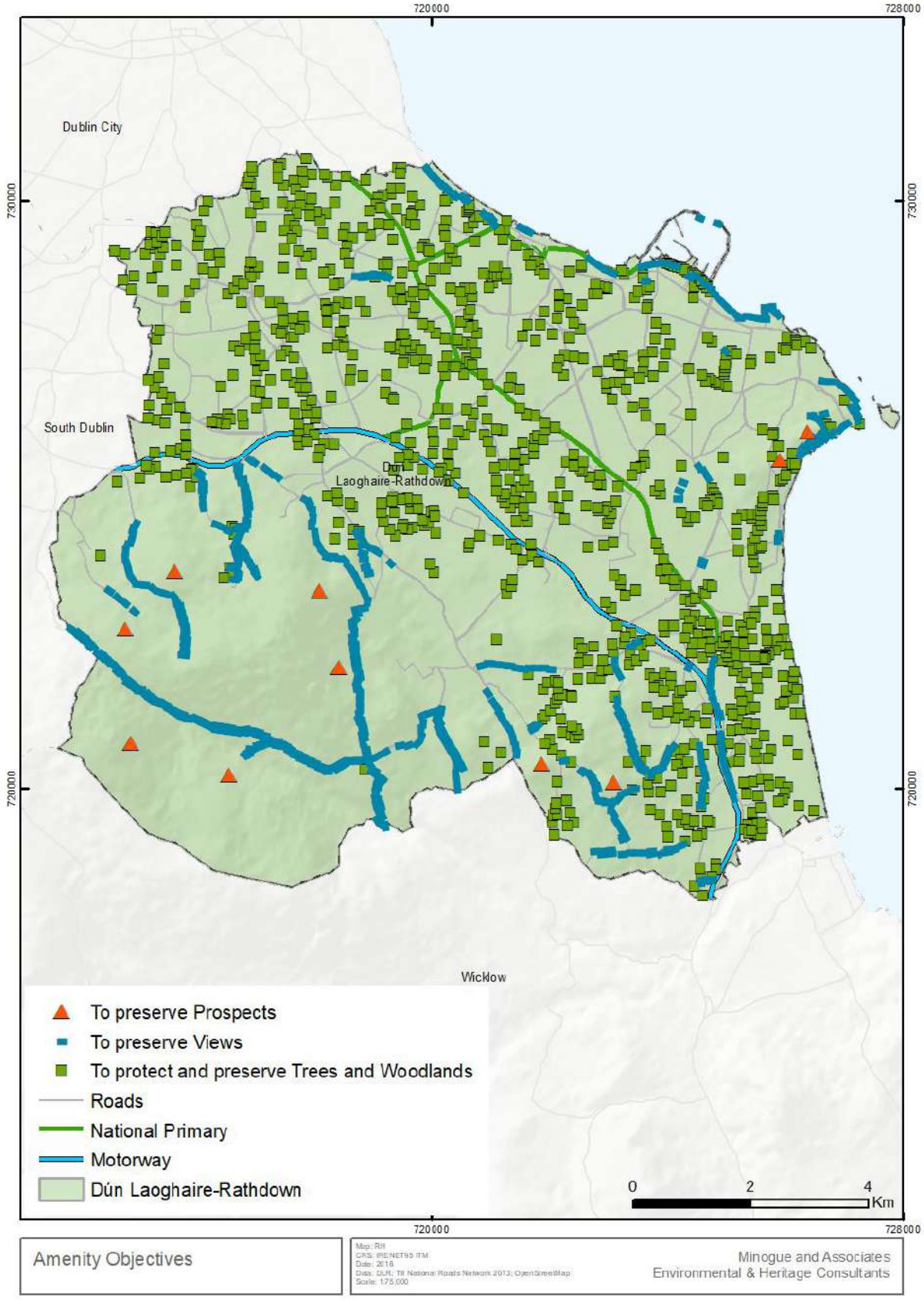
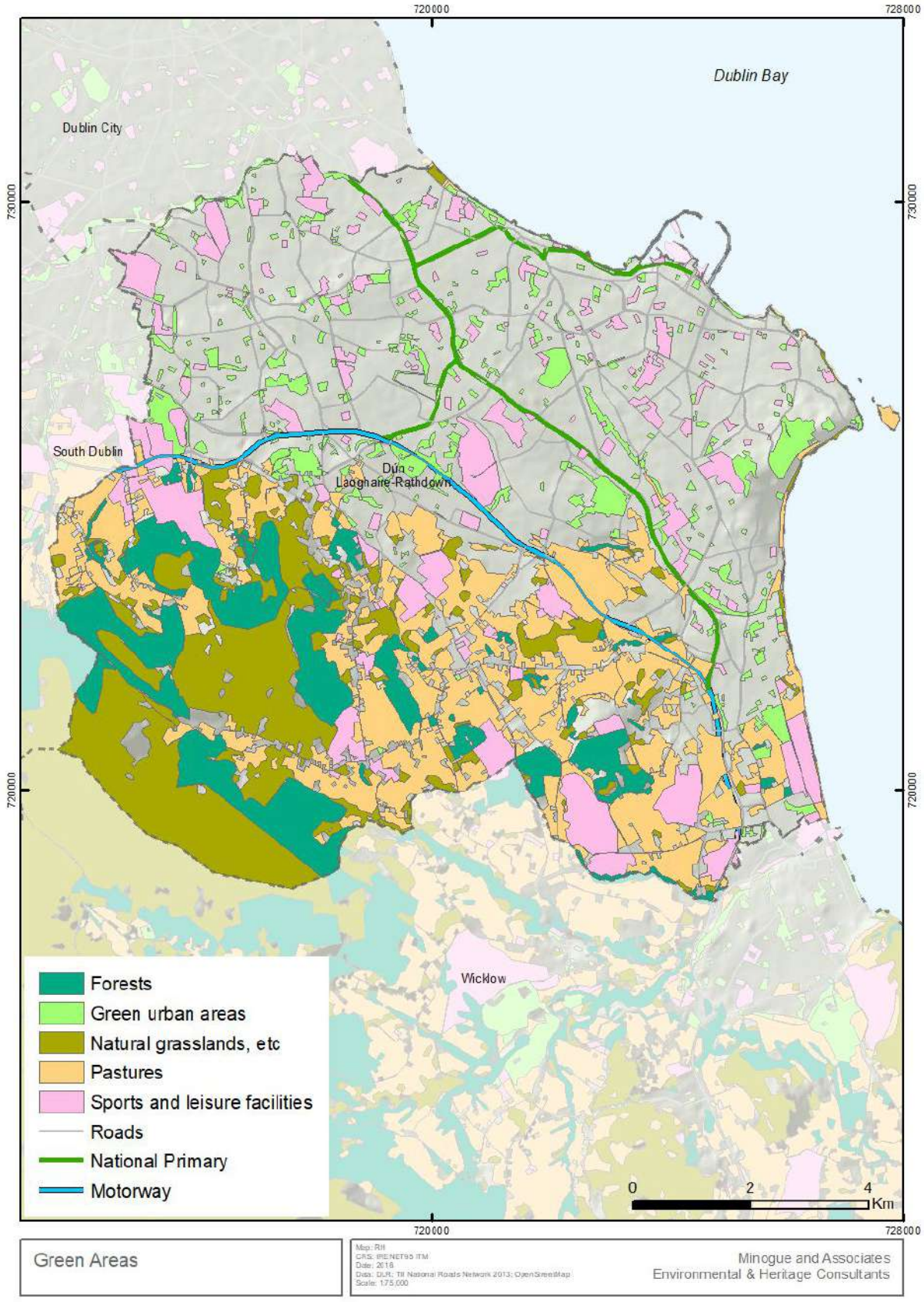


FIGURE 19 TYPOLOGY OF GREEN SPACES IN THE COUNTY



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. Dún Laoghaire Rathdown is located within the 'Dublin City' region. Air Quality is generally classified as 'good'.

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 DLR CCAP. The adaptation baseline has identified that the effects of climate change are already impacting Dún Laoghaire Rathdown 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. Dún Laoghaire Rathdown 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.

DLR Local Authority Emissions

Dún Laoghaire-Rathdown County Council (DLRCC) 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 DLRCC consumed a total of 50.57 gigawatt hours (GWh) of primary energy in 2017. The energy database also shows that DLRCC improved its energy performance by 28.2% between the baseline year and 2017. This highlights a gap-to-target of 4.8%, meaning that DLRCC must improve its energy performance by a further 4.8% 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 55% of the Council's overall energy consumption. Buildings and facilities were the second highest energy consumers, accounting for 38% of the total energy consumption, while the municipal fleet accounted for 7% of the total energy use.

As a signatory to the Covenant of Mayors for Climate and Energy, DLRCC is committed to reducing its own emissions by 40% by 2030, compared to the baseline year.

In 2017, the Council's total emissions amounted to 11,280 tonnes of CO2. Public lighting was the highest contributor, accounting for 57% of total emissions. This was followed by buildings and facilities, and the municipal fleet, each contributing 36% and 7% 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 was the second highest contributor of emissions at 14%. The majority of this gas 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 7% to the total emissions.

DLR TOTAL EMISSIONS (2016)

The most recently-available information for the total emissions in the entire Dún Laoghaire-Rathdown area is based on Census 2016 data. Using this data, Codema was able to calculate that the total emissions for the Dún Laoghaire-Rathdown area amounted to 1,139,570 tonnes of CO2eq in 2016. The sectors that produced the most emissions were the residential, transport and commercial sectors, accounting for 44%, 33% and 19% of the total emissions, respectively. The emissions attributed to Dún Laoghaire-Rathdown County Council amounted to only 1% of the total County emissions, with social housing contributing another 1.2%. This highlights the need for collaboration and action from all stakeholders to tackle the remaining 97.8% of emissions from public and private sector sources in the County.

4.8.3 KEY ISSUES: AIR QUALITY AND CLIMATE

- Planning for and adapting to climate change..

The risks associated with sea level rise in Dún Laoghaire-Rathdown 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

• Increased pressure on sanitation systems - 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 Dún Laoghaire-Rathdown, especially since some housing and major infrastructure (roads, DART lines) are along the coast

• Increased wave heights and high tides producing damage further inland and upstream

• Destruction and alterations of coastal and marine ecosystems, habitats and species

- Sectoral policies can assist in this including transport and energy.
- Measures including carbon sequestration in existing soils and additional appropriate vegetation planting associated with green infrastructure and ecological corridors.
- Integration of blue infrastructure measures
- A modal shift from private transport to public transport
- Increasing energy efficiency in buildings.
- Transition to a low carbon economy and source of power.

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

In terms of trips to work, school and college, walking travel mode share in Dún Laoghaire Rathdown is below the Greater Dublin Area (GDA) average, cycling is higher than the GDA average, while overall public transport usage is also above the GDA average. The car, however, remains the dominant mode of transport with 54% of trips being undertaken by this mode (including car passengers).

There is a relatively high quality pedestrian network throughout the County. In recent years, there has been significant investment in pedestrian infrastructure with a particular focus on the larger urban areas such as Dún Laoghaire, Blackrock, Dún drum and Stillorgan. The key issue is to confer a high quality offer, if not a competitive advantage, on pedestrian movements for short trips related to the main towns, key local destinations and transport hubs/ interchanges.

In 2012, a County Cycle Network was developed following a comprehensive evidence-based review that assessed all cycling routes in the County in terms of Quality of Service. Currently over 250km of cycle routes exist in the County with many off-road routes through the major parks. The Cycle Network aims to connect the main attractors (e.g. town centres, colleges etc) within the County and to provide effective through- movement for cyclists. It also provides a priority list for the development of a network of Primary Routes (between locations of highest cycling demand) and Secondary Routes (routes through residential estates and parks) to give cyclists route options alternative to cycling along main road traffic corridors.

There is a well-established network of bus routes in the County including a number of significant radial bus corridors. The busiest of these is the N11, where there is a high frequency and high capacity services operating along most of the corridor. There are also frequent services operating on the Rock Road radial corridor. There are, however, a more limited number of east-west orbital services in the County and those that do originate- terminate at Blackrock and Dún Laoghaire Dart Stations.

The continued expansion of the Bus Network is of the upmost importance. In addition, the continuation and improvement of existing bus services along radial and orbital routes, subject to sufficient demand and availability of finance, is also considered a priority.

There are two rail corridors in Dún Laoghaire- Rathdown, the Luas Green Line and the South

Figure 20 shows rail and light rail in the county.

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

Waste water in Dún Laoghaire Rathdown is currently treated in Ringsend Wastewater Treatment Works which discharges into Dublin Bay. The treated waters are treated to a Tertiary standard, which is in compliance with the Urban Wastewater Treatment Directive. The quality of the discharged waters is within the requirements of the Urban Waste Water Treatment Directive. Shanganagh WWTP provides secondary treatment for wastewater in the southern part of the county and some of the more rural areas in the county rely on septic tanks for wastewater collection.

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 plan at Clonshaugh (in Fingal County) 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

Over 98% of water distributed in Dún Laoghaire-Rathdown is supplied from Dublin City Council. This water is sourced from catchments outside Dún Laoghaire-Rathdown County Council, primarily Roundwood (Vartry), Ballymore Eustace (Liffey) and Ballyboden (Dodder).

Total daily demand in the Dún Laoghaire-Rathdown County area is approximately 51 mega litres (11 million gallons) per day

It is anticipated that Dublin will need a new major water source by 2025, based 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, Dún Laoghaire Rathdown, 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 Netherlands[13] 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
- 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.

Dún Laoghaire Rathdown County Council 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 Fishing and Marine Resources

The fishing industry in Dún Laoghaire-Rathdown relates not only to commercial fishing (at sea and inland) but also to tourism and recreational activities. The harbours of Dún Laoghaire and Bullock provides fishing year round and are used as recreational and amenity harbours.

The marine resource is very important to Dún Laoghaire-Rathdown as it supports a significant number of water based activities, both work and pleasure related. These include boat hire, yachting, adventure sports, pier/shore angling, sea angling, dolphin and bird watching, hiking, visiting heritage sites and festivals. Dublin Bay Cruises also sail from Dún Laoghaire-Rathdown to Howth daily during the summer months.

4.9.6 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

Due to the characteristics of Dún Laoghaire Rathdown, prolonged heavy rainfall events typically result in urban flooding, which is mainly caused by a lack of pervious surfaces. 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

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

- 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 EXISTING PUBLIC TRANSPORT PROVISION IN DÚN LAOGHAIRE RATHDOWN

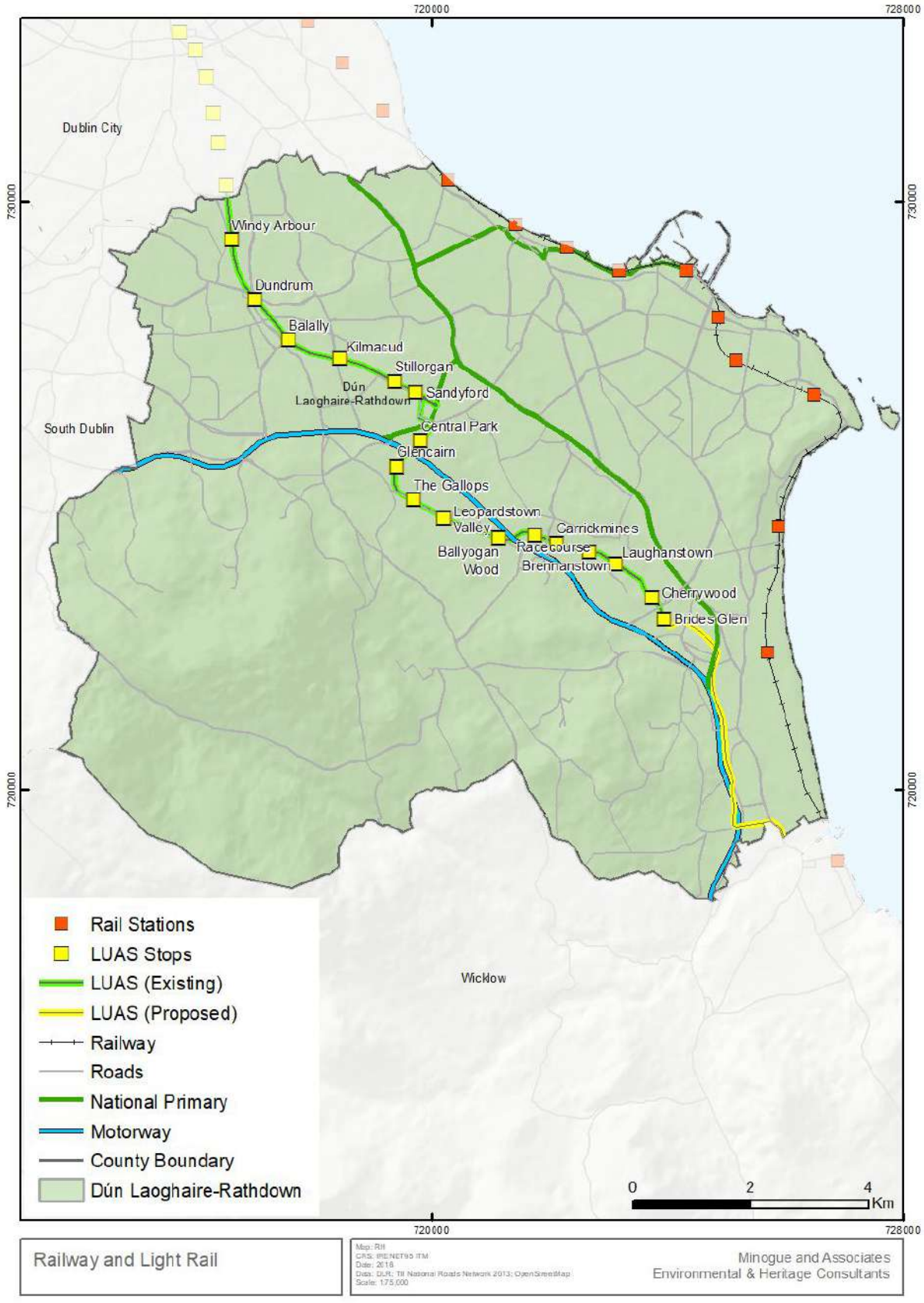
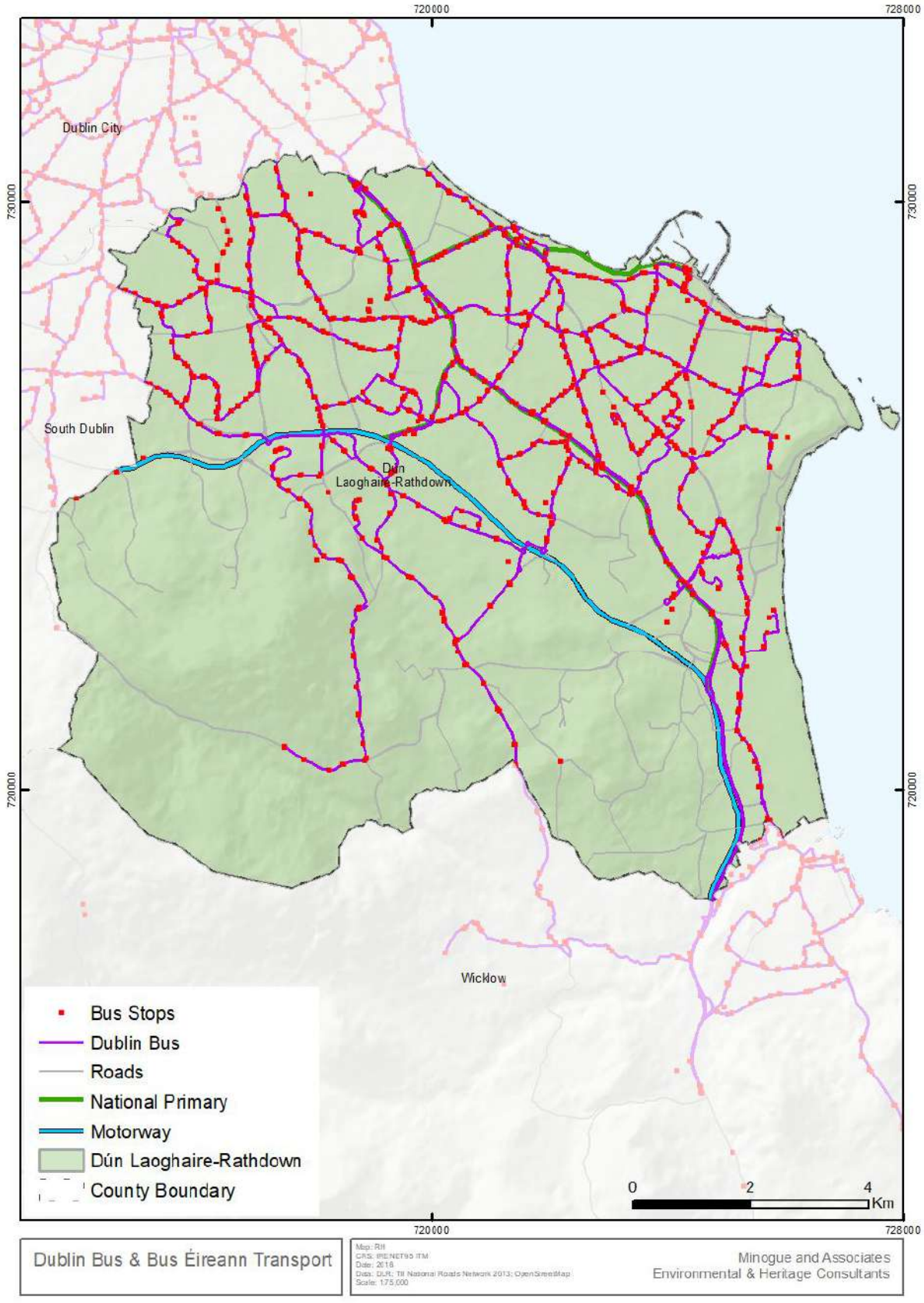


FIGURE 21 CURRENT BUS PROVISION DÚN LAOGHAIRE RATHDOWN

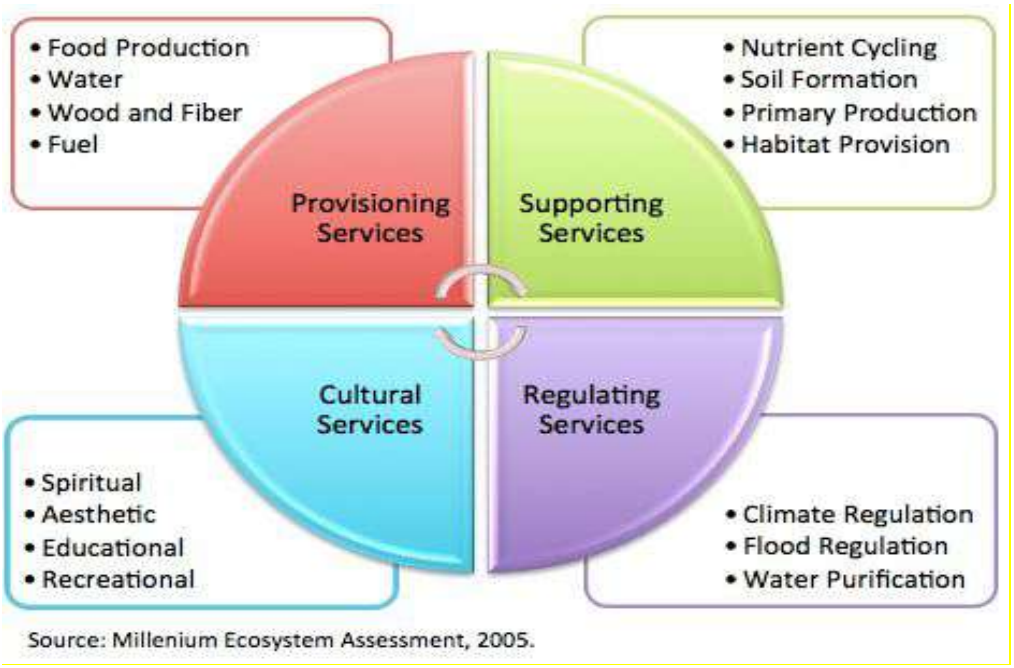


4.10 Inter-relationships

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 22**.

FIGURE 22 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 23 ECOSYSTEM SERVICES –WATER REGULATION OF FLOWS

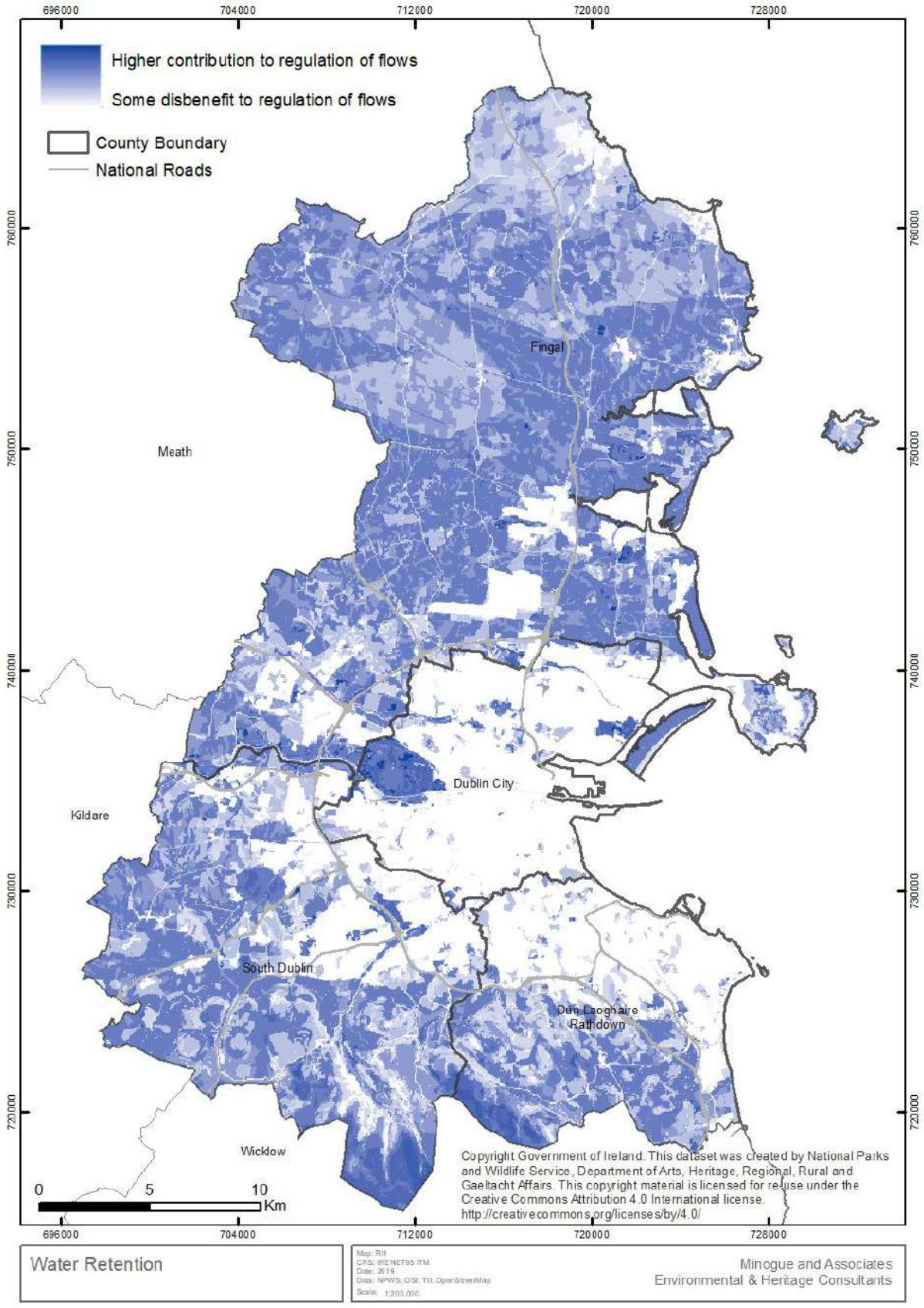


FIGURE 24 ECOSYSTEM SERVICES –WATER FILTRATION

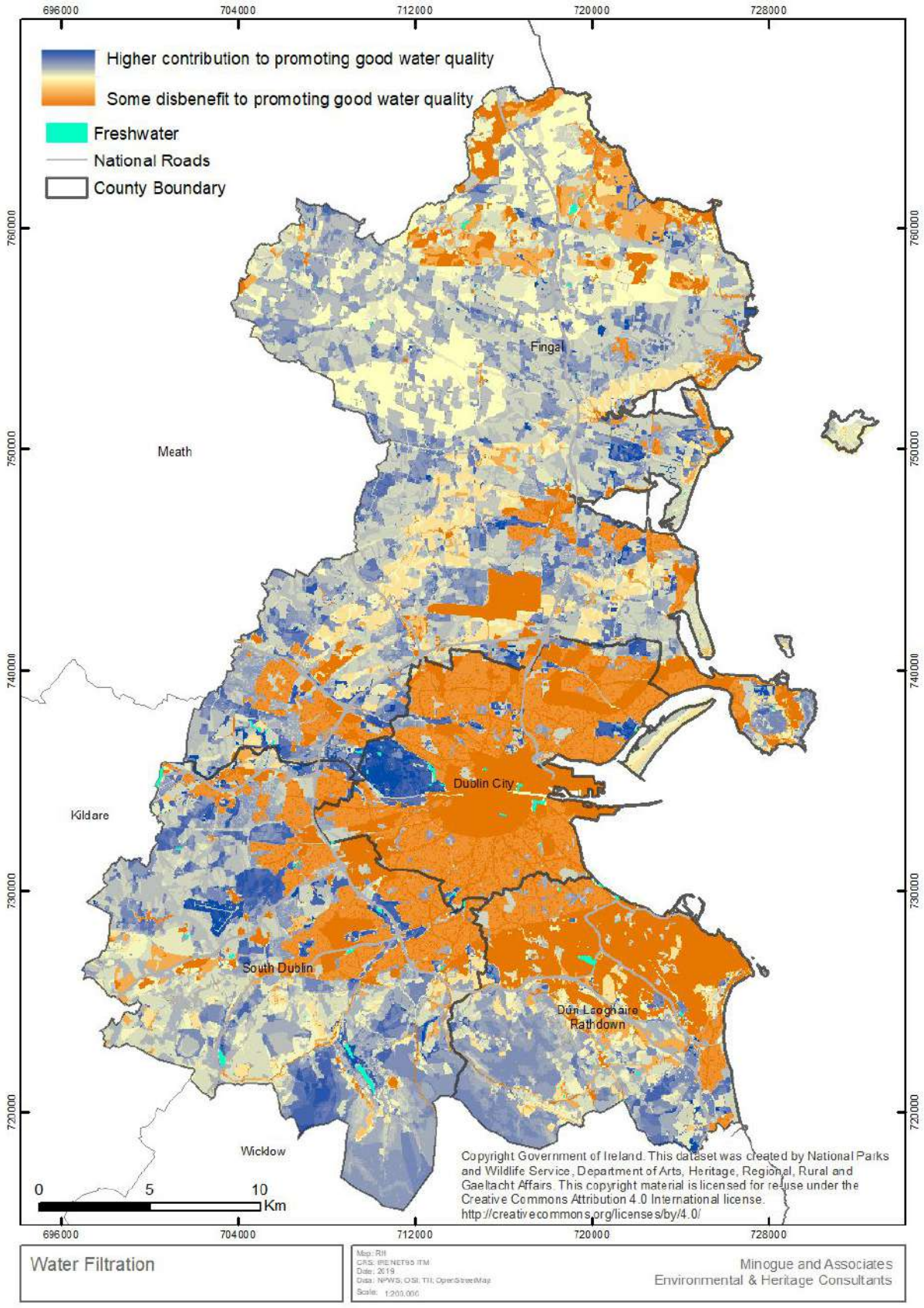
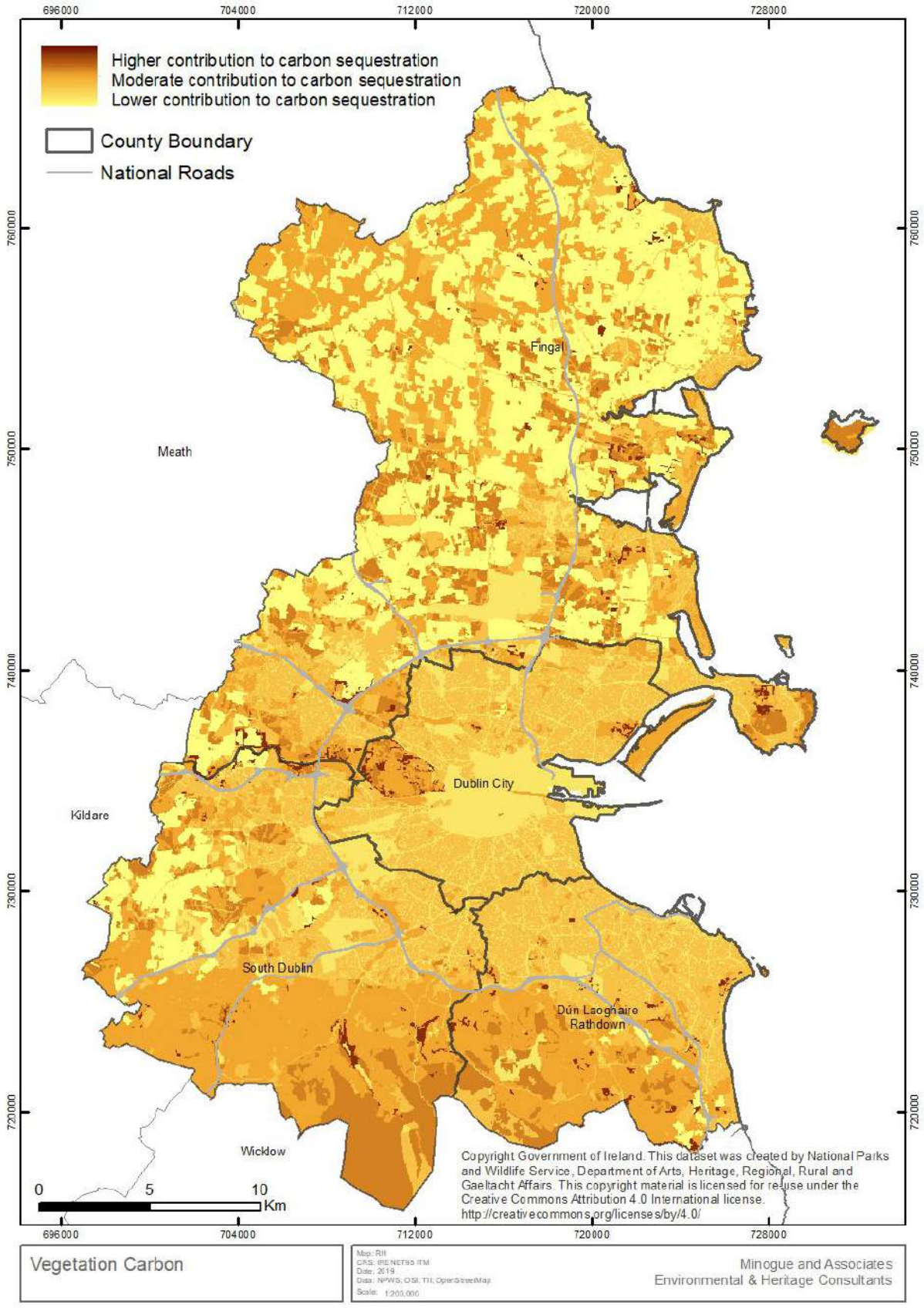


FIGURE 25 ECOSYSTEM SERVICES- CARBON SEQUESTRATION



In the context of Dún Laoghaire Rathdown, the above assessment demonstrates the importance of the foothills and uplands in terms of water storage, filtration and carbon sequestration. The more agricultural lands in the lowland part of the county also fulfil an important role in water services.

4.10.1 Environmental Sensitivity.

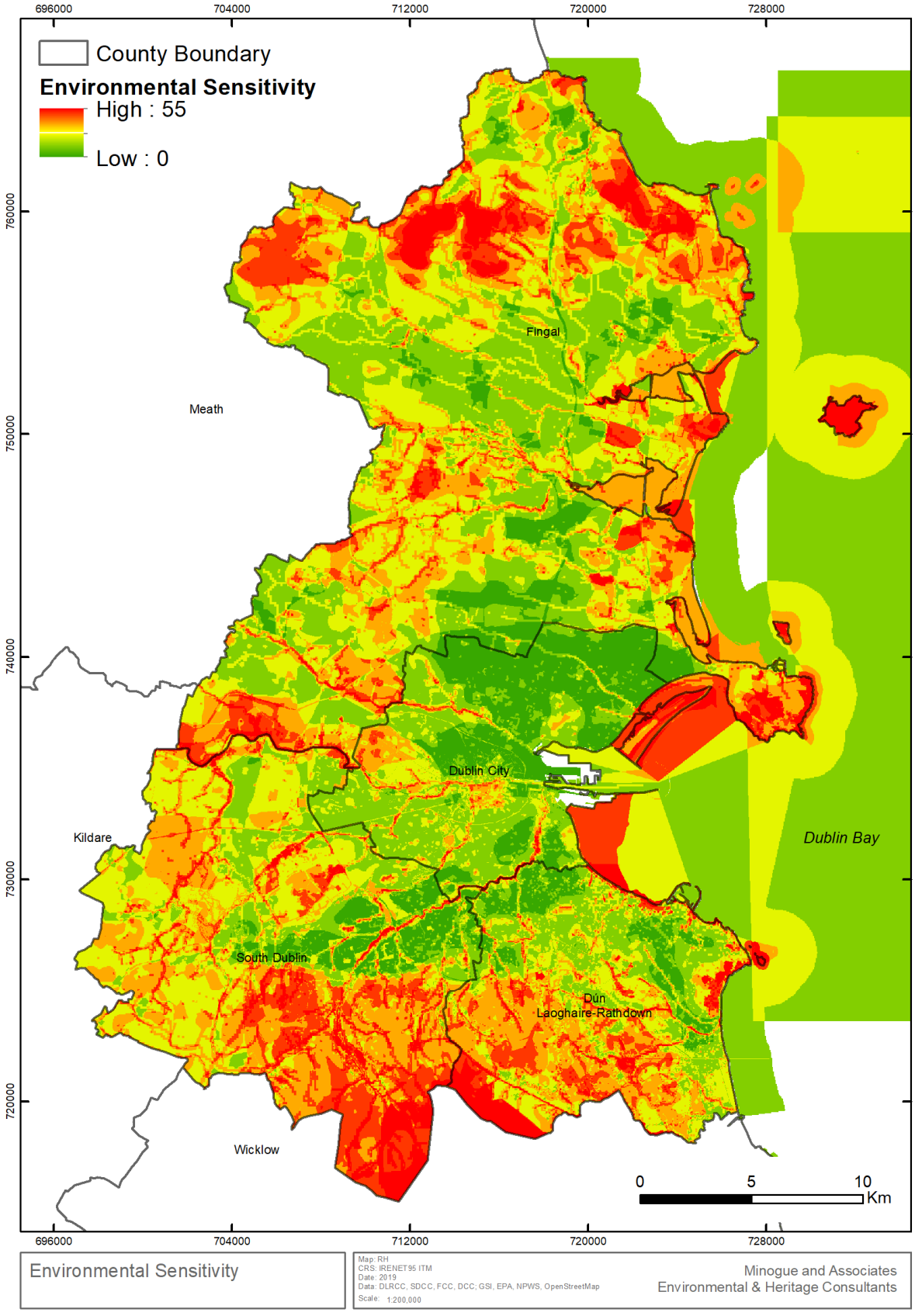
In accordance with the SEA Directive, the interrelationship between the environmental parameters above must be taken into account. Although all such parameters may be considered interrelated and may impact on each other at some level. The Figure below shows the overall environmental sensitivity for the plan area and the other Dublin Local Authorities, and follows the same approach (i.e.: ranking of environmental parameters) as that used in the CDP 2016-2022 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)

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 26** shows the environmental sensitivity map for the County.

FIGURE 26 Environmental sensitivity mapping Dún Laoghaire Rathdown County and other 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 Dún Laoghaire Rathdown County Development Plan 2016- 2022.

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 Dún Laoghaire Rathdown CDP 2016-2022 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 Dún Laoghaire Rathdown, 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 6KEY CLIMATE CHANGE ISSUES IDENTIFIED IN SEA ER OF NEIGHBOURING LOCAL AUTHORITY COUNTY DEVELOPMENT PLANS

SEA Topic	Existing Environmental Issues Dublin City Council
Dublin City County Development Plan 2016-2022	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
Climatic Conditions	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

Fingal County Development Plan 2017-2023	Some of the likely potential impacts of climate change for Fingal have been identified as follows: Increased likelihood and magnitude of precipitation levels and flooding eveng Disruption to urban infrastructure due to flooding Increased sea levels and loss of coastal land Potential residential and commercial water shortages, and Increased vulnerability for at risk sections of society due to changing demographic and hazards Towns along the coast will become increasingly vulnerable to rises in sea levels, coastal erosion and coastal squeeze. More intense storm events are also likely outcomes of climate change.
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 Fingal County. 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.
Wicklow County Development Plan 2016-2022	Emissions to air including greenhouse gas emissions and other emissions[14]

[14] Taken from SEA Statement as Environmental Report not available on final plan webpage.

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 Dún Laoghaire Rathdown County Development Plan 2016-2022. Where they differ from the Dún Laoghaire Rathdown CDP 2016-2022 objectives, the text is shown in italic bold font[15]. The results of this are summarised in a table, called an evaluation matrix (See Chapter Seven SEA ER).

TABLE 7PROPOSED STRATEGIC ENVIRONMENTAL OBJECTIVES

SEA Topic	Target
Biodiversity Flora and Fauna 	***B1: To avoid the loss of important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features, or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.***
	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan .
	B3: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, resulting from the implementation of the Plan, to important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.
	B4 To maintain and restore key ecological processes (e.g. ecohydrology, hydrogeology, hydrogeomorphology, water quality, coastal processes).
Population and human health 	PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan
Soil	S1: To minimise reductions in soil extent and hydraulic connectivity

[15] Biodiversity objectives were amended on foot of feedback by DLR Biodiversity Officer

Water	
	W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status'63 W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)
	W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC
	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning Sy stem and Flood Risk Management Guidelines for Planning Authorities
Material Assets	M1: All new developments granted permission to be connected to and adequately and appropriately served by waste water treatment over the lifetime of the Plan
	M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan
	M3i: Minimise increases in and, where possible, reduce household waste generation M3ii: Maximise increases in packaging recovered (t) by self-complying packagers
Air Quality and Climate	C1: An increase in the percentage of the population travelling to work, school or college by public transport or non-mechanical means
Cultural Heritage	CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from significant adverse effects arising from new development granted permission under the Plan
	CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from new development granted permission under the Plan
Landscape	L1: To implement Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape,

	High Amenity Zones, Historic Landscape Character Areas and Views and Prospects
	***Maintain and improve the health of people, ecosystems and natural processes*** ***Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change***
Interrelationships	

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 Dún Laoghaire Rathdown 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

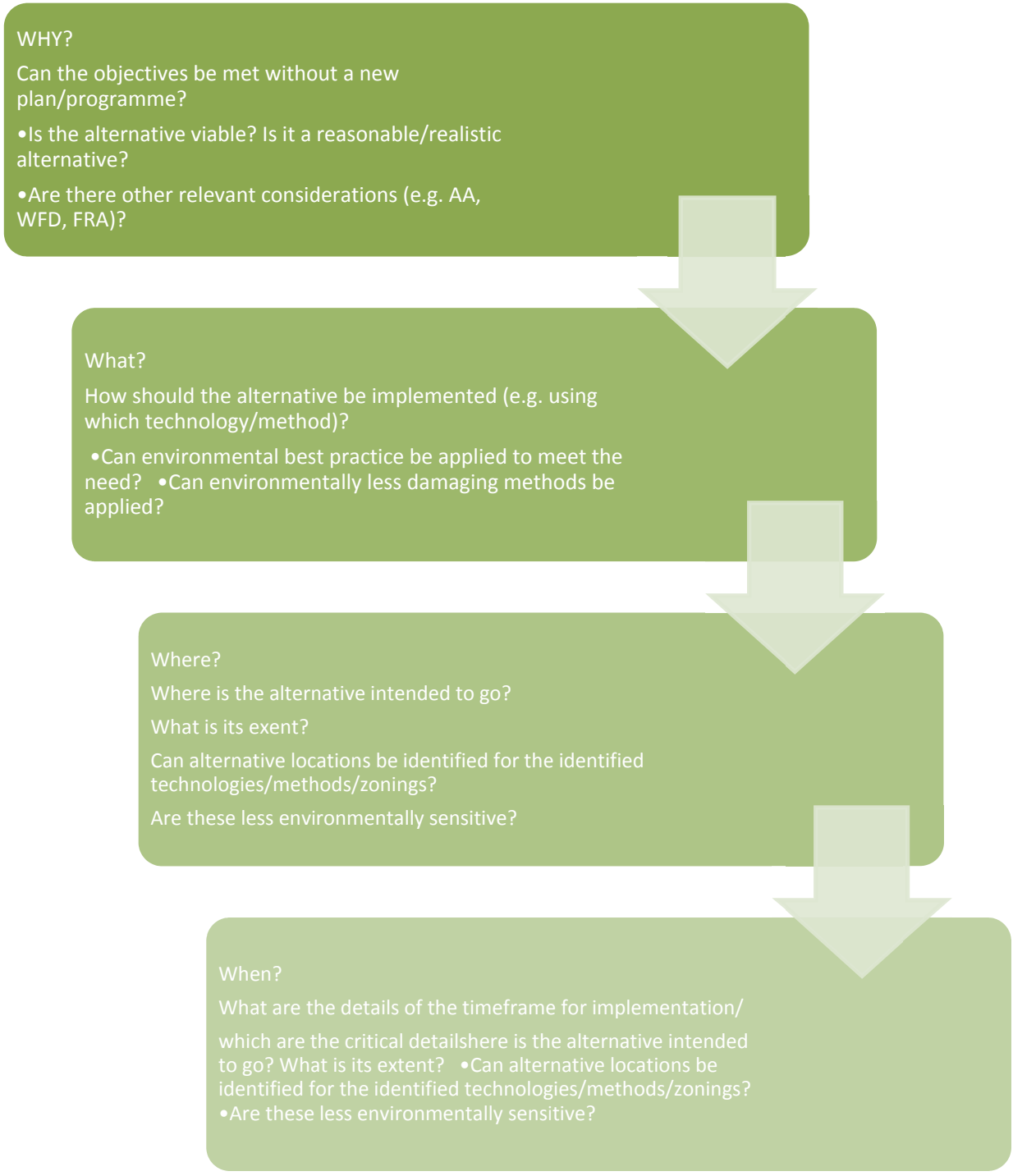
In a *Strategy Towards Climate Change Actions Plans for Dublin 2017*, seven focus areas were identified as having the greatest potential to help the Dublin LAs move towards a zero-carbon society and adapt to the effects of climate change. These focus areas were as follows:

- 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 Alternatives[16]:



Therefore the Alternatives considered are as follows:

[16] 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 county of Dún Laoghaire Rathdown	This would cover the timeframe of the current CDP upto 2022
Alternative 2: Prioritise largest greenhouse gas emission sectors –	This would require the preparation of an action plan that would concentrate on energy and transport for Dún Laoghaire Rathdown as a	It would prioritise measures that would reduce energy emissions, promote renewable energy and sustainable transport projects	This would include the county of Dún Laoghaire Rathdown	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?
Energy and Transport	means to address and respond to climate 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 emissions	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 Dún Laoghaire Rathdown 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.

	Why	What	Where	When
	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?
mitigation).				

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

Target	**Alternative 1:Do Nothing Scenario**	**Alternative 2.Prioritise Energy and Transport**	**Alternative 3 Prioritise all main sectors and include for awareness raising**
B1: To avoid the loss of important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features, or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.	Positive Negative	Negative	Positive++
B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan .	Positive Negative	Negative	Positive++
B3: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, resulting from the implementation of the Plan, to important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.	Positive Uncertain	Negative	Positive++
B4 To maintain and restore key ecological processes (e.g. ecohydrology, hydrogeology, hydrogeomorphology, water quality, coastal processes).	Uncertain	Negative	Positive ++

Target	Alternative 1:Do Nothing Scenario	Alternative 2.Prioritise Energy and Transport	Alternative 3 Prioritise all main sectors and include for awareness raising
PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan	Positive	Uncertain	Positive++
S1: To minimise reductions in soil extent and hydraulic connectivity	Uncertain	Positive	Positive++
	Positive	Positive	Positive+
W1i: Not to cause deterioration in the status of any surface water or affect the ability of any surface water to achieve 'good status'63 W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)	Positive	Positive	Positive++
W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	Neutral	Neutral	Neutral
W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning Sy stem and Flood Risk Management Guidelines for Planning Authorities	Positive	Positive	Positive
M1: All new developments granted	Neutral	Neutral	Neutral

Target	Alternative 1:Do Nothing Scenario	Alternative 2.Prioritise Energy and Transport	Alternative 3 Prioritise all main sectors and include for awareness raising
permission to be connected to and adequately and appropriately served by waste water treatment over the lifetime of the Plan			
M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan	Neutral	Neutral	Neutral
M3i: Minimise increases in and, where possible, reduce household waste generation M3ii: Maximise increases in packaging recovered (t) by self-complying packagers	Positive	Neutral	Positive++
C1: An increase in the percentage of the population travelling to work, school or college by public transport or non-mechanical means	Positive	Positive++	Positive++
CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the surrounding landscape where relevant) from significant adverse effects arising from new development	Positive	Positive	Positive++

Target	Alternative 1:Do Nothing Scenario	Alternative 2.Prioritise Energy and Transport	Alternative 3 Prioritise all main sectors and include for awareness raising
granted permission under the Plan			
CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from new development granted permission under the Plan	Positive	Neutral	Positive ++l
L1: To implement Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects	Positive	Uncertain/neutral	Positive
Maintain and improve the health of people, ecosystems and natural processes *Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change*	Positive	Positive	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 mulit 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. Actions (Energy: *Action 5*) relating to deep retrofits of the councils housing stock provides 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 Dún Laoghaire Rathdown CDP 2016-2022 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 3: Promotion of road safety and active travel in schools, Action 4 Develop and expand the County Walking Network and Action 10 Cycle Parking the Public Realm.*

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, woodland strategy, 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 Produce Regional Flood Management guidelines –use Santry River as a demonstration or Action 19 Protect and conserve floodplains, wetlands, and coastal areas subject to flooding).*

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.

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.

Mapping trees in the county (Nature Based Solutions Action 12), Review the Dublin Bay Biosphere and identify areas vulnerable to climate change (Action 17), as well as Action 18 Co-ordinate action on biodiversity across the four Dublin Local Authorities are examples of actions that are long term positive and consistent with these SEOs.

A number of the Transport Actions are recommended for mitigation either due to the potential in the absence of mitigation on conservation management objectives of European Sites and biodiversity (Actions 12, 13 and 14) ; however it is considered the existing environmental protection measures in the DLR CDP2016-2022 should address these potential effects appropriately.

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. It will be important to avoid the loss of important ecological networks and wildlife corridors due to direct or indirect impacts of greenways. A Wildlife Corridor Plan for the county is currently underway and will be referred to for information and guidance for future projects.

Indirect and cumulative positive impacts are identified for biodiversity in relation to actions around Resource Management such as reducing illegal dumping.

Nature based solutions identified as particularly positive include Action 31 Research to increasing buffers from watercourses; Action 32 establishment of a grant scheme to landowners of riparian habitat and Action 33 Tree Planting in areas identified for climate change resilience. Citizen engagement actions include Action 30 Support local communities through lifelong Biodiversity Education and sustainable gardening workshops (Action 29) are further such examples.

7.2.3 Water - Significant Effects

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

- A reduction in water quality in groundwater, springs and watercourses associated with the construction phase of new developments (short to medium term impacts);
- 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 Dún Laoghaire Rathdown CDP 2016-2022 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 strengthen these through the flood resilience actions and nature based solutions in particular. Additional tree planting and a focus on riparian habitat (Actions 32 and 33) provide for positive effects as they reduce soil run off and allow for water attenuation and filtration. Again this provides for longer, positive effects associated with linear habitat creation and ecological connectivity.

Measures around SUDs, such as Actions 9 and 10 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 as well as Action *19 Protect and conserve floodplains, wetlands, rivers and watercourses subject to flooding*

An additional mitigation measures is recommended for the Flood Resilience to provide consistency in awareness raising and natural flood management measures across the DLAs. A mitigation measure is

also recommended for Action 10 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.

Awareness raising around illegal dumping (Actions 14 and 15) and Action 17 leaf composting can generate positive effects on soil through enhancement of the resource and a more sustainable approach to enriching soil.

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.

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 4 provides for an evidence based climate change chapter in the County Development Plan, both of which will allow for policy responses and in the CDP context, landuse zoning responses based on the evidence prepared.
- Other energy related measures including deep retrofitting of council housing stock (Action 5) are all identified as positive in relation to this SEO.

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 ritual features and landscapes associated with the foothills on peat soils 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 capital[17].

Therefore it is recommended a mitigation measure be included for the Coastal Zone Management Planning actions (Action 3).

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 minimsing 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, and Action 17 Monitoring of smart lighting trials
- Transport: Action 7 Develop and extend cycle network; Action 17: Engagement with citizens on new sustainable travel initiatives and schemes.
- Flood Resilience: whilst most of the measures here mitigate and adapt to climate change, with accompanying positive effects on material assets SEOs, *Actions 7 Develop template to capture impacts, response and costs for all major climate events* and 10 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. Similarly with actions relating to flood storage actions in public parks, a mitigation measures is recommended to highlight nature based solutions where possible.

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 Regional Flood Plain management guidelines, recognition of green and blue infrastructure and corridors and this an

[17] Coastal cultural heritage: A resource to be included in integrated coastal zone management SornaKhakzad[a]MarnixPieters[b]KoenraadVan Balen[c] Ocean & Coastal Management Volume 118, Part B

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*"[18] 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.

[18] (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 Dún Laoghaire Rathdown County Development Plan provided a cumulative assessment of national level plans and programmes as they relate to the CDP.

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 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**	No adverse in combination effects 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 (RSESs) 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. These support as shown in Section 3 of this SEA ER and are consistent with key objectives of the NPF and RSES
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

	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.	
Neighbouring County Development Plans	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.	No in-combination impacts were predicted as a result of implementation of the Plans
River Basin District Management Plans.	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.	No in-combination impacts are predicted as a result of implementation of the Plans
CFRAMS Study	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.	No in-combination impacts are predicted as a result of implementation of the Plans.

Greater Dublin Drainage	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.	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
The Greater Dublin Transport Strategy 2016-2035	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.	Positive effects in relation to the prioritisation of public transport modes above private transport.
Dún Laoghaire Rathdown Heritage Plan	Key objectives as follows: Objective 1: Establish the existing resource information in the County Objective 2: Gather heritage information Objective 3: Provide better access to information	Positive interactions with SEOs in relation to this plan; no adverse cumulative effects identified.

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 to the Dún Laoghaire Rathdown County Development Plan 2016-2022. 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 Dún Laoghaire Rathdown CDP 2016-2022 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 Dún Laoghaire Rathdown CDP 2016-2022 that will apply; please note this is not an exhaustive list.

8.2 Environmental Protection Measures in the Dún Laoghaire Rathdown CDP 2016- 2022.

The CCAP has been prepared having regard to the policies and objectives outlined within the Dún Laoghaire Rathdown County Development Plan 2016-2022. The particular environmental protection measures for the CDP 2016-2022 are as follows:

TABLE 11 ENVIRONMENTAL PROTECTION MEASURES IN DÚN LAOGHAIRE RATHDOWN CDP 2016-2022

Policies/Objectives	
	CLIMATE CHANGE
Policy CC1	National Climate Change Adaptation Framework. * It is Council policy to implement the 'National Climate Change Adaptation Framework - Building Resilience to Climate Change' by supporting the preparation of a Climate Change Adaptation Plan
Policy CC2:	Development of National Climate Change Policy and Legislation. * It is Council policy to support on an ongoing basis the Government programme for the development of a National Climate Change Policy and Legislation through the inclusion and implementation of supporting and complementary County Development Plan policies.
Policy CC3	Development of National Energy Policy and Legislation. * It is Council policy to support on an ongoing basis the Government Programme for the development of Energy Policy and Legislation through the implementation of supporting policies in this County Development Plan - particularly those promoting use of renewable energy sources, energy efficiency, sustainable transport and land use planning.
Policy CC4	Sustainable Energy Action Plan* It is Council policy, in consultation with relevant stakeholders, to prepare a 'Sustainable Energy Action Plan'
Policy CC5	Limiting Emissions of Greenhouse Gases. * It is Council policy to support National and International initiatives for limiting emissions of greenhouse gases
Policy CC6:	Energy Performance in Existing Buildings *. It is Council policy to promote innovative building design that demonstrates a high level of energy conservation, energy efficiency and use of renewable energy sources in existing buildings.
Policy CC8:	Excellence in the Built Environment. * It is Council policy to lead by example by developing a strategy for effective climate protection within its building stock
Policy CC9:	Sustainability in Adaptable Design*. It is Council policy to promote sustainable approaches to the improvement of

	standards for habitable accommodation, by allowing dwellings to be flexible, accessible and adaptable in their spatial layout and design.
Policy CC10	Radon Gas It is Council policy, in partnership with other relevant agencies, to promote best practice in the implementation of radon prevention measures
Policy CC11	Renewable Energy and Energy Networks. * It is Council policy to support National and International initiatives to encourage the development and use of renewable energy sources
Policy CC12	Wind and Wave Energy*. It is Council policy to support and promote, in conjunction with other relevant agencies, wind energy initiatives – both on-shore and offshore – when these are undertaken in an environmentally acceptable manner
Policy CC13	Small-Scale Wind Energy Schemes*. It is Council policy to encourage small-scale wind energy developments within industrial areas, and support small community-based proposals in urban areas provided they do not negatively impact upon the environmental quality or residential amenity of the area
	FLOOD MANAGEMENT
Policy CC14:	Catchment Flood Risk Assessment and Management (CFRAM)*. It is Council policy to assist the Office of Public Works (OPW) in the preparation of the Regional Catchment Flood Risk Assessment and Management (CFRAM) Study being carried out for the Eastern District. Any recommendations and outputs arising from the CFRAM study for the Eastern District that are relevant for Dún Laoghaire-Rathdown will require to be incorporated into the Development Plan.
Policy CC15	Flood Risk Management*. It is Council policy to support, in cooperation with the OPW, the implementation of the EU Flood Risk Directive (2007/60/EC) on the assessment and management of flood risks, the Flood Risk Regulations (SI No 122 of 2010) and the Department of the Environment, Heritage and Local Government and the Office of Public Works Guidelines on 'The Planning System and Flood Risk Management, (2009)' and relevant outputs of the Eastern District Catchment and Flood Risk Assessment and Management Study (ECFRAMS Study)
Policy CC16	Cross-Boundary Flood Management. It is Council Policy to work with neighbouring Local Authorities when developing cross-boundary flood management work programmes and when considering cross boundary development
Policy CC17:	Coastal Defence*. It is Council policy to implement and have regard to the recommendations of the Coastal Defence Strategy (2010) for the County where feasible. The Council will endeavour to obtain funding from the Office of Public works in order to undertake defence measures for specific areas as prioritised in the Strategy

	WATER QUALITY
Policy EI22:	Water Pollution It is Council policy to implement the provisions of water pollution abatement measures in accordance with National and EU Directives and other legislative requirements in conjunction with other agencies as appropriate
Policy EI1	Water Supply and Appropriate Assessment It is Council policy to require that all developments relating to water supply and waste water treatment are subject to screening for Appropriate Assessment to ensure there are no likely significant effects on the integrity, defined by the structure and function, of any Natura 2000 sites and that the requirements of Article 6 of the EU Habitats Directive are met.
Policy EI2	Wastewater Treatment and Appropriate Assessment* It is Council policy to provide adequate wastewater treatment facilities to serve the existing and future population of the County, subject to complying with the Water Framework Directive and the associated River Basin Management Plan or any updated version of this document, 'Water Quality in Ireland 2007-2009' (EPA 2011) or any updated version of the document, Pollution Reduction Programmes for Designated Shellfish Areas, the Urban Waste Water Treatment Directive and the Habitats Directive
Policy EI3:	Surface Water Drainage and Appropriate Assessment* It is Council policy to require that a Sustainable Drainage System (SuDS) is applied to any development and that site specific solutions to surface water drainage systems are developed, which meet the requirements of the Water Framework Directive and the associated River Basin Management Plans and 'Water Quality in Ireland 2007-2009' (EPA 2011) or any updated version of the document
Policy EI4:	Groundwater Protection and Appropriate Assessment It is Council policy to ensure the protection of the groundwater resources in and around the County and associated habitats and species in accordance with the Groundwater Directive 2006/118/EC and the European Communities Environmental Objectives (Groundwater) Regulations, 2010. In this regard, the Council will support the implementation of Irish Water's Water Safety Plans to protect sources of public water supply and their contributing catchment
Policy EI5	Water Supply and Wastewater* It is Council policy - in conjunction with, and the support of, Irish Water - to provide adequate high quality drinking water, to promote water conservation and to continue the development and improvement of the water supply and wastewater systems throughout Dún Laoghaire-Rathdown in order to meet the anticipated water and wastewater requirements of the County - all in accordance with the recommendations set out in the 'Greater Dublin Water Supply Strategic Study' and 'The Greater Dublin Strategic Drainage Study'.
Policy EI6	Integrated Water Management Plans* It is Council policy - in conjunction with, and the support of Irish Water - to contribute to the promotion of the development of Integrated Water Management Plans for the Dublin Region and to

	participate in any pilot scheme for the establishment of such Plans
Policy EI8	Sustainable Drainage Systems* It is Council policy to ensure that all development proposals incorporate Sustainable Drainage Systems (SuDS).
Policy EI7:	Water Quality Management Plans It is Council policy to support Irish Water in its implementation of Water Quality Management Plans for ground, surface, coastal and estuarine waters as part of the implementation of the EU Water Framework Directive
Policy EI9	Stormwater Impact Assessments* It is Council policy to ensure that all new significant developments prepare a Stormwater Impact Assessment which incorporate Stormwater Audits in accordance with the Council's Stormwater Management Plan Guidance Document and the Council's Development Management Thresholds Information Document.
Policy EI10	Storm Overflows of Sewage to Watercourses* It is Council policy to work alongside Irish Water to minimize the number and frequency of storm overflows of sewage to watercourses and to establish, in co-operation with the adjoining local authorities and Irish Water, a consistent approach to the design, improvement and management of these intermittent discharges to ensure that the needs of the Region's receiving waters are met in a cost effective manner.
Policy EI11	Water Services Investment Programme* It is Council policy to support and co-operate with Irish Water to deliver on key water services projects as detailed within Irish Waters proposed 2014-2016 CIP and any subsequent water service plans2
	NATURAL HERITAGE & LANDSCAPE
Policy LHB 1	Access to Natural Heritage It is Council policy to promote, protect and enhance sustainable and appropriate access to the natural heritage of the County.
Policy LHB2	Preservation of Landscape Character Areas* It is Council policy to continue to preserve and enhance the character of the County's landscapes in accordance with the recommended strategies as originally outlined in the Landscape Character Assessment (2002 and since updated), in accordance with the 'Draft Guidelines for Landscape and Landscape Assessment' (2000) as issued by the Department of Environment and Local Government, in accordance with the European Landscape Convention (Florence Convention) and in accordance with 'A National Landscape Strategy for Ireland – Strategy Issue Paper for Consultation' (2011). The Council shall implement any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's National Landscape Strategy for Ireland, 2015 - 2025.
Policy LHB3:	Seascape It is Council policy to carry out a Seascape Assessment in accordance with any relevant recommendations contained in the Department of Arts, Heritage and the Gaeltacht's 'National Landscape Strategy for Ireland, 2015 – 2025'.
Policy LHB4:	High Amenity Zones* It is Council policy to conserve and enhance existing High Amenity zones and to seek to manage

	these and other areas to absorb further recreational uses and activity without damaging the amenities that affords them their special character
Policy LHB5:	Historic Landscape Character Areas In assessing development proposals and in the preparation of plans it is Council policy to have regard to the recommendations and findings of the Historic Landscape Character Assessments (HLCA) already undertaken for a number of the urban-rural fringe areas of the County most likely to come under development pressure.
Policy LHB6	Views and Prospects, it is Council policy to protect and encourage the enjoyment of views and prospects of special amenity value or special interests
Policy LHB7	Coastal Zone Management and Dublin Bay* It is Council policy to co-operate with the Coastal Zone Management Division of the Department of Agriculture, Food and the Marine in the preparation of the National stocking exercise and in the preparation and implementation of a National Coastal Zone Management Strategy to ensure the conservation, management and protection of man-made and natural resources of the Coastal Zone.
Policy LHB9	Coastline Parks and Harbours, it is Council policy to continue to upgrade recreational and tourism-related amenities in the public parks and harbours along the coastline including improved accessibility by the general public.
Policy LHB8	Development in the 'Nearshore' area. It is Council policy to manage development in the 'Nearshore' area in accordance with the provisions of the general scheme of the Maritime and Foreshore (Amendment) Bill 2013. The 'Nearshore' extends from the High-Water Mark to the Low Water Mark and is part of the Foreshore area.
Policy LHB10:	Beaches It is Council policy to promote the use of certain beaches for amenity and recreational use.
Policy LHB11	Dublin Bay Biosphere* It is Council policy to participate in and actively support the work of the Dublin Bay Biosphere Partnership. In furtherance of this policy the Council will aim to develop and implement a Biosphere work program within the County in support of the work of the Dublin Bay Biosphere Partnership
Policy LHB12	Coastal Area Feasibility Study* It is Council policy to undertake a comprehensive feasibility study on the recreational potential along the coastal area of the County which comprehensively addresses recreational impact - including visitor numbers, mapping and surveying of sensitive habitats and species and identification of significant threats on Natura 2000 sites - and which would allow an assessment of any future proposals, alone or in combination, to assess impact on the coastal and marine zone within and adjacent to the County boundary. The Council will explore the possibility of carrying out this study with adjoining and/or coastal Local Authorities and/or other agencies
Policy LHB13	Dublin Mountains Strategic Plan* It is Council policy to support the vision and objectives of the Dublin Mountains Strategic Plan for Development of Outdoor Recreation (2007- 2017) including the continued development and enhancement of the Dublin Mountains Way and its rerouting off public roads wherever possible
Policy LHB14	Public Rights-of-Way It is Council policy to:

	• Preserve, protect, promote and improve for the common good all existing public rights-of-way which contribute to general amenity. • Create new rights-of-way or extend or enhance existing rights-of-way either by agreement with landowners or through the use of compulsory powers in the interest of ensuring access to amenities, including the coast, upland areas, river banks, heritage sites and National Monuments. • Create rights-of-way to provide linkages from the built-up areas to the countryside and the coast. • Prohibit development and keep free from obstruction existing rights-of-way, and to take legal action if necessary, to prevent any attempt to close them off. • Prohibit development which would prejudice public access to existing rights-of-way, unless the level of amenity is maintained by the right of way, footpath, or bridleway being diverted by the minimum practical distance and the route continues to be segregated from vehicular traffic. • Consider favourably planning applications which include proposals to improve the condition and appearance of existing rights-of-way
Policy LHB15:	Recreation Access Routes It is Council policy to preserve all Recreation Access Routes which contribute to general amenity.
Policy LHB16:	National Park* It is Council policy to promote and to co-operate in the extension of the Wicklow Mountains National Park
Policy LHB19:	Protection of Natural Heritage and the Environment* It is Council policy to protect and conserve the environment including, in particular, the natural heritage of the County and to conserve and manage Nationally and Internationally important and EU designated sites - such as Special Protection Areas, candidate Special Areas of Conservation, proposed Natural Heritage Areas and Ramsar sites - as well as non-designated areas of high nature conservation value which serve as 'Stepping Stones' for the purposes of Article 10 of the Habitats Directive. Implementation of this policy will involve, inter
Policy LHB18	Indicative Forestry Strategy* It is Council policy to take full account of the Indicative Forestry Strategy (Draft 2008) produced by the Forest Service of the Department of Agriculture, Fisheries and Food.
Policy LHB20	Habitats Directive* It is Council policy to ensure the protection of natural heritage and biodiversity, including European sites that form part of the Natura 2000 network, in accordance with relevant EU Environmental Directives and applicable National Legislation, Policies, Plans and Guidelines
Policy LHB21	Biodiversity Plan* It is Council policy to implement the provisions of the County Biodiversity Plan 2009-2013 and to produce a second Biodiversity Plan which will be set within the context of the second National Biodiversity Plan, 'Actions for Biodiversity, 2011 – 2016' prepared by the Department of Arts, Heritage, Gaeltacht and the Islands. Due regard shall

	be had to the recommendations arising from the implementation of the current 2009 – 2013 Dún Laoghaire-Rathdown Biodiversity Plan or its successor plan.
Policy LHB22	Designated Sites* It is Council policy to protect and preserve areas designated as proposed Natural Heritage Areas, candidate Special Areas of Conservation, and Special Protection Areas. It is Council policy to promote the maintenance and as appropriate, delivery of 'favourable' conservation status of habitats and species within these areas
Policy LHB23	Non-Designated Areas of Biodiversity Importance* It is Council policy to protect and promote the conservation of biodiversity in areas of natural heritage importance outside Designated Areas and to ensure that notable sites, habitats and features of biodiversity importance - including species protected under the Wildlife Acts 1976 and 2000, the Birds Directive 1979, the Habitats Directive 1992, and rare species - are adequately protected. Ecological assessments will be carried out for all developments in areas that support, or have potential to support, features of biodiversity importance or rare and protected species and appropriate mitigation/ avoidance measures will be implemented. In implementing this policy regard shall be had to the recommendations and objectives of the Green City Guidelines (2008) and 'Ecological Guidance Notes for Local Authorities and Developers' (Dún LaoghaireRathdown Version 2014).
Policy LHB24	County-Wide Ecological Network* It is Council policy to develop an Ecological Network throughout the County which will improve the ecological coherence of the Natura 2000 network in accordance with Article 10 of the Habitats Directive. The network will also include non-designated sites.
Policy LHB25:	Rivers and Waterways* It is Council policy to maintain and protect the natural character and ecological value of the river and stream corridors in the County and where possible to enhance existing channels and to encourage diversity of habitat. It is also policy (subject to the sensitivity of the riverside habitat) to provide public access to riparian corridors to promote improved passive recreational activities

8.3 Recommended Mitigation Measures for the Dún Laoghaire Rathdown CCAP

Action	Suggested mitigation measures	Included in CCAP?
	An integrated approach to decision making in relation to these climate change actions is recommended.	
3	**Prepare and** Implement an **Integrated** Coastal Zone Management Plan **that addresses natural and cultural heritage and follows the Marine Spatial Planning Directive/framework**	
7	Develop template to capture impacts, response and costs (**including ecosystem services/natural capital costs** for all major climate events	
10	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**	
	The following flood storage actions will incorporate nature based solutions and biodiversity enhancement measures where possible.(Refers to actions 11 to 18)	
New measures to be consistent with neighbouring Local Authorities	***Communication and awareness campaigns on flood risk management and natural flood management measures***	
	Nature Based Solutions	
11	Incorporate natural play space into existing parks **for recreation and as SuDS**	
	Develop nature based solutions for design and retrofit in the built environment in urban areas of DLR and encourage their incorporation by property owners, businesses and local government.	

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 indictors 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 and updated on an annual basis, with a review and revision every five years. This draft of the Climate Change Action Plan was developed through DLRCC's Environment, Climate Change and Energy SPC and approved by the full County Council. The Director of Infrastructure and Climate Change 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 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 DLR.

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.

Dún Laoghaire Rathdown 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	Target	Indicator	Data Source
Biodiversity Flora and Fauna			Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). Mapping of DLR important habitats and species as part of the new DLR County Biodiversity Plan Department of Arts, Heritage and the Gaeltacht report of the implementation of the measures contained in the Habitats Directive - as required by Article 17 of the Directive (every 6 years). •Department of Arts, Heritage and the Gaeltacht's National Monitoring Report for the Birds Directive under Article 12 (every 3 years). Consultations with the NPWS (at monitoring evaluation - see Section 10.4). Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). CORINE mapping resurvey (every c. 5 years). Review of Council Ecological Network Mapping
	To avoid the loss of important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features, or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.	B2: Percentage increase of functional connectivity and ecosystem services value due to remediation resulting from development provided for by the Plan	
	B2: No significant ecological networks or parts thereof which provide functional connectivity to be lost without remediation resulting from development provided for by the Plan	B3i: on the protection of listed species	

SEA Topic	Target	Indicator	Data Source
	B3: To avoid significant adverse impacts, including direct, cumulative and indirect impacts, resulting from the implementation of the Plan, to important habitats and species identified in the DLR County Biodiversity Plan along with their supporting environmental features or their sustaining resources and also to ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species.		Mapping of DLR Wildlife Corridor Plan 2019 Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). Consultations with the NPWS
	B4 To maintain and restore key ecological processes (e.g. ecohydrology, hydrogeology, hydrogeomorphology, water quality, coastal processes).		
Population and human health Noise	PHH1: No spatial concentrations of health problems arising from environmental factors as a result of implementing the Plan	PHH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive and Environmental Protection Agency	Dún Laoghaire Rathdown County Council, EPA Consultations with EPA and Health Service Executive (at monitoring evaluation - see Section 10.
Soil and Geology	S1: To minimise reductions in soil extent and hydraulic connectivity	S1: Soil extent and hydraulic connectivity	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant
Water	W1i: Not to cause deterioration in the	W1i: Classification of Overall Status	Internal monitoring of likely significant

SEA Topic	Target	Indicator	Data Source
	status of any surface water or affect the ability of any surface water to achieve 'good status'63 W1ii: To achieve - as a minimum - Mandatory values and, where possible, to achieve Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)	(comprised of ecological and chemical status) under the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (SI No. 272 of 2009) W1ii: Mandatory and Guide values as set by the EU Bathing Water Directive and transposing Bathing Water Quality Regulations (SI No. 79 of 2008)	environmental effects of grants of permission (grant by grant). •Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual). •EPA The Quality of Bathing Water in Ireland reports.
	W2: Not to affect the ability of groundwaters to comply with Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Data issued under the Water Framework Directive Monitoring Programme for Ireland (multi-annual
	W3: Minimise developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk in compliance with The Planning Sy stem and Flood Risk Management Guidelines for Planning Authorities	Number of incompatible developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant).
Material Assets	M1: All new developments granted permission to be connected to and	M1: Number of new developments granted permission which can be	Internal monitoring of likely significant environmental effects of grants of

SEA Topic	Target	Indicator	Data Source
	adequately and appropriately served by waste water treatment over the lifetime of the Plan	adequately and appropriately served with waste water treatment over the lifetime of the Plan	permission (grant by grant).
	M2: No non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan	M2: Number of non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan	•EPA The Provision and Quality of Drinking Water in Ireland reports (multi-annual). •EPA Remedial Action List (every quarter).
	M3i: Minimise increases in and, where possible, reduce household waste generation M3ii: Maximise increases in packaging recovered (t) by self-complying packagers	M3i: Total collected and brought household waste M3ii: Packaging recovered (t) by self-complying packagers	•EPA National Waste Reports •EPA Ireland's Environment Reports
Air Quality and Climatic Factors	C1: An increase in the percentage of the population travelling to work, school or college by public transport or non-mechanical means	C1: Percentage of population travelling to work, school or college by public transport or non-mechanical means	CSO Population Data (every c. 5 years).
Cultural Heritage	CH1: Protect entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and their context of the above within the	CH1: Percentage of entries to the Record of Monuments and Places - including Zones of Archaeological Potential (and the context of the	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Consultation with Department of Arts, Heritage and the

SEA Topic	Target	Indicator	Data Source
	surrounding landscape where relevant) from significant adverse effects arising from new development granted permission under the Plan	above within the surrounding landscape where relevant) - protected from significant adverse effects arising from new development granted permission under the Plan	Gaeltacht (at monitoring evaluation - see Section 10.4).l
	CH2: Protect entries to the Record of Protected Structures and Architectural Conservation Areas and their context from significant adverse effects arising from new development granted permission under the Plan	CH2: Percentage of entries to the Record of Protected Structures and Architectural Conservation Areas and their context protected from significant adverse effects arising from new development granted permission under the Plan	•Internal monitoring of likely significant environmental effects of grants of permission (grant by grant). •Consultation with Department of Arts, Heritage and the Gaeltacht (at monitoring evaluation - see Section 10.4).
	L1: To implement Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects	L1: Implementation of Plan Policies LHB2 to LHB6 which provide for the protection and management of Landscape Character Areas, the Seascape, High Amenity Zones, Historic Landscape Character Areas and Views and Prospects	Internal monitoring of likely significant environmental effects of grants of permission (grant by grant).
Inter-relationships	***Maintain and improve the health of people, ecosystems and natural processes*** ***Actively seek to integrate opportunities for environmental enhancement during adaptation to climate change***	***% or number of blue and green infrastructure measures included in approved planning applications within Dún Laoghaire Rathdown including SUDS, Integrated Wetlands, Hedgerows, Native tree planting scheme***	***Review per grant application and # of DLR supported schemes such as integrated wetlands.***

SEA Topic	Target	Indicator	Data Source
		DLR supported community blue/green infrastructure measures	

9.3 Conclusion

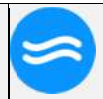
This SEA Environmental Report demonstrates how environmental parameters have been addressed in the plan preparation process. Consultation has been undertaken for the Scoping of this Environmental Report and further opportunity to comment on the CCAP will be possible over the forthcoming weeks.

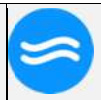
The SEA Appropriate Assessment processes have been undertaken in line with the Planning and Development (Strategic Environmental Assessment) Regulations 2004 to 2011 (as amended). Subject to the full and proper implementation of the mitigation measures outlined in this SEA Environmental Report and the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

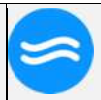
No likely interaction with /insignificant impact with SEOs	0	Potential conflict with SEOs – likely to be mitigated	⇳
Likely to improve status of SEOs	↑	Probable conflict with SEOs – unlikely to be mitigated	↓

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	Interrelationship
								

CCAP Actions: Energy and Buildings

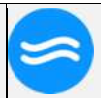
										
	Energy Planning									
1	Create Energy Master Plan for the Dublin Region	⇳	↑	⇳	⇳	⇳	↑	⇳	⇳	↑
2	Prepare DLR Sustainable Energy and Climate Action Plan	⇳	↑	↑	O	↑	↑	↑	↑	↑
3	Develop and implement Public Lighting Master Plan	↑⇳	↑	↑	↑	↑	↑	↑	↑	↑
4	Evidence based Climate Change Chapter in County Development Plan 2022-2028	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Energy Efficiency and Renewables									
5	Deep retrofits of housing stock to nZEB or EnerPHit standard	⇳	↑	↑	↑	↑	↑	↑	↑	↑
6	Undertake energy efficiency works in the Council's housing stock	⇳	↑	↑	↑	↑	↑	↑	↑	↑
7	Review all significant energy users within the Council to increase energy efficiencies	O	↑	O	O	↑	↑	O	O	↑

										
8	Apply for energy funding through SEAI's BEC, EXEED and deep retrofit programmes	O	↑	O	O	↑	↑	O	O	↑
9	Implement EPC project in 3 Council leisure centres	↑	↑	↑	↑	↑	↑	↑	↑	↑
10	Apply for energy funding through SEAI's BEC, EXEED and deep retrofit programmes	↕	↑	↑	↑	↑	↑	↑	↑	↑
11	Continued compliance with ISO50001	↑	↑	↑	↑	↑	↑	↑	↑	↑
12	Display Energy Certificates for public buildings	O	↑	O	O	↑	↑	O	O	↑
13	Annual Monitoring and Reporting to SEAI	O	↑	O	O	↑	↑	O	O	↑
14	Promote DLR's exemplar role of energy efficiency in public sector	O	↑	O	O	↑	↑	O	O	↑
15	Publish Energy Review annually		↑			↑	↑			
										↑
	Research and Innovation									
16	Facilitate the Small Business	↑	↑	↑	↑	↑	↑	↑	↑	↑

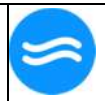
										
	Innovation and Research (SBIR) challenge for climate change solutions									
17	Monitoring of smart lighting trials in County	O	↑	O	O	↑	↑	O	O	↑
18	Continue to use Energy Elephant to monitor energy use in Council buildings	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Awareness Raising									
19	*Energy awareness initiatives in Council owned buildings*	O	↑	O	O	↑	↑	O	O	↑
20	*Monitor and develop the Home Energy Saving Kits in dlr libraries*	O	↑	O	O	↑	↑	O	O	↑
21	*Expand housing assistance programme to include tenant energy awareness*	O	↑	O	O	↑	↑	O	O	↑

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.

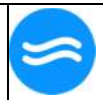
A small number of SEOs could, in the absence of mitigation give rise to potential adverse effects; these relate to the following:
Action 1: Create an Energy Masterplan for Dublin,
Action 2: Prepare DLR Sustainable Energy and Climate Action Plan
Action 3: Develop a Public Lighting Masterplan "
However the above targets relate to plan preparation and there are sufficient and appropriate mitigation measures through environmental protection measures in the DLR CDP 2016-2022 to address these and provide appropriate mitigation.

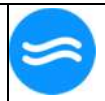
										
Actions 5,6 and 10 relating to retrofitting of housing stock and buildings are positive in relation to the SEOs listed above, but also in terms of soil and geology and waste management, by retrofitting the existing housing stock it extends the life of buildings, and in addition to energy savings and reductions, reduces the need for geological and soil resources associated with new build, it indirectly supports the circular economy.										

CCAP Actions: Transport

										
	OPERATIONS									
1	Increase number of Electric Vehicles in the Council Fleet	O	↑	O	O	↑	↑	O	O	↑
	Planning and Public Realm									
2	Reduce Street Parking	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Active Travel and Behaviour change									
	3 Promotion of road safety and active travel in schools	O	↑	O	O	↑	↑	O	O	↑
4	4 Develop and expand the County walking	↕	↑	↕	↕	↑	↑	↑	↕	↑

	network									
5	5 dlr Sports Partnership organised walks	O	↑	O	O	↑	↑	O	O	↑
6	Permeability and connectivity in the planning process	O	↑	O	O	↑	↑	O	O	↑
7	7 Develop and extend cycle network	↕	↑	↕	↕	↑	↑	O↕	↕	↑
8	Cycle Training Programme in schools	O	↑	O	O	↑	↑	O	↕	↑
9	Develop County bike sharing scheme	O	↑	O	O	↑	↑	O	O	↑
10	Cycle parking in public realm	O	↑	O	O	↑	↑	↕	↕	↑
11	30 km/h speed limits	O	↑	O	O	↑	↑	O	O	↑
12	Road maintenance improvements	↕	↑	↕	↕	↑	↑	O	↕	↑
	Public Transport									
13	Expand Bus network in the county	↕	↑	↕	↕	↑	↑	↕	↕	↑
14	Expand rail network in the County	↕	↑	↕	↕	↑	↑	↕	↕	↑
15	Expand car clubs in the County	**O**	↑	**O**	**O**	↑	↑	**O**	**O**	↑
16	Expand EV network in	**O**	↑	**O**	**O**	↑	↑	**O**	**O**	↑

										
	the County									
17	Engagement with citizens on new sustainable travel initiatives and schemes	↑	↑	↑	↑	↑	↑	↑	↑	↑
18	Replacement of diesel hand sweepers/diesel power washers with electric models	O	↑	O	O	↑	↑	O	O	↑
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 this 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 (Actions 12,13 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 14 Expand Rail 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 on-* *going 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)*										

CCAP Actions: Flood Resilience

										
1	Implement flood risk management guidelines	↑	↑	↑	↑	↑	↑	↑	↑	↑
2	Coordinate Emergency Response Plans incorporating climate change	↑	↑	↑	↑	↑	↑	↑	↑	↑
3	**Prepare and** Implement an **Integrated** Coastal Zone Management Plan **that addresses natural and cultural heritage**	↕	↑	↕	↕	↑	↑	↕	↕	↑

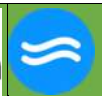
	and aligns with the Marine Spatial Planning Directive									
4	Implement coastal monitoring programme, map of vulnerable areas	↑	↑	↑	↑	↑	↑	↑	↑	↑
5	Develop and implement a biosphere work programme within the County	↑	↑	↑	↑	↑	↑	↑	↑	↑
6	Develop a climate change impact GIS risk map with scenarios for the Dublin Region	↑	↑	↑	↑	↑	↑	↑	↑	↑
7	Develop template to capture impacts, response and costs (**including ecosystem services/natural capital costs** for all major climate events	↑	↑	↑	↑	↑	↑	↑	↑	↑
9	Establish a Working Group to deal with the Issue of Pluvial Flood Risk. This shall include: • How to manage "urban creep" and the increase in impermeable	↑	↑	↑	↑	↑	↑	↑	↑	↑

	surfaces • Promotion of SUDS early in design process • Development of pluvial flood forecasting through use of point rainfall forecasting									
10	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**	⇳	↑	⇳	⇳	↑	↑	⇳	⇳	↑
The following flood storage actions will incorporate nature based solutions and biodiversity enhancement measures where possible.										
11	Cabinteely Park flood storage	⇳	↑	↑	↑	↑	↑	↑	⇳	↑
12	Fernhill Park flood storage feasibility study	⇳	↑	↑	↑	↑	↑	↑	⇳	↑
13	Kilbogget Park flood	⇳	↑	↑	↑	↑	↑	↑	⇳	↑

										
	storage									
14	Installation of screen monitoring cameras	O	↑	↑	↑	↑	↑	O	O	↑
15	Glenavon Park flood storage and integrated wetland	↕	↑	↑	↑	↑	↑	↑	↕	↑
16	Marlay Park enhanced flood storage	↕	↑	↑	↑	↑	↑	↑	↕	↑
17	Sandyford Park flood storage	↕	↑	↑	↑	↑	↑	↑	↕	↑
18	Corbawn coastal protection works	↕	↑	↑	↑	↑	↑	↑	↕	↑
NO										
19	*Promote and encourage community involvement in the retrofit of SuDS in existing developments*	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Communication and awareness campaigns on flood risk management and natural flood management measures	↑	↑	↑	↑	↑	↑	↑	↑	↑
Comment: *Actions 3, 7 and 10 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 (Action 10).* *In relation to the Coastal Zone Management Plan it is recommended that additional mitigation be provided to allow for the preparation of an integrated coastal zone plan that addresses cultural and well as natural resources and heritage and is line with*										

										
the Marine Spatial Planning Directive. *.* *Whilst the parks identified for flood storage may be broadly positive, an overarching mitigation measure is recommended in the introductory line to promote nature based solutions and biodiversity enhancement measures where possible; this provides for improved and better consistency with Biodiversity SEOs, Water SEOs, landscape and human health SEOs.* *A new mitigation measure in relation to awareness raising is recommended to ensure regional consistency across the DLAs in citizen engagement and awareness raising around flood risk management and natural flood management measures..*										

CCAP Actions: Nature Based Solutions

NO	Action									
	OPERATIONS									
1	Establish regional working group to identify areas **and priorities for actions**	↑	↑	↑	↑	↑	↑	↑	↑	↑
2	Agree joint action plans to protect habitats and species native to the County	↑	↑	↑	↑	↑	↑	↑	↑	↑
3	Establish	↑	↑	↑	↑	↑	↑	↑	↑	↑

NO	Action									
	interdepartmental working group with engineers and planners									
4	Workshop on NBS, green infrastructure and Sustainable urban Drainage Systems (SuDS)	↑	↑	↑	↑	↑	↑	↑	↑	↑
5	Produce regional floodplain management guidelines - use Santry River as a demonstration	↑	↑	↑	↑	↑	↑	↑	↑	↑
6	Undertake a feasibility study to develop an ecosystems audit template	↑	↑	↑	↑	↑	↑	↑	↑	↑
7	Assessment of the impact of climate change on biodiversity and ecosystem services	↑	↑	↑	↑	↑	↑	↑	↑	↑
8	Develop and implement pollinator support actions	↑	↑	↑	↑	↑	↑	↑	↑	↑
9	Create region-wide map	↑	↑	↑	↑	↑	↑	↑	↑	↑

NO	Action									
	of green network to support walking and cycling									
10	Implement Public Open Space and Parks Strategy	↑	↑	↑	↑	↑	↑	↑	↑	↑
11	Incorporate natural play space into existing parks **for recreation and as SuDS**	↑	↑	↑	↑	↑	↑	↑	↑	↑
12	Implement dlr TREES 2011- 2015 strategy by producing a map of trees in the Count	↑	↑	↑	↑	↑	↑	↑	↑	↑
13	Develop Dublin tree and plant guide	↑	↑	↑	↑	↑	↑	↑	↑	↑
14	Update dlr TREES 2011-2015 strategy	↑	↑	↑	↑	↑	↑	↑	↑	↑
15	Promote the heritage tree hunt	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Conservation									
16	Complete and climate proof Biodiversity Action Plan, Invasive Alien Species Plan, and dlr TREES 2011-2015 strategy	↑	↑	↑	↑	↑	↑	↑	↑	↑

NO	Action									
17	Review Dublin Bay Biosphere Plan and identify areas vulnerable to climate change	↑	↑	↑	↑	↑	↑	↑	↑	↑
18	Coordinate action on biodiversity across the four Dublin Local Authorities	↑	↑	↑	↑	↑	↑	↑	↑	↑
19	Protect and conserve floodplains, wetlands, and coastal areas subject to flooding	↑	↑	↑	↑	↑	↑	↑	↑	↑
20	Promote the natural, historical and amenity value of watercourses while maximising natural flood protection	↑	↑	↑	↑	↑	↑	↑	↑	↑
21	Launch awareness campaign to build awareness of native species	↑	↑	↑	↑	↑	↑	↑	↑	↑
22	Bee Friendly Estates - promote planting of pro-pollinator flora	↑	↑	↑	↑	↑	↑	↑	↑	↑
23	Update Hedgerow Study	↑	↑	↑	↑	↑	↑	↑	↑	↑
24	Development of community garden at	↑	↑	↑	↑	↑	↑	↑	↑	↑

NO	Action									
	Fernhill Park									
25	Deliver green roofs on civic buildings	↑	↑	↑	↑	↑	↑	↑	↑	↑
	Awaiting Budget									
26	Develop demonstration sites to show how to combine nature conservation with existing land uses	↑	↑	↑	↑	↑	↑	↑	↑	↑
27	Produce A Guide to Sustainable Living in County Dublin	↑	↑	↑	↑	↑	↑	↑	↑	↑
28	Identify further sites suitable for community gardens for local food production	↑	↑	↑	↑	↑	↑	↑	↑	↑
29	Sustainable gardening workshops	↑	↑	↑	↑	↑	↑	↑	↑	↑
30	Support local communities through Lifelong Biodiversity Education	↑	↑	↑	↑	↑	↑	↑	↑	↑
31	Assess benefit of increasing buffer distance of 10m from water courses to	↑	↑	↑	↑	↑	↑	↑	↑	↑

NO	Action									
	distances of 20m, 50m and 100m, in order to protect biodiversity and provide greater flood attenuation									
32	Establish a grant scheme to landowners of riparian habitat for the planting of trees and enhancement of riparian habitats to increase resilience to climate change	↑	↑	↑	↑	↑	↑	↑	↑	↑
33	Tree planting in areas identified for climate change resilience and biodiversity	↑	↑	↑	↑	↑	↑	↑	↑	↑
34	Pilot Demonstrator Projects for Rain Gardens and Blue-Green Streets – new builds and retroffing	↑	↑	↑	↑	↑	↑	↑	↑	↑
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 county tree canopy and a woodland strategy will all provide co-benefits to biodiversity, flora and fauna, assist with air quality purification, with accompanying positive effects on human health, assist with carbon storage, and provide landscape benefits.										

CCAP Actions: Resource Management

										
1	Monitor and enforce waste regulation	↑	↑	↑	↑	↑	↑	↑	↑	↑
2	Assess waste in Council owned and operated buildings and plan actions to be taken	↑	↑	↑	↑	↑	↑	↑	↑	↑
3	Run staff recycling awareness campaign	O	↑	O	O	↑	↑	O	O	↑
4	Identify neighbourhoods/ areas in region in need of bring banks	O	↑	O	O	↑		O	O	↑
5	Apply for Local Authority Prevention Network grants	O	↑	O	O	↑	↑	O	O	↑
6	Develop Stop Food Waste campaigns in DLR	O	↑	O	O	↑	↑	O	O	↑
7	Continue environmental awareness campaigns to support public in their	↑	↑	↑	↑	↑	↑	↑	↑	↑

	efforts to manage their resource use									
8	Promote Reuse Month annually	↑	↑	↑	↑	↑	↑	↑	↑	↑
9	Use €co-Merit programme to advise businesses on how to become resource efficient	↑	↑	↑	↑	↑	↑	↑	↑	↑
10	Help implement Recycling Ambassadors Programme	↑	↑	↑	↑	↑	↑	↑	↑	↑
11	Secondary School Eco Conference	↑	↑	↑	↑	↑	↑	↑	↑	↑
12	12 Maintain and increase Green Schools Programme participation	↑	↑	↑	↑	↑	↑	↑	↑	↑
13	Work in partnership with resident/community groups in climate-related programmes	↑	↑	↑	↑	↑	↑	↑	↑	↑
14	Run anti-dumping and anti- litter campaigns using SBIR challenges	↑	↑	↑	↑	↑	↑	↑	↑	↑
15	Anti-dumping initiatives/	↑	↑	↑	↑	↑	↑	↑	↑	↑

										
	anti-litter campaigns									
16	Marine litter clean up days	↑	↑	↑	↑	↑	↑	↑	↑	↑
17	Introduce leaf composting programme	↑	↑	↑	↑	↑	↑	↑	↑	↑
18	Support and promote local Tidy Town initiatives	↑	↑	↑	↑	↑	↑	↑	↑	↑
19	Community fridge programme	O	↑			↑	↑	O	O	↑
20	Monitoring of Big Belly Bins in County	O	↑			↑	↑	O	O	↑
21	Climate related evaluation criteria in all tenders	↑	↑	↑	↑	↑	↑	↑	↑	↑
22	Expand housing assistance programme to include tenant waste and water awareness		↑	↑		↑	↑	O	O	↑
23	Waste management guidelines developed for	↑	↑	↑	↑	↑	↑	↑	↑	↑

	developers of new housing schemes									
Comment: Again most of the measures are consistent with the SEOs in particular material assets, population and human health, climatic change and air quality. For several SEOS the indirect and long term effects are positive, for example the water conservation measures. Actions that address illegal dumping and potential reuse of emissions from landfills generate positive effects as a reduction in illegal dumping creates long term positive effects on soil and geology, water and biodiversity, as well as Landscape and Population. In turn an indirect positive effect may relate to accidental introduction of invasive species both through illegal dumping from construction or industry or plastic rubbish which has been identified as a vector for invasive species through water bodies.										

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 7th 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: • 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 Biological Diversity, 1992	The Convention on Biological Diversity (CBD) entered into force in December 1993. It has 3 main objectives: 1. The conservation of biological diversity.

Title	Summary
	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	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: · 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 Habitats) Regulations 2011	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 judgements.

Title	Summary
	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.
Green Infrastructure Strategy	The European Commission in May 2013 adopted a Green Infrastructure Strategy, '*to promote the deployment of green infrastructure in the EU in urban and rural areas'*. 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).
Population and Human Health	
The Stockholm Convention	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.
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	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 Strategy will guide and frame Ireland's approach to developing its own soil protection strategy.

Title	Summary
Water Resources	
Water Framework Directive (2000/60/EC) as amended	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: inland surface waters; groundwater; transitional waters; and coastal waters. The key aims of the WFD are: expanding the scope of water protection to all waters, surface waters and groundwater; achieving "good status" for all waters by a set deadline water management based on river basins; "combined approach" of emission limit values and quality standards. getting the prices right; getting the citizen involved more closely, and streamlining legislation. Its ultimate objective is to achieve “good ecological and chemical status” for all Community waters by 2015.
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.
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

Title	Summary
	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 the Protection of the	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 'protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study'. It

Title	Summary
Archaeological Heritage, 1992 (The Valletta Convention)	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	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: 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 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: 1) Preparing the Ground; 2) Climate Impact Screening; 3) Prioritisation; Executive Summary - Sectoral Planning Guidelines for Climate Change Adaptation iii 4) Priority Impact Assessment; 5) Develop your Plan; 6) Implement, Evaluate and Review
The National Planning	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

Title	Summary
Framework 2040	the population grows, that growth is sustainable (in economic, social and environmental terms). 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. 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.
Biodiversity, Flora and Fauna	
Actions for Biodiversity 2017 – 2021, Ireland's 3rd National Biodiversity Plan	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 They include: 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	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. 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.
National Heritage Plan (2002)	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 Local Heritage Plans at County and City level.
All Ireland Pollinator Plan 2015-2020	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.

Title	Summary
	The Pollinator Plan has 5 key objectives: 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	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.
Irish waters Capital Investment programme	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 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 WWTP upgrade	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.
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	

Title	Summary
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 Asssesment.
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	In relation to planning at the County level the guidelines require planning authorities to: • 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	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. 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.
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 2013	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.
Material Assets	
Smarter Travel, A	Smarter Travel is the transport policy for Ireland that sets out how the vision of a sustainable travel and transport system can be achieved.

Sustainable Transport Future, A New Transport Policy for Ireland 2009-2020	
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: • 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 South Dublin 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.
Planning and Development Act 2000 (as amended). **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.
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:

- **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	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. 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.
Dun Laoghaire Rathdown County Development Plan 2016-2022	The Dún Laoghaire-Rathdown County Development Plan 2016-2022, which relates to the entire functional area of the Authority, replaces the 2010-2016 County Development Plan. The Development Plan comprises a series of separate, but closely linked and interrelated, elements: • The Written Statement – the main policy document. • A series of supporting Appendices. • 14 no. County Zoning Maps, Flood Zone Maps (plus supplementary mapping) . • Environmental Report and SEA Statement. • Natura Impact Report.
DLR Heritage Plan 2013-2019	The second Heritage plan concentrates on heritage and quality of life with key themes as follows: Heritage and Quality of Life 6 Consultation 7 First dlr Heritage Plan 2004-2008 10 Communicating the story of our heritage 12 Caring for our heritage (management of heritage and adding to knowledge) 14 Increasing level of community involvement in heritage
Parklife 2010	Parklife A policy for enhancing Biodiversity in Parks and Greenspace. An action of the Heritage Plan this policy document aims to promote biodiversity and green space within the public parks of DLR

Eastern & Midland assembly regional spatial and economic strategy 2018	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. The Draft RSES provides a: • 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	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: • 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	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 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.
Eastern Catchment Based Flood risk Management (CFRAM) study 2011-2016	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 • 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
Greater Dublin Strategic Drainage study	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: • 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.